Radically simple.
Simply versatile.
Radically simple. Simply versatile.
We believe in energy efficiency.
We believe in energy-saving cooling and heating –
and that the two go together.
We believe in systems.
We believe in simplicity.
We believe in renewable energy.
We believe in cooperation.

We are Glen Dimplex Thermal Solutions.
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Energy efficiency in systems
Three letters for greater efficiency: ESS.

Reduction.
Less is more. Even less is perfection.

System Zero.
No restrictions. No waste.

HybridChiller.
The best of both worlds.
The year 2017 marks the beginning of a new era in efficient solutions for heating and cooling: radically simple, simply versatile.

The new brand Glen Dimplex Thermal Solutions has a long and fascinating history. In the German town of Kulmbach, that history stretches back to the nineteenth century and a certain master well builder. We’ve experienced much and learned a great deal – from Upper Franconia to Dublin, from Michigan to Shenyang. That wealth of experience is found in every GDTS system.
Glen Dimplex Deutschland, Dimplex Thermal Solutions in the United States and Shenyang Dimplex Electronics in China join forces within the Glen Dimplex Group to form the new brand Glen Dimplex Thermal Solutions, bundling our expertise in cooling and heating – and making us even more international in the future.
Christian Weiss founds the company later known as ASK. The firm specialises in civil engineering and pipe systems, but heating technology is also one of its core competences. ASK designs and builds the heating system for the Kulmbach town hall – one of the first central-heating systems in the world.

At the new industrial site located at "Am Goldenen Feld 18", ASK starts production of industrial water pipes, heating and ventilation systems. The headquarters of the company is still at this address today.

Hermann Hill founds Koolant Koolers. The family-run company based in the US state of Michigan produces condensers, heat exchangers and cooling systems for various applications.
**1973**

**Dublin** / Martin Naughton founds Glen Electric with four friends. The start-up initially produces oil radiators – the first appliances are inspected on the Naughtons' kitchen table.

**Kulmbach** / ASK and Siemens set up the joint venture Kulmbacher Klimageräte-Werk GmbH (KKW). KKW takes over the plant in Kulmbach.

**Kulmbach** / Prompted by the oil crisis, KKW engineers start thinking about how to use renewable energy efficiently in heating technology. Soon afterwards, the first heat pumps in the world that use energy from the air, the earth or groundwater go into production. In fact, the very first heat pump started operating in Zurich town hall as early as 1938, but it was the engineers from Kulmbach that made the technology a global success.

**1977**

**Dublin** / Glen Electric acquires Dimplex, the British market leader in electrical heating, a company at the time eight times its size. Through the acquisition Glen Dimplex is created.

**Dublin** / Glen Dimplex grows rapidly, becoming the market leader in all areas of heating technology in the British Isles.

**1980**

**Kulmbach** / Siemens realises the great potential of heat pump technology and acquires 100% of KKW. Since then, ASK has concentrated on gas, water and sewer line construction, which remain its focus to this day.
1986
Kulmbach / Refrigerant circuits form the technical heart of heat pumps, as they do for compression-based refrigeration machines. Siemens takes the next logical step and starts also building refrigeration units for medical and industrial applications in Kulmbach.

1990
Dublin / 1990
Kulmbach / Siemens withdraws from electrical heating and cooling technology. The Irish-based Glen Dimplex Group acquires a 51% stake in KKW. One year later it takes over the company completely. Initially the name KKW remains.

1990
Kulmbach / KKW acquires Riedel Kältetechnik in Nuremberg, considerably expanding the cooling systems product segment.

1994
Kulmbach / KKW acquires Riedel Kältetechnik in Nuremberg, considerably expanding the cooling systems product segment.

1995
Kulmbach / The Glen Dimplex Group buys EIO – Elektro Installation Oberlind – in Sonneberg, Thuringia (Germany). The company produces electrical appliances such as vacuum cleaners. Today, this is where the electronic circuits for heat pumps are made.

1999
Kulmbach / KKW takes over Bosch Gewerbe-Kühlanlagen and incorporates it into its business unit Riedel. Further expansion of the company’s cooling competence.
2000
Kulmbach / The cooling technology division Riedel moves from Nuremberg to Kulmbach. KKW’s expertise in refrigeration is now all located at a single site.

2002
Kulmbach / KKW develops the first high-temperature heat pump with a flow temperature of 75 °C for restoring older buildings.

2003
Kulmbach / A machine of many talents – KKW builds the first air-to-water heat pumps that can cool as well as heat.

2005
Kulmbach / The company changes its name to reflect its international alignment and membership of the Glen Dimplex Group. The name KKW is dropped and company is now called Glen Dimplex Deutschland, with two main brands: Dimplex and Riedel.

2006
Kalamazoo / The Glen Dimplex Group acquires Koolant Koolers in the United States. The company is renamed Dimplex Thermal Solutions. The Glen Dimplex Group also expands into Australia and New Zealand.

2009
Kulmbach / Glen Dimplex Deutschland enters the market for ventilation systems, which are becoming increasingly important due to improvements in building insulation. Kulmbach now produces system solutions that combine heating, cooling and ventilation.

2010
Kulmbach / Glen Dimplex launches the LA60TU, the largest air-to-water heat pump in serial production to date. At 60 kW, it is powerful enough for use in very large apartment buildings.

2012
Shenyang / SDE realigns. Production focus is now on cooling systems for industrial and medical technology.

2012
Shenyang / The Glen Dimplex Group and a local Chinese power company create the joint venture SDE – Shenyang Dimplex Electronics. The company produces heating systems for the Asian market.
Glen Dimplex Thermal Solutions is a new brand. It brings together what belongs together: heating and cooling expertise, employed in intelligent and maximally efficient system solutions – whether it's for managing temperature and ventilation in buildings or precision cooling technologies and processes.
Much lies behind the new brand. Decades of experience. Specialist knowledge. Ideas. Ambition. Passion. Embodied in people across three continents, working together for Glen Dimplex Thermal Solutions. The brand belongs to the Glen Dimplex Group in Dublin, the global market leader for electric heating – a family-led, debt-free company. We wanted to find out more about the strategic background to the realignment and what the Group hopes to achieve through it. So we arranged to speak to Fergal Naughton, CEO of the Glen Dimplex Group and son of the company’s founder Martin Naughton, and Jochen Engelke, who developed and drove the plan for the creation of Glen Dimplex Thermal Solutions and who leads the new division from Kulmbach in the Franconia area of Bavaria, Germany. To our delight, Fergal brought along with him his older brother Neil Naughton, who works at Fergal’s side as Deputy Chairman, guiding the Group into the future. The perfect opportunity for a family chat: about a failed business plan, the joy of starting a new venture, megatrends and great opportunities – and naturally about heating and cooling, too.

Fergal, Neil, you grew up with Glen Dimplex – or maybe it’s even fair to see you grew up in Glen Dimplex. Can you reflect on those early memories for us?

Neil Naughton Without giving any state secrets about my age away, I was four years old when Glen Electric was started by my father. It was just a start-up. My earliest memories are of products being designed on our kitchen table. As a five or six-year-old I was fascinated by all these bits of metal – screws and thermostats and electrical components all laid out. There was a tense but exciting atmosphere. In fact, we were just talking about this with our father last night. His original business plan was to grow the business to a turnover of one million pounds and to employ 100 people – to run the company better and better each year, but never under any circumstances to grow beyond that. He jokes that his business plan was a complete failure.

Fergal Naughton You’re right to say that we grew up in the business, too. When Neil and I were both younger, every single school holiday and weekend was spent working in the different businesses. On assembly lines, in maintenance, in all different areas of the business and in different businesses within the Group. At the time, it was just work for us, but looking back on it, we now have a deep understanding of how the business operates.

Do you still have a favourite product from those early days that you feel emotionally connected to?

Neil Naughton Without giving any state secrets about my age away, I was four years old when Glen Electric was started by my father. It was just a start-up. My earliest memories are of

Jochen Engelke, when did you first come across the topic of electric heating – or have to deal with a heat pump?

Jochen Engelke As a child, never – we had gas heating in my parents’ house. But, interestingly, I’ve been working with cooling circuits almost all my life. I studied Chemistry and in one of our first study groups we had to develop a process for producing the refrigerant R-134a, an alternative to CFCs. And in my first job interview, for a position as a process engineer in large-scale plant construction, the very first question they asked was: “How does a refrigerator work?”

Did you know the answer?

Jochen Engelke Yes, of course! I had studied cooling circuits in depth during my degree so the answer was easy. My involvement with cooling carried on after that. For example, in my job in plant construction I was partly responsible for developing cooling systems for steam condensation. And when I joined Glen Dimplex I was dealing with cooling again – and with heating, too, for the first time.
Neil, Fergal, at what point in your life did you know that you would be working for the Group?
Fergal Naughton There was never any certainty that either of us would enter the Group. It was always hoped that we would, but our father never put any pressure on us. It was made very clear to us in our early years that it would be our decision. We also had to be qualified to join the Group. We had to have both the desire and the capability. Neil and I were fortunate that we had the training within the company and the education that helped us and prepared us for the jobs that we do today.

Jochen, Neil mentioned the start-up atmosphere at the kitchen table. Do you have some experience of that, too?
Jochen Engelke Not directly. But I’ve spent most of my professional life reorganising companies, developing new business models and strategies. That’s similar to some of the work in a start-up. And ultimately that’s what we’re doing at Glen Dimplex Thermal Solutions.

You started as head of Glen Dimplex Deutschland in 2013. How soon did you realise your job would be to reposition the company, to transform it, to create new brands and divisions?
Jochen Engelke That was pretty much clear from the start – it was in the air, so to speak. What surprised me was how things have sped up in the last three years.

How would you rate the transformation process compared to your previous experiences?
Jochen Engelke The process here is much more profound, much more all-embracing than what I experienced in my former jobs. We are working in an extremely competitive environment and our competitors are not standing still either. With things changing this fast, keeping up is one of the biggest challenges.

So that’s one of the reasons for the new division and brand Glen Dimplex Thermal Solutions (GDTS). Did the idea first emerge in Kulmbach?
Jochen Engelke Yes. Developments over the last few years have led us to conclude that GDTS is the next logical step. First and foremost, these days there is much more awareness both in the political world and among customers that we need to look at the energy spent on cooling and heating together. This accounts for around 60% of final energy demand in Europe, so savings in this area have great potential with regard to the “Energiewende” – the turnaround in energy policy. The second development is that, finally, the heat pump has become a true alternative to fossil-fuel heating systems, both from a technical and a political perspective. It’s the only system that can heat and cool in a genuinely climate-neutral and energy-efficient manner.

Fergal Naughton As Jochen said, there is a drive for greater energy efficiency. People are now focusing not just on the efficiency of individual units but on the entire system, and looking at system losses overall. Bringing heating and cooling together allows us to eliminate additional losses that exist within the system.

That leads us to two important megatrends. On the one hand, the energy revolution and the fight against climate change – in other words, environmental factors. And on the other, globalisation and the resulting cost pressure – in other words, economic factors. What do they mean for GDTS?
Jochen Engelke The two megatrends go hand in hand. At last, with the Paris Climate Summit, we have agreement on the need to deal with climate change. The trend towards climate-friendly system solutions is exactly what we stand for at GDTS: using renewable energy effectively and efficiently. Thanks to our positioning and our expertise in cooling and heating, we can take action exactly where the greatest leverage is. Particularly in the area of climate comfort in buildings, there are more than enough options for using renewable energy efficiently.

Neil Naughton And just very generally speaking … with renewable energy generation, electricity has become the fuel of the future. I honestly believe that we will be using electricity to drive our cars, to heat our homes. It is the fuel that drives the computer age. And it’s the only major fuel that can be carbon-free. So it is an exciting part of our future.
Jochen Engelke At the same time, financial decisions will of course continue to play a key role for our customers. That is where we can stress the advantages of our systems, the fact that they are both environmentally friendly and energy-efficient. So it’s a win-win situation for everyone.
Fergal Naughton Another primary motivation for the new global strategic alignment is so we can serve our customers better. We have more and more requests from our customers that we should offer products and services to them on a consistent, globally available basis – be that in North America, Europe or China. By bringing these companies together we will be better able to react to those requests.
Jochen Engelke: Exactly. Many of our major clients are global businesses – Siemens, GE, Toshiba and Philips in the field of medical technology, for example, or TRUMPF and Amada in machine and laser cooling. Naturally they also expect global solutions from us. So the reorganisation is a great opportunity. It was also the next logical step: at the end of the day, around 25% of the new division’s turnover already comes from our global customers.

Fergal Naughton: In addition, the restructuring will create synergies, because all of these businesses have different strengths. For example, Dimplex Thermal Solutions in North America is very strong in industrial cooling, whereas Riedel in Germany has a traditional strength in medical cooling. How can both businesses learn from each other and work together to ensure that we are bringing the best solutions to play in both areas? I think that globally we are now very well structured and very well equipped to take on this challenge.

Is it really possible to lead an international business from Kulmbach, in the Franconia area of Bavaria?

Jochen Engelke: Why not? Germany’s tradition of family-run, medium-sized companies – what we call the “Mittelstand” in German – is largely based in the provinces but it includes many “hidden champions” that are global leaders in niche markets. We would not be the first to run a global company from a local region such as Kulmbach. And it is not the case that we only acted regionally in the past. In the area of cooling systems, for instance, we have always worked internationally. The great thing about GDTS is that we now have a much broader basis for our international activities.

Are you already planning Chinese or American weeks in the canteen? Or will you be exporting bratwurst from Franconia to Michigan or Shenyang?

Jochen Engelke: Actually, we often feature local specialities from Franconia at the international trade fairs we attend, including those in the United States and Saudi Arabia.

Fergal Naughton: Speaking of that, I think there are a lot of similarities between the Irish and the Franconians, socially. We enjoy going to the pub, having a beer, enjoying each other’s company, music. Socially we have a lot in common (laughs).

GDTS and the Group are not the only players in the market, of course. What sets you apart from the competition?

Jochen Engelke: From the perspective of Kulmbach, I believe there are two things that we do more consistently than other companies. First, we see ourselves more and more as suppliers of system solutions rather than simply components. And second, we combine our expertise in cooling and heating technology more consistently than any other firm. We are particularly skilled in hydraulics. We have outstanding competence in control systems – in the area of precision cooling and in complex heating systems. We have developed this knowledge over more than 40 years under a single roof. So our competitors have a lot of catching up to do. This is the basis we use to offer system solutions for intelligent thermal management that have real credibility. It’s important for us to be aware of this expertise, to use it in a targeted fashion and above all to build on it for the future.

Fergal Naughton: As a company we have tremendous history in the development and manufacture of both heating and cooling products. We have decades of learning that is inherent within our organisation. We also now have a global manufacturing and service presence with our operations in North America, Europe and Asia. That gives us a great position from which to service the market. We have a lot of catching up to do. This is the basis we use to offer system solutions for intelligent thermal management that have real credibility. It’s important for us to be aware of this expertise, to use it in a targeted fashion and above all to build on it for the future.

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There is another megatrend, too: digitisation. What opportunities does that bring?

Jochen Engelke For me, digitisation is the glue that binds our key cooling, heating and ventilation technologies together. It helps us to create true system solutions, to integrate all the relevant components. It brings us much closer to our end consumers and allows us to offer them much more added value than in the past.

Besides GDTS, two other new divisions are being created within the Group: Glen Dimplex Heating & Ventilation, and Glen Dimplex Consumer Appliances.

How will the divisions relate to each other?

Fergal Naughton The Group now has three very strong pillars, three strong divisions – each with their own leadership and their own expertise built in. We envisage that each of these strong divisions will have windows and doors into the other divisions: windows where they can look and see what their colleagues are doing and learn from them, and doors where they can go in and out of the other divisions and work with their colleagues.

Jochen Engelke I like the image of houses a lot. Windows and doors: this exchange between the different divisions is absolutely critical for the future. In the past there were lots of different contact people within the group and the technological expertise was too fragmented. The house had too many small doors which only those in the know knew about … secret doors, so to speak (laughs).

Since we are talking about the Group again: more than 40 years after its foundation, it is still privately owned and in the hands of the founding family. What effects does that have on strategic directions, on the day-to-day business?

Neil Naughton Glen Dimplex is unique. When we talk to our friends and our peers, I find that, for most of today’s start-ups, the first thing the founders are thinking about is the exit. That’s certainly not the case with Glen Dimplex. When Fergal and I talk about “exit” we are talking about the next generation, about how to hand over a better and stronger business than we inherited.

Fergal Naughton Agreed. Being involved in a family business allows you great freedom to take a long-term perspective. When Neil and I think about planning the Group, we plan for future generations of the family. All the decisions that we take are in the interests of the long term.

So what is it actually like working together as brothers?

Neil Naughton Well – and I hope Fergal will agree with me here (laughs) – I think we’ve got a fantastic working relationship. Nobody knows me better than Fergal. He’s known me for an awful long time. He knows how I think.

Fergal Naughton Our offices are next to each other, so when he isn’t in my office, I’m in his office. We spend a lot of time together. We’re very lucky that we have complementary skills, that we have a good working relationship and a great personal relationship also. There is something special about family: you can have an extraordinary level of trust.

Jochen Engelke It’s also a great advantage for me being part of a family business with the values that entails – and the financial independence that has made the reorganisation possible in the first place. It is important that a culture of striving to find the best solution is actually lived out in practice. That is what I experience very day, and it’s enormous fun. If we nurture that culture in all the different sites belonging to the division, then I am convinced that the reorganisation will be a success story.

Jochen, do you feel part of the family almost?

Jochen Engelke Yes. You know, I visit Dublin regularly and we – my wife and I – are really treated almost like family.
Jochen, did you enjoy a Guinness or two with the Naughtons in the pub?
Jochen Engelke Actually i am not a great fan of Guinness. But I have been invited to the family pub!

Not a fan of Guinness?? And you still got the job?
Fergal Naughton It doesn’t have to be Guinness for us all the time either... Most of the time, yes, but not all of the time (laughs).

Jochen, you mentioned values. In the new mission statement, GDTS describes itself as “bold, efficient and full of ideas”. How do the three of you interpret these values?
Fergal Naughton First of all, I must say that I have been very impressed by the job that Jochen and the management teams have done in setting out a very clearly articulated vision and mission, and in building a clear strategy for the years ahead about where the division is going. It is a bold strategy and we are supporting that. We will be investing significantly in GDTS to realise these ambitions and goals. We have a very significant opportunity here – a global opportunity that we, as the executive of the Group, will be very happy to support. Of course, we have to continue to offer the high-quality, highly reliable products and services that our customers know us for, but we also need to stay continuously competitive.
Jochen Engelke These three values will help us on our way. They have great credibility, they ring true – not just for the business in Kulmbach but for the new division as a whole. They are values that are really lived out in the company. I observe them every day in my conversations with our employees. I find it really motivating that many of the topics we have addressed in the last two or three years have an incredible resonance for the Group. For me, these three values are a perfect fit for the entire company – and for all of us.

Finally, where do you see GDTS ten years from now?
Fergal Naughton As I said earlier, what is important about the way we’ve structured the Group with these strong divisions is that we have good leadership teams. Jochen and his team have put a strategy in place. It’s down to the local management to determine the course of the business. While we ourselves have visions for where we want the Group to go, we will be heavily influenced by the teams and what they want for the businesses they operate.
Jochen Engelke We are in competition with very large players who will no doubt be moving in similar directions to us. It would be very presumptuous of us to say we wanted to establish ourselves as the leading world player. We are following a “hidden champion” strategy, building a top position for ourselves in areas where we are strong and competitive. That could include specialised system solutions for cooling and heating, an area where we want to be the best in the world. An essential part of our goal is, in ten years’ time, to have a much bigger sales volume and greater profitability than today. That is a fundamental part of our ambition – without that, it wouldn’t be worth starting off down this road in the first place!
What drives us.
The GDTS manifesto.
We believe in energy efficiency.

We believe in energy-saving heating and cooling – and that the two go together.
Because we know that 60% of energy demand is for cooling and heating. Climate change leaves us no choice: we have to save energy on a major scale. That’s why we build heat-pump systems that don’t just heat but also cool, and chiller systems that protect high-tech machinery from overheating. And that’s why we integrate the two technologies in novel ways, such as using the excess heat from server clusters and factories as an energy source, rather than wasting it.

We believe in renewable energy.
Because we know it will only be possible to meet ambitious climate goals through the effective use of electricity from renewable sources. That’s why all our cooling and heating systems run on electricity – the only energy that can be completely produced from renewable CO₂-free sources. And that’s why all our systems use this energy as efficiently as possible, with minimum consumption and maximum results.

We believe in cooperation.
Because we know that the really major tasks, such as the UN Climate Change Agreement and the energy transition, can only be mastered if we all pull together – and that despite our forty years’ experience with cooling circuits we can still learn new tricks, all around the world. That’s why we enjoy to collaborating with our colleagues in Kalamazoo, Kulmbach, Sonneberg and Shenyang. And that’s why we love working with partner companies who stand up for energy efficiency and renewable energy.

We believe in systems.
Because we know that the whole is always more and more than the sum of its parts, and that functional interplay is something you should be able to experience without having to understand it. That’s why we don’t just combine our engineering expertise in heating and cooling technology, we also think ahead to an integrated future, devising meaningful 360-degree solutions for our customers. And that means air-conditioning systems for buildings as much as precise cooling for technology and processes.

We believe in simplicity.
Because we know that the world is becoming more complex all the time, and that there is a real art to mastering this complexity. That’s why we develop heating and cooling solutions that point the way forward. Radically simple: simple to select, to install, to maintain, to operate, to use. Simply versatile: the right variant for every requirement.

We are Glen Dimplex Thermal Solutions.
China

How long has the company been in China?
Founded in 2003 as a joint venture with a local energy company, the firm was taken over by the Glen Dimplex Group in 2010. The factory in Shenyang, formerly known as SDE (Shenyang Dimplex Electronics), today employs 46 people. Some 1,700 kilometres further south in the industrial metropolis of Shanghai, a further five employees deal with services and sales. The average age of the employees is 35.

What customers and markets does GDTS serve in China?
Originally the Chinese plant manufactured heating systems for private customers. Since 2012, however, their focus has been on high-performance cooling systems for the industrial and medical technology industries. Every year more than 2,000 system solutions are developed and built for the local market. Key clients include General Electric, Siemens, TRUMPF and Toshiba.

What else is Shenyang famous for?
In the seventeenth century Shenyang was the capital of the Chinese emperors. In 1644 the government was then relocated to Beijing. Since 2014 the magnificent imperial palace has been a UNESCO World Heritage Site. Today Shenyang, the capital of Liaoning Province, is the most important business location in the northeast of China. Some 4.7 million people live and work there. Numerous European companies such as BMW have sites in Shenyang where they manufacture for the Asian market.

“For me, GDTS means we have a common vision, we share resources and we can support each other across different sites.”
David Li – Head of Supplier Management

“Quality, customer orientation, efficiency and teamwork – that is what our corporate culture is about.”
Yandi Wu – Human Resources
“We have a lot of people here with bold ideas.”
At home on three continents.

United States

North America / US / Michigan / Kalamazoo

How long has the company been in the US?
The company was founded in 1952 by the engineer Hermann Hill under the name Koolant Koolers. After acquisition by the Glen Dimplex Group in 2006, it was renamed Dimplex Thermal Solutions. Some 200 employees currently work for GDTS in Kalamazoo, the largest city in the US state of Michigan. The average age of the employees is 42.

What customers and markets does GDTS serve in the US?
At the 10,000-m² plant on the southern outskirts of Kalamazoo, cooling systems are planned and manufactured for industrial clients across North America. The highly efficient cooling units are used in laser systems, medical imaging and the production of plastics and foodstuffs, for example in breweries. In fact, wherever powerful, energy-saving process cooling is called for.

What else is Kalamazoo famous for?
Kalamazoo is located between Chicago and Detroit and has a population of around 75,000. Before the European newcomers settled on the Kalamazoo River, two Indian tribes, the Potawatomi and the Ottawa, lived in this area. They gave their name to the river and thus indirectly to the city. The exotic-sounding name Kalamazoo – like Timbuktu – has come to mean any exotic, faraway place.

“I love coming to work each day because it’s still about craftsmanship. Especially when we’re building prototypes.”
Laine Bassett – Final assembly engineer

“We have a lot of people here with bold ideas.”
Tom Fenwick – Sales representative
At home on three continents.

How long has the company been in Germany?
In 1860 Christian Weiss founded the forerunner of the firm ASK Kulmbach; in 1973 Kulmbacher Klimageräte-Werk GmbH (KKW) was formed as a joint venture with Siemens. Since 1990 KKW has belonged to the Glen Dimplex Group. The nearby plant in Sonneberg was added in 1996. Some 683 employees work in Kulmbach and another 102 in Sonneberg. The average age of the employees is 44.

What customers and markets does GDTS serve in Germany?
For more than 40 years the plant in Kulmbach has been developing and manufacturing highly efficient cooling and heating systems, keeping homes cosy and ensuring vital high-tech medical devices stay cool even when running at full power. Every year more than 50,000 systems leave the production halls – including cooling units with a capacity of 1 to 226 kW and heat pumps with a capacity of 4 to 180 kW. The switchboxes and control units are manufactured at Sonneberg. In Kulmbach they are coupled with the cooling circuits then exported all round the world.

What else are Kulmbach and Sonneberg famous for?
Kulmbach is a town of almost 30,000 people in Upper Franconia – the heartland of German Romanticism, at least in terms of the scenery. In the nineteenth century the rugged rock formations, winding river valleys and ruined castles attracted painters, poets and composers such as Wagner, who wished to experience nature in its authentic, unadulterated form. Kulmbach itself is famous for its beer and also for its collection of tin soldiers, housed in the historic castle. Sonneberg, about 40 kilometres away, was known for many years as the “world’s toy town”. Nowadays it is famous for its German Toy Museum.

“What makes us different? Our ability to innovate. We exploit all the technical options to meet the demands of the market.”
Uwe Michel – Sales

“What we are breaking new ground and combining technologies in ways that have not been seen before on the market.”
Sven Schomers – Quality manager
How long has Glen Dimplex been in Ireland?
When Martin Naughton founded Glen Electric in 1973 he was just an engineer with a great business idea. By the time he bought Dimplex in 1977 – a company eight times the size of Glen Electric – he was already a businessman with a truly international vision. Since then, the Glen Dimplex Group has grown steadily and enjoyed great international success. The headquarters in Dublin has a staff of 200. The average age of the employees is 42.

What customers and markets does the Glen Dimplex Group serve?
What began with a handful of people more than forty years ago is now the world’s largest manufacturer of electric heaters and generates an annual turnover of EUR 2 billion. To this day, the Glen Dimplex Group is owned and run by the Naughton family. Some 10,000 employees around the world are busy making the planet cleaner and more environmentally friendly – with intelligent electric heating, cooling and ventilation systems.

What else is Dublin famous for?
Dublin is not just the capital of Ireland, it’s the capital of Irish stout. In 1759 Arthur Guinness founded the brewery that bears his name and which to this day is an important part of the Irish way of life, just like the game of rugby. James Joyce and Samuel Beckett also belong to Dublin, as does the limerick. And for the past few years, Google, Facebook, Twitter and Yahoo have also been part of the city; their European headquarters are all located nearby.

“You can’t develop without changing. The new strategic alignment with Glen Dimplex Thermal Solutions helps us be more responsive to the needs of our customers.”
Fergal Naughton, CEO, Glen Dimplex Group

“Running a family business gives us great freedom to think long term.”
Neil Naughton, Deputy Chairman, Glen Dimplex Group

“In all the decisions we make, our long-term objectives take centre stage.”
Fergal Naughton, CEO, Glen Dimplex Group
At home on three continents.

Ireland

Europe / Ireland / Leinster / Dublin
The Paris Agreement, digitisation, resource scarcity, Industry 4.0: we live in times of great challenges. But the opportunities they create are even greater – as long as you can find the right lever and apply it in the right place.

There is much to be done: fighting climate change and protecting us from its impact is consuming more and more of our limited resources, as is the fast pace of technological change in this digital age. Investment expenditure is growing, cost pressure is rising. One of the biggest factors – both environmentally and economically – is energy. The energy used for heating and cooling in particular. Increase the efficiency with which you control the temperature of buildings or machinery with smart, networked systems and make yourself ready to use renewable energy on a consistent basis and you can change the challenges into opportunities – with remarkable knock-on effects. To put it another way, energy changes the world. The facts, figures and trends speak for themselves.
fact #1
WORLD CLIMATE CONFERENCE IN PARIS

175 nations have signed the Paris Agreement on climate change.

fact #2
COST OF FOSSIL FUELS

- 64% increase in oil price
- 74% increase in gas price

fact #3
POTENTIAL SAVINGS

Innovative heating & cooling concepts are needed as:

- ... around two thirds of energy generated is used for cooling and heating today.
- ... by 2040 global energy consumption will increase by 35%!
- ... of all emissions to be cut by 2030.
- +1.5°C is the target maximum temperature increase by 2030.
- ... emissions by 2050 set as the limit.

9 tasks

... which are surely too much for just one company to manage on its own. A company that provides energy-efficient, digitally networked, individualised, modular, CO₂-neutral, easy-to-use solutions that combine heating and cooling functions and use renewable energy. Can such a company exist?
fact #4
HEATING COSTS
by 2030
+400%

fact #5
DEMAND FOR COOLING
increase in average temperature in 2016 compared to the average value for the 20th century.

fact #6
DECENTRALISATION
Survey on future power supply: “In 2030, the house I live in…”

fact #7
DIGITISATION
USD 23,120,000,000
...will be invested in computer centres from 2014 to 2020 in Western Europe alone.

fact #8
RENEWABLE ENERGY
100%
...of renewable energy sources produce electricity. That means climate-neutral heating and cooling is only possible with electricity.

fact #9
SIMPLICITY
simple
Our need for easy-to-use, modular systems is growing.

1 solution
Glen Dimplex Thermal Solutions already combines all these elements in revolutionary heating and cooling devices such as System Zero, the HybridChiller and System M. Simply more performance. Simply less waste. Today – and in the future.
We can’t change the future. But we can prepare for it.

Nobody can say what our lives will look like in 30 years’ time. Holidays on Mars? A tiny smartphone implanted under your skin? Power generated in Africa? A robot for your best friend? The future consists of the questions we ask ourselves today and the challenges we will face tomorrow. How does a globally active company develop environmentally and economically sound strategies when everything is constantly in flux?

GDTS Marketing Director Henrik Rutenbeck and Chief Developer Dr Klaus Hanl talk about visions, innovations and concrete ideas that can help us tame the future.
Climate change, the energy transition, Industry 4.0, digitisation...
There’s a lot going on at the moment. Do you even have enough time to think about the future?

Klaus Hanl We have to find the time. Otherwise the future will happen without us. We’ve reached an important threshold in terms of environmental and energy policy. If we miss the boat, we create enormous problems for ourselves in the future.

Henrik Rutenbeck Planning and imagining the future is one of the most important tasks for companies. You have to ask yourself again and again: what strategy do we want to pursue? Where do we see ourselves in five or ten years’ time? How can we remain profitable?

Klaus Hanl The energy transition in particular has a global socio-political dimension as well as a business dimension. It’s about taking responsibility for the future.

Henrik Rutenbeck That’s why I’m proud of the fact that, as a company, we’re involved in political processes at a regional, national and EU level trying to promote climate protection. We sit down with our colleagues at the Ministry for Economic Affairs and Energy and think about what we can do as an innovative company to contribute to the energy transition. We have an exciting future ahead of us.

Klaus Hanl How should we react to the challenges? That’s the question that drives us.

And how does GDTS react?
Klaus Hanl We try to spot opportunities and turn them into ideas. Specifically, we create products for the future by analysing the present. Many companies throw around words such as “digitisation” and “Industry 4.0” in an attempt to position themselves as forward-looking businesses. We want to provide real innovations, not sound bites. And that takes time and courage.

Henrik Rutenbeck New technology makes exciting new approaches possible. Digitisation is very important for our industry, for instance. But the vision and the idea behind GDTS go far beyond that. Digitisation is not the issue: the issue is how can digitisation help us to implement our ideas?

Klaus Hanl Thirty years ago we had the ideas but not the technology; now we have the technology and are working on the ideas. I put that sentence up on my notice board at work. For me, this is the challenge we face today.

So what ideas are you working on right now?
Klaus Hanl Well, there are quite a lot of them – and some of them are pretty good! (Laughs) For example, we’re certain that the future will be about system solutions, not individual technical parameters. Rather than the COP value of my heat pump, I’ll want to know how efficient the overall solution is that the heat pump forms part of. The important thing will be the synergies.

Henrik Rutenbeck Systems can simplify our lives, for all of us. Because we are aware of this, we are working intensively on refining product ideas at the overall system level. We want smart solutions that benefit everyone – end customers as well as the installers who have to understand, sell and install our products. We don’t think in products anymore, we think in system solutions.

Klaus Hanl Integration is the key concept that is set to change future business – technically, economically and environmentally.

Please explain. What does “technical integration” mean?
Klaus Hanl We have two core competences at GDTS: heating and cooling. The basis is always the same, namely the refrigeration circuit and how to regulate it. For a long time now we have been thinking about how we can merge these two competences into one for the benefit of our customers. We have already come up with some innovative solutions. For example, if an industrial customer has a major cooling requirement, our experts at Riedel provide the customer with a powerful precision cooling unit. That unit produces waste heat – and that’s where our experts at Dimplex come in. They know how to use the waste heat for heating or hot water. This creates an energy cycle in which everything is brought together for maximum efficiency. Thinking in systems and exploiting synergies – that is what drives us and what we want to develop further.

Henrik Rutenbeck Things will also change on a technical level over the long term – not just the product ranges themselves but how they are installed and run. With digital support we will be able to completely redesign the operating process. We can collect and evaluate data and gain new insights. This will dramatically change how products are evaluated. We will be judged by the efficiency of the overall system rather than its individual parts.
Will that make working on individual products less important?  
**Klaus Hanl** No, not at all. We will continue to work hard on individual products, improving them wherever possible so as to achieve outstanding quality. In the past we carried out our optimisations in the lab, refining products down to the last percentage point without knowing how they actually performed when they reached the customer. In the future we will be able to observe the performance of products in situ, optimising them while they work. That means the criteria will change for developers. Engineers will no longer develop brilliant theoretical solutions sitting in ivory towers. We already send our engineers out into the field so they can see what happens in reality. We want them to gather experience and translate it into products. That is how we see engineering today.

**Henrik Rutenbeck** We start with our customers’ requirements and problems. What do they need? What do they want? Generally, customers want maximum efficiency and lower costs. Total cost of ownership is important. Customers are no longer interested in what individual machines cost. They look at the total costs, including purchase, installation and operation. They ask themselves – and they ask us – how sustainable the solution is and what its long-term advantages are.

Are economy and ecology in conflict or do they drive each other on? How do engineers see this?  
**Klaus Hanl** Ecology and economy are different sides of the same coin. Depending on the issue, they can be in conflict with each other or they can spur each other on. Our job is to marry the two, or at least ensure that they live together in harmony. With the technology we have today, that is entirely achievable.

How will customers’ needs change over the coming years?  
**Henrik Rutenbeck** In the old days, many of our industrial clients were able to take care of their own power systems. Now things are much more complex. The need for comprehensive energy consulting is growing. We see that already.

**Klaus Hanl** The key goal of consulting will be to save energy and hence operating costs. That’s only possible with individualised, efficient overall solutions. And that brings us back to our system-based approach. As a global company, it is particularly important for us to be proactive rather than reactive.

How can you ensure you are the ones doing the leveraging and not the ones being leveraged, so to speak?  
**Henrik Rutenbeck** We have to try to remain innovative. Standing still means moving backwards.

**Klaus Hanl** And “me too” is the death of innovation.

Henrik Rutenbeck Innovation does not automatically mean action without reaction, however. The question is, what am I reacting to? If I’m reacting to the competition, then I should stop it immediately. But if I’m reacting to social, physical or political change, then that makes sense. That is constructive reaction.

**Klaus Hanl** In the past, action primarily meant proactively introducing technologies or products. Nowadays, action means watching the market, spotting needs and reacting with innovation.

How can you remain innovative in the long term?  
**Henrik Rutenbeck** You have to be bold. And you have to focus. Being bold means sometimes making mistakes. We know that – and we know it’s OK, because you can learn from mistakes. But it is not possible to do everything. It’s important not to get bogged down, to have clear goals. That’s why we have set a clear objective with the strategic realignment of the GDTS brand: we cool, heat and ventilate the future. That is the path we plan to follow.

Can you really plan innovation?  
**Klaus Hanl** Up to a point. But it’s also a question of your time horizon. It’s not possible to plan 30 years ahead, so we don’t do that. But if you want to be innovative, you need to develop products for the future. Our project ideas shouldn’t meet the current needs of customers; they should meet the needs of customers in two or three years’ time, when the product actually reaches the market. So it makes sense to think about how the world is changing. Indeed, such scenarios are often the starting point for our ideas.

**Henrik Rutenbeck** To some extent innovation is a process and can be managed accordingly. But there are also those ideas that come to you in the shower, which initially sound completely crazy. We also discuss those ideas internally, and sometimes they turn into something.
Is there a sort of GDTS “think tank” that develops future visions?
Henrik Rutenbeck No. There are no chosen individuals pondering the future high up in an ivory tower. We need to be close to the developments taking place on the ground. All our developers – and there are about a hundred of them worldwide – are involved in the strategic and creative process. Marketing and sales are also involved. We work in various interdisciplinary and international innovation teams, dealing with different topics, such as the question of what tomorrow’s cooling agent will be.

Klaus Hanl To develop innovations you need to master the art of thinking outside the box, of wondering what might be relevant in the future.

How far outside the box do you need to think?
Klaus Hanl I recently read something about cooling on Mars. We not that far yet, but in the future – who knows? Basically there are no limits.

Henrik Rutenbeck I would put it like this: first and foremost we are a business, and that means we have to be profitable. But as long as that is working, we have all the space in the universe to think.

Klaus Hanl Early in my career one of my bosses said to me: a developer should spend 20% of his time on crazy ideas. I wouldn’t limit it to 20% and, even more importantly, I wouldn’t limit it just to developers. If we don’t spend time on really crazy ideas, then we will never be innovative.

OK, well here’s a crazy idea for you. It’s the year 2030. In a giant highrise block in Seoul, food is being grown on hundreds of different floors, across hundreds of square kilometres. Each floor has its own climate zone, perfect for mangoes, asparagus, chickpeas or whatever. What role would a company such as GDTS play in this scenario? Would it be responsible for the building? For regulating the different climate zones? For refrigerating the crops after they had been harvested?

Henrik Rutenbeck That vision – the idea of having to do everything in a very limited amount of space – is actually not so far off in the future. Parts of it are already reality, albeit not as radical as in your version. Major urban centres have no space left. People are starting to draw up plans for building on top of existing buildings, creating more and more floors. We are studying this idea carefully as it’s an area where heating, cooling and ventilation obviously have a major role to play. Extending that idea further still, we may soon be talking about self-sufficiency – and that could mean greenhouses integrated into residential buildings. We’re already involved in climate control for greenhouses, for example in Hokkaido in Japan. And in the retail and commercial sector we already provide different temperature zones for gigantic supply containers, at the same time as heating and cooling the buildings in which the goods are sold. We could also do that for a residential building. Fundamentally we have the necessary expertise to come up with individualised solutions for different situations, including your future scenario.

Klaus Hanl Our core competency is heat transformation, in other words adjusting thermal energy to the required level. That can be above or below zero. And importantly, it can be anywhere. We use the energy that is freely available in the environment, and that exists everywhere. North or south, in the desert, sea or up in the sky on the 150th floor. The possibilities are basically endless. We have a worldwide presence through our sites in China, the United States and Germany. That’s going to stay that way, now and in the future. Our approach to the future is global. Where the limits lie for us as a company 30 years from now, only time can tell.
To imagine the future, you have to invent it. But what points of orientation exist? A good imagination is certainly helpful, but what you really need is a proper understanding of the present. What trends are emerging today? Where does the potential lie? We examine three current megatrends and develop scenarios that could come true in a few decades’ time. We consider what role global companies such as GDTS might play in these visions of the future.

The megatrend. Decentralisation of energy.
Solar, wind power, geothermal energy – the energy transition means switching to natural, renewable resources. Most of these resources are available everywhere. Which is why decentralisation of the energy supply is becoming more and more important.

The vision. Everyone produces their own energy.
Sierra Leone, 2035. In the past, energy was generated centrally and then distributed. Now, it comes from your own garden. Or from nearby. Drones with highly sensitive photovoltaic wings fly over an area of 100 kilometres, looking for where the solar radiation is strongest. They collect the energy like bees collecting nectar. Since more and more people began generating electricity in this mobile, decentralised way, the country’s economy has been growing unstoppably.

The role of GDTS.
Henrik Rutenbeck:
"Today’s system solutions are intelligent, high-performance energy machines that draw energy from the environment and integrate energy sources such as photovoltaic units. Will GDTS also be involved in local energy management? Maybe. But it’s impossible to say today."
The megatrend.  
Power from algae.  
In 2016 scientists created a new form of algae with the help of genetic engineering that produces five times as much hydrogen as normal varieties. The “green power station” is on its way.

The vision.  
As much energy as you want. The bio-battery for on the go.  
Brussels, 2040. Many people think the bio-battery may win the Nobel Prize. The principle is as simple as it is ingenious. Green microalgae use energy from sunlight and release hydrogen from water, ecologically and with no harmful side effects. The hydrogen is then supplied to fuel cells. Efficiency rates are now almost 30%. There are huge facilities all round the world where the algae is grown. For the algae to reproduce optimally, however, it needs constant temperatures. Fluctuations of even half a degree lead to efficiency losses during production.

The role of GDTS.  
Dr Klaus Hanl:  
“We are already specialists in maintaining fixed temperature levels with a high degree of reliability, whatever the local climatic conditions. In hot countries we’d have to cool, in cold countries we’d have to heat, both of which we already do today – for example in fish farms, which are not a million miles away from the idea of algae. We have developed our own software that monitors temperatures. Where possible, we also use the waste heat to ensure maximum efficiency in the overall system. It’s even possible that, in this scenario, GDTS would go into bio-battery production.”

Introducing the new brand.
South Korea, 2038. Thirteen-year-old Kim is excited: today is moving day. Together with her father, a well-known organic farmer from the district of Dongdaemun, she is moving to the 57th floor of the Urban Skyfarm. Her father plans to grow his vegetables in the heart of the city so he can deliver them to his 348 signed-up customers fresher than ever before. Kim can hardly believe what she sees: green light flickers between the floors as they go up in the lift, past orange trees and wheat fields. Insects hum, birds sing. It’s almost as beautiful as Granddad’s old farm far away in the countryside.
The megatrend.
Archi-nature.
Giving the big cities back what they’ve lost as a result of urban expansion: fields, meadows, parks, allotments – all of them integrated into the architecture.

The vision.
Farms in the heart of the metropolis.
Seoul, 2038. A gigantic tree made of concrete, steel and glass grows in the centre of the city with its population of eighteen million. Instead of branches, gardens stretch up towards the sky, above which solar panels and wind turbines transform the sunlight and wind into electricity. The Urban Skyfarm is the trailblazer for a new generation of landscapes stacked on top of each other. Green plots of land are attached to the branch-like structure. High above the tarmac, orange and apple trees bloom and broccoli and lettuce flourish. The plants supply the air with oxygen, while complex filter systems in the basement of the building clean the water of the Han River, which winds its way through the sea of houses.

The role of GDTS.
Henrik Rutenbeck:
“GDTS could act as the main contractor for running the huge building, something we already do on a smaller scale today. We also have experience controlling heat and humidity in greenhouses and providing precise cooling for sensitive foodstuffs.”
Every company is different. That’s why we take plenty of time with each one. We stop by, we listen, we hang on every word and we ask questions. And we do that as often as it takes for us to understand every last detail. That’s because the more accurately we understand your production processes, the more comprehensive our advice will be – ensuring our system solution is as individual as possible.

We call this method Energy Saving Solutions (ESS). It’s a method that helps companies keep their energy costs down and also save on operating costs. Payback in under two years is not uncommon. For us it’s not about replacing individual components, it’s about rethinking the whole thing – and finding an intelligent system solution.

Why are we so good at thinking in systems? Because we have over 40 years’ experience in efficient cooling and heating solutions behind us. From family houses to industrial plants, from standard heat pumps to highly specialised plant cooling systems – for our experts at Dimplex and Riedel, working together under the umbrella of Glen Dimplex Thermal Solutions, system solutions aren’t a far-off dream, they’re part of day-to-day life.

Sounds good? It works well, too. An international supplier for the auto industry, for instance, managed to save a third of its overall energy requirements with our Energy Saving Solution. That’s a drop of 1.2 million kWh, representing savings of EUR 170,000. Year in, year out. “And that’s not a one-off,” explains Mario Bittner, Chief Sales Officer Cooling Technology. “Savings of up to 40% are not uncommon. When you realise that 30 to 40% of operating costs come from heating and cooling processes, you start to understand why. And you also realise how much potential is wasted in many companies.” This is precisely where ESS comes in. It addresses your heating or cooling needs, or both. Cooling technology and heat generation – we bring them together and exploit the synergies. And that pays off, particularly for commercial and industrial clients.

In the case of the auto supplier, it meant modernising an outdated cooling system. Standardised measures are often little help here, because the path to a sustainable overall system is completely different for each industry and area of application. A precise needs analysis and a deep understanding of production processes are essential if the solution is to achieve optimal efficiency. “Our ESS experts offer all the necessary skills from a single source,” says Bittner, “from the initial consultation to the installation and maintenance.” The savings potential is already calculated in the planning phase. And it is also soon apparent which technical approach is the most advisable, and how soon it will pay for itself. “Our system solutions are so efficient that it doesn’t take long to recover the investment,” explains Bittner. “As a rule of thumb, return on investment is achieved after 18 months. There is barely a quicker or easier way to improve profits.” So who should be looking at ESS? In essence, any commercial or industrial company that wants to remain competitive by lowering its operating costs.

Where can I make changes that will save energy? The ESS method makes this potential visible and usable.

So it’s no wonder we were involved when Germany’s Energy Efficiency 360° network was established last year, an association of four companies that share a common goal: integrated energy consultation for industrial clients from a variety of perspectives (see feature overleaf).
#1 Consultation
We begin with extensive on-site consultation. What requirements have to be met, and what technological options are possible as a result?

#2 Concept and planning
Our ESS experts calculate the exact cooling and heating requirements for your processes and develop a tailored system solution.

#3 Implementation and installation
Next comes the individualised implementation of your energy-saving system.

#4 Service
We remain by your side, with our reliable service offer.

Do you require financing?
Come and talk to us. We can work with you to develop a financing concept that addresses your situation and requirements.
Every company is the same. At least when it comes to its business goals. Large or small, automated or artisanal, the aim is always to increase efficiency and remain as profitable as possible.

But how do you become more efficient? By saving on energy, and thus on operating costs. It’s no secret that there is plenty of hidden potential here. How exactly do you find this potential and make the most of it? This is where companies generally need help. Internal structures and production processes can be forbiddingly complex. In order to understand and optimise them you need experts with different areas of expertise. And experience.

The Energy Efficiency 360° initiative offers precisely that: individual consultation that shows industrial clients how they can save energy in concrete terms. Four companies have formed this network in order to bring together their knowledge and offer the most comprehensive consultation possible.

“To save on energy, you have to use synergies,” says Anton Pagendarm. “And to be able to identify synergies, you have to incorporate as many areas of expertise as possible.”

Pagendarm, Division Manager at industrial LED manufacturer Neuenhauser, first had the idea for Energy Efficiency 360° over a year ago. It was then developed by those involved into a series of events. The other founding members are the cooling and heating experts from Glen Dimplex Thermal Solutions and Riedel, energy consultants Gildemeister, and compressed air system supplier Kaeser Kompressoren.

“If you can save 70% of lighting costs with LED bulbs, what can you achieve if you really start to look at the whole picture?” says Pagendarm. “And when you really start to add together all the savings? This is when you need a reliable partner. Pagendarm contacted the experts for energy efficiency analysis at Gildemeister and they came on board straight away, bringing GDTS with them. “No wonder,” says Rüdiger Kuhn, “cooling, heating and ventilation offer the greatest savings potential.” Kuhn is Sales Manager Industry at RIEDEL Cooling Technology and he knows what he’s talking about. “The costs for heating and cooling can represent up to 40% of a company’s overall operating costs.”

When the compressed air experts Kaeser joined the network, the efficiency quartet was complete. The basis for the organisation is a true first for Germany; with no contractual ties, the group is held together by trust. Each brings expert knowledge to win new clients as a group.

The concept has taken off – and there’s no shortage of demand. In 2016 alone there were 11 roadshows across Germany. A total of 442 top industrial professionals have benefited from consulting. “The events have a workshop feel and they’re highly productive,” explains Kuhn. “Together with clients we develop individual concepts around the issue of energy efficiency.”

In 2017 there’s another 360° tour, this one visiting 12 locations in Germany and featuring an expanded concept. That includes talks on state subsidy programmes that can make the transition to energy-efficient systems more financially palatable for companies.
Gildemeister energy solutions
Specialists in high-tech solutions and services in the area of renewable energy.
energy.gildemeister.com

Kaeser Kompressoren SE
Specialists in compressed air production, processing and distribution.
www.kaeser.de

Neuenhauser Energie Effizienz
Specialists in LED lighting and individual lighting concepts.
www.neuenhauser.de

Glen Dimplex Thermal Solutions
Specialists in system solutions for cooling and heating powered by electricity.
www.gdts.one

energieeffizienz360grad.de
Less is more.
Even less is perfection.

Reduction means leaving out the superfluous. It sounds like a simple, natural process – but it isn’t. Reduction is hard. It is only once you’ve gone down every path of complexity that you arrive at the essential and discover the principle of the golden ratio. Like Dieter Rams, whose 1960s electrical appliance designs for Braun remain vibrant today. Or like Apple, with their radically reduced designs. But Rams didn’t just set standards in design, he also distilled them into a kind of manifesto: “Good design means as little design as possible.” This is the last of his ten principles of good design and it also serves as the quintessence of simplification. How little can we get away with? How much can be left out? Everything except for the functional. The aesthetic will then suggest itself. Just like the examples on the following pages.
The GDTS magazine.
Introducing the new brand.
Abode of the gods.

“Simplicity is the ultimate sophistication,” proclaimed the great Italian artist and polymath Leonardo da Vinci in the 15th century. But naturally the principle of simplification is much older, and it can even be calculated:

\[
\frac{a + b}{a} = \frac{a}{b}
\]

In other words, the ratio between the whole and its larger part corresponds to the ratio between the larger and the smaller part.

The formula of the golden ratio first appeared in the writings of the mathematician Euclid of Alexandria, who is thought to have lived in the third century BC. Two centuries later, the Parthenon was built on the Acropolis in Athens – a temple to Athena, goddess of wisdom, the arts and battle. There are dozens of different ways to group columns around an inner temple. As front or side columns, in a circle, a rectangle, a single or double row.

Here the golden ratio helped the builders tame this mass of options. The harmonious division into a lower and upper section, as well as front and side columns, lend the temple not just order but also a measure of tension. Balanced, but not static. Simply perfect.
Five notes are enough.

We have no choice. A good logo gets into our heads unbidden, and it stays there. The German typographer and graphic designer Kurt Weidemann (1922–2011) said “A good logo is one you can scratch into the sand with your big toe.” The simpler it is, the clearer it is. And the clearer it is, the more memorable. That applies to sound logos or jingles, too. C-C-C-E-C. Five quick notes in C major. Any German who hears it will automatically think of their country’s telecommunications giant, Deutsche Telekom. American musician Christopher McHales composed the sound logo.

That was in 1998, three years after Deutsche Telekom was founded as an offshoot of Germany’s federal post office. McHales was inspired by the company’s new logo – three grey boxes, a pink capital T, and another grey box. Have you been keeping count? McHales’s first thought was that it had to be five notes, the fourth higher than the others to correspond to the capital T. C-C-C-E-C.

Communication has become digital, complex, but we make it a simple experience. That’s what this sound logo promises: an identity so simple you can whistle it.
Back to nature.

We first started painting with our fingers. Then we used twigs, brushes or other tools. Originally we painted what we saw onto the walls of caves. Then we wrote down our thoughts and dreams and experiences on paper. Finally we invented a machine that could process data – the computer – but you had to express what you wanted from it in the form of source code. That used to be the sole domain of Harvard graduates; the rest of us were left out in the cold. Then came the 1970s and Apple, and the computer became personal, concealing its complexity behind a screen.

Navigation became intuitive, especially after Apple launched the first computer mouse in 1983. Click. Even today, the mouse remains an ingenious input device and a revolutionary example of simplification. Like the pencil, it was an extension of the finger, more or less, which allowed for intuitive operation. Gradually the field of operation for the mouse expanded, while the mouse itself became slimmer, more reduced. The cable, visible keys and even the scroll wheel disappeared. Perhaps the rest of the material will soon be superfluous. Or maybe your fingers will do the job on their own, as with smartphones.
Radical and intuitive.

Anyone who owns a smartphone knows how to use it: how to make calls, how to browse the Internet, how to make videos. But how the processor behind the touchscreen works – who knows? And that’s OK. The world is too complex for us to understand every last detail of it. German product designer Dieter Rams felt the same way. “Good design makes a product comprehensible” and “Good design makes a product usable” were two of his ten principles of good design. We have designed the interface for our new heating system, System M, in such a radically intuitive way that instructions are superfluous. One thing you can rely on: System M works at maximum efficiency whether it’s warm or cold outside, at whatever temperature you want inside. You simply express your requirements using your fingertip on the touch display, either on the device or with the Smart Room Heating app on your smartphone. Everything you can see and touch is all you need to know.
The new heat pump system for commercial and industrial clients.

Zero restrictions.
Zero waste.
System Zero is here.

There’s a new force in heat pumps for commercial and industrial applications: System Zero. Forget “either/or” – System Zero is the first series-produced heat pump to combine various heat sources, including waste heat, and regulate them for maximum efficiency. All while running on the environmentally friendly cooling agent propane. The result? Zero energy wasted, and zero money wasted. That makes System Zero a highly flexible all-purpose solution for a huge range of applications. For warehouses, computer centres or apartment blocks, System Zero is a patented all-rounder.
Air is always available as a heat source.

Facts.
**System Zero.**

+ Air-to-water and brine-to-water heat pumps in a single housing
+ Combined heating and cooling function (reversible technology)
+ Comfort throughout buildings up to 1,000 m² (including hot water)
+ Environmentally friendly propane cooling agent
+ The air-to-water circuit uses air, a constantly available heat/cold source
+ The brine-to-water circuit uses geothermal energy and waste heat, and allows multiple sources in parallel
+ Intelligent control of air and brine sources through alternating or parallel operation is always efficient and always automatic
Maik Heydrich and his team: in the beginning was the idea. Six months later came the revolution in heating and cooling.
Maik Heydrich and his team: in the beginning was the idea. Six months later came the revolution in heating and cooling.

The GDTS magazine. Introducing the new brand. How we came up with System Zero.

It was a cold, rainy October day in 2012. Maik Heydrich was on his way back home from his 220th customer visit. To date he had developed 220 different tailor-made models for cooling computer centres, or used geothermal energy to heat whole apartment complexes, or set up systems to supply warehouses and their offices with heat. And for the 220th time, Heydrich asked himself the question: can’t we do more? Can’t we combine different technologies and construction principles even better into one highly efficient overall system... ideally one that also incorporates waste heat? It was a thought that Maik Heydrich just couldn’t shake off as he drove through the rain. “It was the loss of waste heat in particular that had always bugged me,” he explains. “That was the same for all of us at Glen Dimplex Thermal Solutions: we just hate losing energy.” Instead of driving home, Heydrich headed to the office. A night at the drawing board followed. The idea had taken root. An idea that would revolutionise the heating and cooling of commercial and industrial facilities as well as large buildings – in an extremely cost-efficient way.

The next morning Maik Heydrich called together his team of experts under Project Manager Dieter Müller and Engineer Uwe Steeger. Together they kept tinkering – and developed a plan for a heat pump that could do more than any other available heating solution. First, the new system would use at least two different heat sources, including waste heat. Second, the system would constantly optimise itself thanks to clever regulation, and depending on requirements decide which source should be tapped and in what quantity. This would guarantee maximum efficiency at all times. Third, the new system would naturally cool as well, thanks to its reverse circuit. Fourth, the new system would use the environmentally friendly cooling agent propane. Also, customers would be able to use the new system in a radically simple way: no-fuss installation, no maintenance woes during operation. And, at the same time the, new system would be highly flexible so it could fulfil as many different tasks as possible – in the warehouse, in the apartment block, in the computer centre. It didn’t take long to come up with a name for the new system: System Zero. Zero as in zero restrictions, zero difficulty, zero waste, zero problems, zero cost explosions. Just six months later the prototype was ready.

Technically speaking, System Zero hits the jackpot. “External air is used as the primary heat source,” explains Heydrich. “A brine circuit uses other heat sources, such as geothermal energy, and above all waste heat.” In the past the only options were air-to-heat or brine-to-heat pumps. What does combining the two offer? “The best of both worlds – depending on requirements!” says Uwe Steeger. “And that goes for normal load as much as full load.” That’s particularly apparent when the system is used in apartment blocks. System Zero can use air as a heat source down to an exterior temperature of 2 °C. At lower temperatures, and when the demand for heating is greater, it switches over to the ground, a constantly available heat source, via the brine circuit: “The control technology recognises precisely when it make sense to do so,” says Dieter Müller.

The brine circuit can draw energy from other waste heat sources besides the ground, too. As a result, System Zero is suitable for use in many different settings. Anywhere, in fact, where previously unused heat is available. In the warehouse of a restaurant chain the heat can come from the refrigerated section, in the computer centre from water- or air-based server coolers. “In both scenarios System Zero can use these sources to heat or even cool rooms more efficiently than an air-to-heat pump could on its own,” says Müller admiringly. The cost savings? “Up to 25%”

And that’s all with an amazingly low initial investment. “That brainwave in the car really paid off,” says Heydrich.

The heroes of the refrigeration circuit.
System Zero is here.


Waste heat isn’t wasted any more – in fact it helps save costs for heating and cooling, System Zero.

“You can’t make an omelette without breaking eggs,” goes the old proverb. And if you’re heating or cooling, you’re wasting valuable energy. Whether it’s a computer centre, cold store or apartment complex, large buildings and commercial and industrial facilities produce a lot of waste heat. That’s hardly to be avoided, given the laws of physics. But does the energy really have to go to waste? That was the question that led a team at Glen Dimplex Thermal Solutions to come up with an unusual solution: System Zero. Zero waste heat wasted. Zero fear that heating and cooling costs will go through the roof. System Zero is the world's first large-format propane heat pump system that draws energy from various different heat sources, especially waste heat sources, potentially even in parallel. The result? Radically efficient energy usage. Radically lower energy costs.
The GDTS magazine.
Introducing the new brand.
Warehouse of a restaurant chain: heating from cooling units.
The situation

Large warehouses and distribution facilities, belonging to restaurant chains or online vendors, for example, have year-round cooling for meat, milk and fresh fruit. This produces plenty of waste heat, which in the past largely went unused (approximately 657 MWh/year for 100 kW of cooling).

The idea

Use waste heat to heat and cool the offices.

The solution

Two linked System Zero machines draw excess heat energy from the cooling units via the brine circuit – 2 x 40 kW in total. Freely available external air is used as an additional heat source. System Zero combines them to ensure pleasant office temperatures. Heating in winter, cooling in summer... 120 kW in total.

Savings per year*:
EUR 9,500 in heating costs
52 t less CO₂

* sample realistic values compared to relevant systems using fossil fuels (oil); values for locations in Central Europe. Also applies to * on pages 60-61.

CO₂ savings per year* 52 t
The situation  Millions of gigabytes of data are processed and stored in computer centres, with around 40% of energy consumption going on cooling alone. This produces an enormous amount of waste heat (approximately 548 MWh/year for 100 kW of cooling). This is energy that was unused in the past.

The idea  Use waste heat to heat and cool the entire office complex.

The solution  Two System Zero heat pumps with a heating load of 120 kW tap the air- or water-based cooling units of the servers – or, to be precise, the waste heat they emit – via a heat exchange and the brine circuit. External air is used as an additional heat source. System Zero is thus able to ensure well-regulated office temperatures – cool in summer, warm in winter.

Savings per year*: EUR 10,000 on heating costs 52 t less CO₂
**The situation** A warm tropical shower in a private wellness temple in the morning, the perfect temperature in every room, the outdoor pool heated to just the right degree – in large apartment blocks and luxury villas, there is a lot to heat and cool. And that drives costs up.

**The idea** realise savings potential through the intelligent use of dual heat sources.

**Apartment blocks or luxury villas:** plenty of heating, minimal costs.

**The solution** A System Zero heat pump – positioned on the roof, next to the building or in the underground car park – taps a geothermal probe or well via a heat exchange and the brine circuit. In addition, external air is used as a free heat source down to temperatures of 2 °C. Because of not having to drill so deep into the earth, the combination already reduces the acquisition costs for the geothermal installation by EUR 15,000.

**Savings per year**: EUR 4,500 in heating costs 25 t less CO₂
There was a time when you had to choose. If you wanted reliable, precision cooling you’d go for compression technology, and if you wanted maximum efficiency you’d go for the adsorption principle, which transforms waste heat into cool air. Now you can have both. With the HybridChiller, the experts at Glen Dimplex Thermal Solutions have come up with a true first: an intelligent combination of compression and adsorption cooling. The result? Maximum efficiency, with all the precision you need. Automatically. In a single machine. Which is easy to install and suitable for a wide range of applications.

It’s a common scenario: most industrial facilities produce plenty of waste heat which goes unused. That’s true for thermal power stations, production processes in the plastics and metal industries, and even compressed air generators. It’s precisely these environments that often have substantial cooling requirements, so the adsorption process is ideal. With silica gel and a supply of waste heat you can create cold air – and with a high degree of efficiency, as the waste heat comes at no extra charge.

Sounds good? Unfortunately there’s a catch. Adsorption cooling isn’t as constant or precise as industrial applications require. “This is where the strength of compression comes into play,” explains Rüdiger Kuhn, who looks after sales to industrial customers for the Riedel brand at Glen Dimplex Thermal Solutions. “By carefully controlling an electrically-operated compressor, we can guarantee cooling that is precise and stable at all times.” Naturally, using electricity costs money – more or less money depending on the cooling requirements. “For most of our customers, reliability used to be more important than efficiency,” says Kuhn. “But legislative requirements are becoming stricter, and cost pressure heavier. Reliability is still a prerequisite. But now we can combine it with maximum efficiency. So really, the time is right for the HybridChiller!”

The HybridChiller combines the best of both worlds: an adsorption refrigeration circuit and a compression refrigeration circuit in a single, compact housing. And they make a perfect match. “The proportions of each technology in the refrigeration process varies depending on the amount of waste heat generated and the level of cooling required,” says Steffen Kühnert from SorTech AG, who developed the HybridChiller in collaboration with the GDTS experts. “The smart controls decide completely automatically, depending on the situation,” says Rüdiger Kuhn. “Is the adsorption sufficient? Does the compression need to kick in? And if so, to what extent?” All the operator needs to do is attach a waste heat source of between 55 and 95 °C, and the HybridChiller can keep things at a constant chill with a precision variance of just +/-0.5 Kelvin in a temperature range of 8 to 20 °C. It can even absorb load peaks – precisely and with no time delay.

And the savings? Truly impressive. Refrigeration using a free waste heat source and the HybridChiller is five times more efficient than using a pure compressor chiller. Electricity consumption drops by up to 80%. And that leads to a faster return on investments. A perfect combination that pays its way.
Testing the HybridChiller at the independent Fraunhofer Institute.
Hybrid Chiller

Cooling using waste heat

1. A cooling agent is vaporised. This produces the refrigeration for the object to be cooled.
2. The now gaseous cooling agent is condensed, and thus heats up.
3. The heated gas is condensed once again in the condenser, releasing heat into its surroundings.
4. The flash tank reduces the pressure on the cooling agent, which flows back into the evaporator.

Truly precise refrigeration.

The compression circuit
1. Water in a vacuum is brought to the point of evaporation between 5 and 10 °C. This produces the refrigeration for the object to be cooled.
2. Absorbent silica gel adsorbs the steam.
3. With the introduction of waste heat (at 55–95 °C) the saturated silica gel expels the water.
4. The steam liquefies at higher temperatures (around 30 °C) in the condenser.

Truly efficient refrigeration.

The adsorption circuit
1. A cooling agent is vaporised. This produces the refrigeration for the object to be cooled.
2. The now gaseous cooling agent is condensed, and thus heats up.
3. The heated gas is condensed once again in the condenser, releasing heat into its surroundings.
4. The flash tank reduces the pressure on the cooling agent, which flows back into the evaporator.
It was clear from the outset that combining adsorption and compression in an optimised system would boost efficiency. Just how much it would boost it, however, we left it to the independent Fraunhofer Institute for Solar Energy Systems ISE to find out.

Because the HybridChiller, developed by GDTS and SorTech AG, was so pioneering, the scientists at the Fraunhofer ISE in Freiburg had to rethink their testing methods. Measuring the efficiency of the overall system called for a special experimental set-up. The measuring program was based on the Eurovent standard, with a few adjustments and additions. “The test apparatus consisted of two modules for water conditioning, a climatic chamber and the measurement technology for evaluating the energy characteristics of the HybridChiller,” says Ivan Malenkovic of the Fraunhofer ISE. “The series of tests took into consideration the partial-load operation of the cooling unit under various conditions and weighted the results accordingly.” The objective was to put the performance of the HybridChiller to test.

The results from the two-week test phase were impressive. The Fraunhofer ISE experts recorded a “seasonal energy efficiency ratio” or SEER – the ratio of cooling performance rendered to energy consumed – of 19.6. In the world of chillers that means the HybridChiller achieves a much better cooling performance for the same amount of energy used and is up to five times more efficient than pure compression cooling. In other words, the HybridChiller enables electricity savings of up to 80%. “The results of the tests were convincing,” says Rüdiger Kuhn of Glen Dimplex Thermal Solutions.
System M.
The new generation of heat pump.
Radically simple.
Simply versatile.
The perfect system.

M for Modular. What is System M, and what can it do?

Five advantages. One system.

System M. At a glance.

Go modular! The Pope of Logistics, Horst Wildemann, on the art of defining interfaces.
It all starts with your requirements.

So, you’re following the dream of building your own house or you’re planning renovations. Or maybe you’re an installation technician helping a client to achieve these goals. The first thing we did was to ask ourselves what you want, what would actually help you. And then we developed System M.

Building? Renovating? Then you’re probably about to embark on one of the single biggest investments of your life. That makes choosing the right heating system all the more important. But what does “right” even mean? The cheapest? The most efficient? The most sustainable? Don’t be put off by meaningless superlatives. The right heating system is the one that suits you and your needs the best. So the right heating system is the one that can do everything you need – and want – it to do. You want to be warm in winter and cool in summer. You want hot water to be available at all times, and for there to be enough of it. Perhaps you’re planning to include a photovoltaic system or ventilation units? And naturally you want everything to be compatible with everything else. For day-to-day living, you really just want your heating system to do its job. It shouldn’t draw attention to itself or take up too much space. Its design should be restrained, with a minimum of status alerts. And naturally you want to profit from state subsidies and save money in the long term.

System M offers all of that. And no less.
Are you a specialist in heating systems?

Then over the years you must have assembled, ordered, installed, set up, readjusted, maintained, error-checked, prepared and exchanged plenty of them... Yes, you know your way around heating systems all right. But you're not just an expert, you're an entrepreneur as well, and you need to keep your customers happy. So you've probably sometimes asked yourself: why don't manufacturers make it easier for me to give my customers the right heating system?

But what does "right" even mean? The right heating system is the one that best suits the needs of homebuilders and renovators. That means an all-in-one package that combines all the important basic functions but which is also easy to expand on an individual basis. Everything you need, inside and out, fully preconfigured and optimised for long-term reliability. Plug'n'play, as they say - quicker to install and get running than any other heating system. Because let's be honest, the faster and more reliably the heating works, the better. And the less your customers see of you, the more they like you!

System M offers all of that. And no less.
M for Modular.
M for Minimalist.
M for Made in Germany.
M for Made-to-measure.
“Modularisation? For a product developer like me it's like a mental puzzle: you try and create the largest number of variants with the fewest possible parts, so you can meet every important customer requirement.”

Jens Rammensee, Project Manager, System M, Glen Dimplex Thermal Solutions
“At the beginning of the product design process for System M we tried to really hold back. Because a heating system isn’t a design object that you want to put on display in your living room. Put it this way: System M doesn’t force its way into the spotlight. But once you do notice it, it looks great. It’s organic, with balanced proportions, and functional down to the last detail. Plus the quality is uncompromising.”

Thorsten Bald,
Director Strategic Marketing,
Glen Dimplex Thermal Solutions
M for Made in Germany.

“What is quality? It’s the sum of numerous factors. One of the most important factors is experience. And there’s no substitute for it. At our Kulmbach site in Bavaria we have been designing, developing and optimising refrigeration circuits for more than 40 years. It’s this level of skill and care that make System M so special.”

Daniela Reuther,
Head of Quality Management,
Glen Dimplex Thermal Solutions
M for Made-to-measure.

“The made-to-measure part of System M is the way it combines small size, design efficiency, low volume, intuitive controls, perfect comfort and so on. When you get that right, it becomes irrelevant for the owner whether the machine breaks records or not on individual stats. And that goes for us, too.”

Dirk Eggers,
Head of Sales, Domestic Heating and Ventilation,
Glen Dimplex Thermal Solutions
Indoor unit

Outdoor unit

Design
Operations
Efficiency
Sound
Comfort
Modular, minimalist, made in Germany, made-to-measure... System M brings all of these principles together. But what concrete benefit do you get from bringing System M into your home? Over the following pages we describe the five major advantages – in design, operations, sound, efficiency and comfort. Each individual advantage is persuasive. But it’s when they come together that they create a unique overall solution, so extraordinary you’ll grow accustomed to this heating system from the very first day, and you’ll never want to do without it again.

For many heat pump manufacturers, it’s like a game of trumps: who has the highest efficiency rating? Who has the lowest decibel value for the outdoor unit? But with System M, that’s not how we play. Starting with the individual modules, we put together systems that offer real advantages – to homeowners as much as to installation technicians. “To do that you have to make small compromises in individual cases,” explains Jens Rammensee, Project Manager for System M at Glen Dimplex Thermal Solutions. “Because you can’t outsmart physics.”

For instance, if you want the quietest, most efficient air-to-heat pump in the world, you need room for it – in a large, heavy housing. “Who wants that in their garden?” asks Dirk Eggers, Head of Sales in the Domestic Heating and Ventilation division. “Who wants to look at it every day? And that’s before you consider what the neighbours might say.” For many people, a great big box with ventilation holes in it automatically looks too loud. Even when the heat pump isn’t running.

System M, on the other hand, achieves the perfect balance: small size, pared-back, intelligent design, with the greatest possible efficiency and lowest noise levels. At the same time, System M lets you enjoy a few superlatives, or increase the level of comfort as desired. “We have put together precisely as many configuration packages as we needed in order to be able to meet every requirement,” says Dirk Eggers. “At the same time we have made choosing the right configuration easier than ever before.” Operating the system via the interface or app and its assembly by the installation technician are just as simple.

For each of these ingeniously combined total packages, the whole is more than the sum of its individual parts. It’s the combination which makes all the difference.
Well constructed. Minimum space requirements. At 60x60 centimetres, the footprint of the System-M indoor unit (4/6 kW) requires less space than any other heat pump – and no more than a standard fridge, washing machine or dishwasher.

The outdoor unit of System M is just 60x50x87 centimetres, making it the smallest external heat pump unit on the market.
You want a heating system that takes up as little space as possible in the cellar or, even more importantly, the utility room. A system that fits in perfectly, adapting itself to its environment. A system with quality you can see and feel. That's exactly what we offer with System M. It requires a radically small space, indoors as well as out. System M can be placed in all manner of corners because the slim indoor unit can be set up with almost no wall clearance. It can stand next to the fridge, washing machine or dryer, for example. And thanks to its purity of form, clearly accentuated planes and outstanding finish, it needn’t be a wallflower either. The System M outdoor unit, meanwhile, is more or less invisible against the façade thanks to the unrivalled range of colours and materials available.
Radically good design.

What is good design? Is it really something you can expressly concisely, clearly and precisely? When you're an international design icon, then yes. Dieter Rams – who came to fame with his designs for Braun, later a major inspiration for Apple – has been working since the 1970s to encapsulate his thoughts on design in ten principles. Anyone aiming to set standards in product design needs to know the principles. And they help us to explain what is so remarkable about the design of System M.

“Good design means as little design as possible.” System M isn’t an exclamation mark that draws attention to itself in the narrative of your interior. System M isn’t loud in an optical sense, it isn’t conspicuous, it isn’t swathed in an on-trend finish or playful details. Nothing in System M is superfluous, each element has its function and thus its own purpose. Concentrated on the essential. Minimalist. Simple. Radical.

“Good design is unobtrusive.” System M fits naturally into its environment, both inside and out. So you barely notice it and never perceive it as disruptive. The radically compact outdoor unit is the only heating system on the market that can be customised with the major materials used in house construction – wood, cement, copper, brass – to forge a seamless link with the architecture. The camouflaged heat pump.

“Good design is consistent, right down to the last detail.” System M offers a high-quality finish, without which simplicity and reduction can appear clumsy and banal. Our team of designers, engineers and marketing experts applied this standard consistently and passionately throughout the development of System M – discussing, designing, engineering, discarding, optimising, testing, arguing, building. The result? Perfect curves, a harmonious appearance, precisely balanced dimensions. Only in System M are the sheet-metal edges curved to 45° and bevelled at the edges of the device. This results in a “shadow gap” that tells you at first glance that this is a high-quality precision machine. And that’s what System M is – all made possible by precise sheet-metal processing.

“Good design is aesthetic.” System M offers harmonious proportions. Unlike other heating systems and heat pumps, it doesn’t seem overwhelming or bulky. During development, the engineers wrested every centimetre they could save. All the components were installed inside the housing in a way that uses as little space as possible. And that meant we could get it all down to the footprint of a kitchen appliance – 60x60 centimetres. Meanwhile the outdoor unit has a split in its side plate and differentiating lacquering to make it look even more slim and slender.

“Good design is honest.” System M uses steel plates as its basic material. Despite high-quality lacquering, it is this metallic material quality that should be seen and felt. The surface of the indoor unit should come across as a little more refined, a little smoother, while the outdoor unit should emphasise the matt, raw, robust feeling.

“Good design is innovative.” The outdoor System M is not just quiet, it looks quiet – with the air vents now positioned on the side rather than the front and additionally covered by slats. System M is adaptable to more individual design options than any other exterior model on the market. And the indoor System M is a compelling beauty, with a large, high-resolution square display, so you never have to squint in puzzlement at a complex, overloaded mini-screen again.

“Good design makes a product understandable.” System M directs the product experience of the otherwise radically reduced interior unit to a central location – the display unit on the System M master unit. This interface enables a new kind of user experience, one that is both surprising and exciting. System M is the first heating system that is self-explanatory and intuitive enough to operate without instructions, without sacrificing functionality. That goes for experts as well as newbies, using the device itself or via the Smart Room Heating app (with its award-winning design). The app means that you also get complete operating convenience with the Pure variant of System M, which has no touch display on the device.
Welcome to System M!
Available in the right design variant for every home.
For example …

…for all those who live consciously and think to the future. Mobility: electric car, cargo bike. Daughter: 14 years old and full of life, with a thousand ideas for saving the world. Living: streamlined, compact, low-energy, because who needs superfluous luxury? Style: pared-back, thoughtful, casual. The most important shared space? The kitchen.

The heating system: System M Pure.
Even a heat pump can have the wow factor. Pleased to meet you! System M is moving in. For example …

… with anyone who places their greatest demands on themselves. And on day-to-day comfort. Mobility: sports car, maybe vintage. Profession: decision-making, making things happen. Interests: good art, excellent taste, the finer things. Living: generous in every way, with room for table tennis and floorboards throughout. Statement living.

The heating-cooling system: System M Comfort.
Wood or paint?
Everything in green ... or an architectural flourish? It’s your personality that decides. Just as it does with System M. The first outdoor heat pump that is perfectly integrated into its surroundings rather than in conflict with them. And that’s why it strikes the perfect note. A true attraction.
You want a heating system that makes day-to-day living as simple and pleasant as possible. A system that doesn’t bug you with superfluous status alerts. A system that doesn’t even need instructions.

That’s why we came up with System M. It is radically simple to connect and radically intuitive to operate. From the very beginning – in other words, the installation. System M can create its own hotspot, ideal for building sites where the Internet connection isn’t up and running yet. Thanks to clever pre-configuration, the actual start-up is faster, simpler and more straightforward than any other heating system. System M just asks a few simple questions, simple enough for an apprentice to answer, and that’s it - it’s up and running. And it just keeps going.

You have everything at your fingertips, including the current and target temperatures for every room. Every setting for the weekend or for holidays, the ventilation strength, the quick heat option. In short, System M means it’s child’s play to access the functions you need, when you need them.

With the Pure variant you even get System M without the touch display on the device itself – you just use the app instead.

One more thing: because System M comes with its own Internet connection as standard for every configuration, at no extra charge, it can itself report any irregularities directly to the installation technician or customer service. The Internet connection also means it’s constantly ready for updates.
Quiet as a whisper.
Quiet as a whisper.

Jet aircraft – 120 dB(A)
Propeller aircraft – 110 dB(A)
Circular saw – 100 dB(A)
Construction site with pneumatic drill – 90 dB(A)
Road traffic saw – 80 dB(A)
Lawnmower – 70 dB(A)
Normal conversation – 60 dB(A)
Soft radio music – 50 dB(A)
Refrigerator – 40 dB(A)
Whisper – 30 dB(A)
System M – 27 dB(A)
Soft wind – 20 dB(A)
Snowfall – 10 dB(A)

You want a heating system that uses the free, endless supply of thermal energy in the air. A system that therefore has an external unit with a fan, but is nonetheless almost inaudible. A system that even reassures your neighbours – because it doesn’t just sound quiet, it looks quiet, too.

This is exactly why we came up with System M. It’s great for your nerves, whispering like a soft, soothing breeze. System M isn’t just optimised for the sound lab but for use in the real world as well. All the sound escapes at the side and not towards the garden or the neighbours. You don’t see any ventilation grilles or twirling propellers, which can be as alarming as noise. System M specifically filters out the low frequencies that disturb the human ear. And it uses the benefits of split technology, keeping the outside sound source (evaporator) and inside sound source (compressor) well away from each other.
You don’t want a compromise between comfort and efficiency in your heating system. You want a system that operates as economically as possible, all by itself, from day one. A system that qualifies for current state subsidies and pays for itself in the long run. A system that meets the requirements of tomorrow, today.

That’s precisely why we developed System M – radically efficient, in three different ways. First, only heat pumps like System M achieve the A++ class energy label for individual heat generators, as opposed to oil or even gas heating. Second, System M has integrated so many functions and optional add-ons that it is the only composite system to achieve top scores on the energy label. And third, we have fitted System M with the smartest control technology available today. System M eliminates the rigid heating curve by constantly determining the lowest-possible flow temperatures for the desired conditions in up to ten different rooms. That means it makes no difference how much you crank up the heating, or how scalding your baths, System M automatically runs as economically as possible.

Nothing heats as efficiently as the heat pump.

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Only the electric heat pump achieves the highest efficiency value... because it draws 75% of the energy it requires from the environment. And with green electricity, it can be run fully CO₂ free.
You want a heating system that really only has one setting: the individual comfort programme for you and your family. A system that offers you no less than that – but please, no more.

That’s precisely how we made System M: radically comfortable. And radically made-to measure, in line with your needs. We asked ourselves some fundamental questions so you have an easier time of selecting, configuring, installing and using the device. This is how the System M variants came about (see overview the following pages). Simply choose how much hot water comfort you need on hand at any given time. Decide on the integrated cool function – with no drafts, no noise, no condensation and therefore no danger of mould. Or get the Plus variant with inverter technology – ideal for anyone who needs a bit more heating power now and then but doesn’t need a whole overloaded system.

Perfect convenience with our two service packages.
Your choice.

1
Basic service package
- 5-year guarantee
- On-site start-up, incl. activation of screed programme if required
- One-time online check of the system following the first heating period
- Online monitoring, active info in the event of technical deviations
- Software updates to keep System M automatically up-to-date

2
Long-life service package
- Extended 10-year guarantee
- On-site start-up, incl. activation of screed programme if required
- Condition monitoring with annual report on data evaluation and tips for optimising energy efficiency
- Software updates to keep System M automatically up-to-date
- Software upgrades for new, additional functionalities
System M
At a glance.

System M Pure
The modern heating solution for the small home – up to 150 m². Ideal not just for prefabricated houses.

System M Compact and Comfort
A comfortable and sustainable heating solution for modern family homes as well as for luxury living – depending on the selected heating capacity, for homes up to 300 m². Higher-powered machines can also be used for renovation projects.

System M Personal
Your individual heating system: the outdoor units of all System M Compact and Comfort systems can be customised in a multitude of ways. Just select the material and colour combination that best fits your garden or the outside of your home.

System M Pure
Available from 09/2017
Heating capacity 4 kW/6 kW
180-litre hot water tank included (demand for hot water: L)
Controlled via Smart Room Heating app

System M Compact
Available from 06/2017
Heating capacity 4 kW/6 kW
180-litre hot water tank included (demand for hot water: L)
Controlled via touch display or Smart Room Heating app
Attractive customisation options

System M Compact Plus
Available from 11/2017
Heating capacity 4–6 kW
Inverter technology for short-term burst in heating capacity included
Cooling option available
180-litre hot water tank included (demand for hot water: L)
Controlled via touch display or Smart Room Heating app
Attractive customisation options
### System M Comfort

- Available from **06/2017**
- Heating capacity 9 kW/12 kW
- Cooling option available
- 240-litre hot water tank optionally available (demand for hot water: XL)
- Controlled via touch display or Smart Room Heating app
- Attractive customisation options

### System M Comfort Plus

- Available from **11/2017**
- Heating capacity 9–16 kW
- Incl. inverter technology for short-term performance boost
- Cooling option available
- 240-litre hot water tank optionally available (demand for hot water: XL)
- Controlled via touch display or Smart Room Heating app
- Attractive customisation options
Known variously as the “Pope of Logistics” and the “Master of Efficiency”, Horst Wildemann brought the idea of “just-in-time” manufacturing from Japan to Germany in the 1980s. In so doing, he helped ensure that Germany’s venerable automotive and engineering industry did not get left behind in the global economy, which was accelerating as a result of this major boost to productivity.

In the present millennium, Professor Wildemann was one of the first economists to discover “modular thinking” and utilise it for companies. We talked to him about the continuing megatrend of modularisation: what lies behind it and why is it so successful?
Professor Horst Wildemann (75) is Professor Emeritus and Head of the Management, Logistics and Production Research Institute at the Technical University of Munich. He is also Founder and Chairman of the Management Consulting Company TCW. Once a year he organises the prestigious Munich Management Colloquium at which business leaders and other experts share their first-hand experiences. The 24th Colloquium will take place in 2017. An anniversary event is planned for March 2018.
“Modularity? The art of defining interfaces.”

Professor Wildemann, for almost 40 years now you have been investigating how companies can work more efficiently – especially in the area of production, but also in development, distribution, delivery, services and even personnel management. What does a leading economist and logistics expert such as yourself understand by the term “modularisation”? Why has it become so important?

To explain what “modularisation” means for how production and companies are organised, I like to quote a well-known book. Not a standard work on economics, but the wonderful children’s classic “Croguphant”, a flip book in which you can combine parts of different animals on different pages to create amazing, often impossible creatures. The head of the CROcodile with the body of the jaGUar and the legs of the elePHANT – all the heads, bodies and legs in the book fit together.

My grandchildren love that book because it’s such fun. And I love it because the principle behind the Croguphant is one of modular design. This is precisely what modularisation is: the art of defining interfaces along which complex products can be broken down meaningfully and then recombined into endless new variants.

So it’s all about interfaces? Tell us more...

In the Croguphant, the interfaces are the mutually compatible boundaries between the heads, bodies and legs. The design allows you to create 1,700 different animals just with this one flip book, which isn’t even very thick. Or take Lego, for example. Lego is perhaps the best-known example of modularity. The ingeniously designed studs and tubes that allow you to stick the bricks together are the interfaces. Using a limited number of bricks you can build literally anything, from Neuschwanstein Castle to the Death Star. In machine and automotive engineering, where the principle of modularisation was applied very early on, we distinguish different assemblies, each of which shares a specific performance criterion: the same material, the same function, the same development option. If the interfaces are standardised, interconnectivity is guaranteed.

Having fewer different individual parts means less complexity?

Exactly – but you still have this great wealth of variants. From a broader perspective, modularisation is the only way companies can overcome one of the mega-challenges of globalisation, namely how to offer specific goods and services for more and more local markets and niches without choking on the complexity and cost of the diversity. In the past, each product needed its own development work, its own production lines, its own logistics arrangements and its own marketing efforts. No wonder parts warehouses were getting more and more overcrowded, price lists longer and longer, and sales concepts more and more complex. Both managers and customers were getting completely lost – not to mention the costs, which were skyrocketing.

Can you give a specific example of a success story?

To stick with trucks: the Swedish manufacturer Scania managed to cut the number of parts it used by half thanks to its modular production system. If one company uses far fewer parts than its competitors, the implications for competitiveness are obvious to everyone. Take the rear axle, for example: 971 parts compared to around 10,000. Or the front axle: 500 parts compared to 5,500. The difference that means in terms of number of spare parts is almost unbelievable: 60,000 compared to around half a million. And that’s without impinging on product variety, which is so important for serving niche markets in a globalised world. The more products a company can launch using as few parts as possible, the greater its efficiency – and thus the greater its potential success.
So has the “platform strategy”, which served the industry well for many years, now served its purpose?

Well, let me put it like this. Modules multiply the advantages of the platforms which the automotive industry and others have used as a basis for developing and manufacturing various models – albeit only within a single class in the past. By contrast, modules combine horizontal and vertical efficiencies. Engineers think beyond the individual vehicle and the question of roadster, SUV or van. They have in their hands a single, large construction kit equipped with elements that, thanks to their compatible interfaces, can be used in vehicles ranging from compact cars to luxury saloons.

That means that every module has to meet very high requirements... Of course, the modules must be designed to meet the highest requirements. Heaven forbid that a module might break down in the luxury saloon! So the modules tend towards being over-engineered. But that’s compensated for by the lower R&D costs, less testing, great reliability, more safety and economies of scale.

Do the modules also last longer? Platform strategies were based on great leaps forward in the development process. Every change of model demanded a tremendous effort combined with great risks – financial, creative and organisational risks. Modular strategies are based on continuity. The individual units last longer but can also be exchanged more easily. Old elements can be combined with new elements to create the latest model. In the modular age, developing a product world no longer involves a succession of major breakthroughs and technological revolutions. Instead it is almost fluid. In the automotive industry, even the workshops benefit as they no longer have to make fundamental model changes but can develop continuously instead. And in the world of heating technology, where frequent training is required, it makes life much easier for installers.

Can the modularity principle also be applied to companies outside the automotive industry? Certainly. Through our management and organisational consulting company TCW we have very successfully implemented thinking and working in modules in many different industries. Even homebuilding is currently experiencing a modularisation revolution. Define a set number of window, wall and roof variants plus other categories that are compatible with each other, and you can use this limited number of individual parts to create an almost unlimited number of houses – and build them in record time. The principle? A prefab house, off-the-peg. The result? An individual architect’s dream.

“It suddenly becomes easy to find creative solutions.”

So modularisation benefits not just manufacturers but customers, too? Yes. A product system built on modules is easier to configure, order, understand and use. For example, when logistics companies set up a distribution centre in the past, they had to have a transport and distribution system tailor made, so to speak. Every bend, every junction, every scanner station had to be defined in advance. The metal parts for the conveyor belts had to be specially shaped so the components would fit together and could then be carefully assembled by hand. Once the system was up and running it required a great deal of effort and a massive number of new parts to adapt the machinery to any new requirements. Today, by contrast, customers are learning how to do their own tailoring – to use the toolkit themselves. Add an outward transfer module on the bottom, an additional roller track module on the side, switch on the software module and the new sorting track is ready to go. For customers, modularisation takes the worry out of complicated planning processes – in particular the worry that they will make a mistake that they can’t correct later on. Suddenly it becomes easy to find creative, context-specific solutions.

Just like with the Crogphant? You could sum it up as follows: the modular principle is the hinge that connects customers’ requirements to the economic interests of the company. So it really could be the key to constantly coming up with the latest all-singing, all-dancing product. (Laughs.) Like the Crogphant!
Radically reduced. Modularising the automotive industry.

Anyone who has ever seen an automobile factory from the inside knows what a complex task it is to build a modern car. A regular passenger vehicle is assembled from around 10,000 parts. How do you bring order to this complexity? With the help of conveyor belts (at least since Henry Ford), with standardisation, with robots. And how do you reduce the complexity? With modularisation. The more often you can reuse a specific part – in the gears, the door hinge, the navigation system, the cylinder – across all classes and all types of vehicle, the more efficient the entire development and production process. Truck manufacturer Scania has managed to build a rear axle with only 971 different parts using such modules, instead of the previous 10,000. Modularisation creates space: space for storage, and space for ideas.
Twenty-four layers of corrugated cardboard, bonded together and waterproofed. This is the Wikkelhouse from the Netherlands. It comes directly from the factory on the back of a lorry and can be put together, with no foundations necessary, in less than 24 hours: in your garden, by a lake, on the roof. Each segment is 120 centimetres long and houses whatever you want or need it to: a kitchen module, a bathroom module, a living-room module (with fireplace). There is room for the whole family, for an office, for friends. The Wikkelhouse can be extended as desired – the holiday home can grow into a spacious hall. Modularisation creates freedom.

www.wikkelhouse.com
Lego – the toy that invites you to build new worlds – is an excellent example of modularisation. Thanks to its ingeniously compatible interfaces (round studs and corresponding tubes) and the strict size relations between bricks (each one is double the height and width of the previous one), the system knows no boundaries. Six 2x4 bricks create approximately one billion possibilities. Over the years, however, different shaped bricks started being released with increasing frequency. Things got out of control. So Jørgen Vig Knudstorp, former CEO of Lego and current head of the Lego Brand Group, decided to set some limits. Knudstorp reduced the number of different blocks from 13,000 to around 3,000. Since then, designers have had to submit applications for special pieces. Modularisation creates variety – through limitation.
We cool cleverly and precisely. Three applications, three system solutions.
We cool Industry 4.0
Networked cooling for TRUMPF.

We cool medical technology.
MRI diagnostics with the MC Chiller.

We cool groceries.
Corner shop 2.0.
The trend: Industry 4.0

Just another buzzword? First it was the German government’s policy programme for sounding out opportunities. Now it’s somehow become everything that’s meant to happen to business in the future. Industry 4.0. But what exactly does it mean? The formulation implies a sequel to the three great upheavals in industrial history. At the end of the 18th century the power of water and steam were truly harnessed for the first time, triggering the first Industrial Revolution. The dawn of the 20th century saw the evolution of revolution, as industrial facilities turned electric and the production line rolled into action. In the 1970s the computer introduced the third generation of industry and ushered in the digital age. So the next logical leap forward is Industry 4.0 – and it’s happening right now. This time it’s all about networking autonomous machines. The result? Industrial processes and systems such as product development, production, logistics and resource planning are being interconnected across sectors. They can communicate with each other. All of this requires new ideas and new interfaces. An example? Read on.

We keep Industry 4.0 cool.

Networked cooling for TRUMPF – the future starts now.
The pioneer: TRUMPF

TRUMPF is the world market leader in machine tools, lasers and electronics for industrial applications – and a perfect example of the Industry 4.0 movement. TRUMPF is in the advance guard, already making the fourth industrial revolution a reality. The giant machines in its Ditzingen works near Stuttgart and in the factories of TRUMPF customers around the world are learning to talk, in a manner of speaking. High-performance laser and tool machines carry out their own system analysis and sound the alarm early on if they detect any potential trouble. This might mean, for instance, raising an alert on falling coolant levels long before the coolant runs out completely. And what the machine promises as a whole, the individual components fulfil in detail. The modules think and collaborate with each other to optimise the production process, intelligently and fully automatically. TRUMPF’s overall objective is to comprehensively network its machines within five years, achieving a 30% hike in productivity. So, how will it work?
Reliably precise & intelligently networked.
The partner: networked cooling.
Productive networking calls for reliable partners. This is especially true with core processes. Machine tools, and particularly their integrated lasers, produce heat. Their interruption-free operation relies on constant, precise cooling. This is where Riedel, the cooling brand from Glen Dimplex Thermal Solutions, comes in. The specialists from Kulmbach have been supplying world market leader TRUMPF with high-performance, reliable cooling equipment for over 30 years. Lasers still need cooling to function – Industry 4.0 isn’t about to change that. So they need to communicate with the Riedel cooling units. “This is the challenge we’ve taken on,” explains Michael Schmidt, Key Account Manager at Riedel. “In the future our cooling units will be connected to all the other relevant components in the network in which they operate. That means they can be incorporated into TRUMPF Remote Services, with all the advantages associated with remote access.” And that’s not all. After a year of operations the cooling module could, for example, order replacements for wear parts as a precautionary, fully automatic measure. These parts would then be swapped out ahead of time to prevent longer, more costly machine downtime. So with the support of the experts from Riedel, TRUMPF is already perfectly prepared for the future.
Pain-free and high-resolution: magnetic resonance imaging provides fascinating insights into the human body – but only if the MRI machine is cooled safely and accurately. Even tiny temperature deviations can lead to false results. We pay a visit to the Centre for Radiological and Nuclear Medicine in Lauf an der Pegnitz (Bavaria) where Riedel, one of the brands belonging to cooling professionals GDTS, makes sure that the equipment functions reliably – day and night.

The picture is mainly black and white. To a layperson it looks like different-sized patches of various shades of grey. An experienced medical eye is needed to interpret the amorphous shapes, outlines and shadows. Dr Wolfgang Langlouis, Specialist in Radiological Diagnostics, examines the image, which has just been produced using magnetic resonance imaging (MRI). He points out different areas and explains: “The internal organs are particularly clear. Here, for example, is a cross-section of a kidney.” He traces the outline with a pencil. “It’s so bright because it contains a lot of hydrogen, which the strong magnetic field makes particularly visible.”

Tumours and inflammations are also clearly distinguishable from healthy tissue, thanks to their atypical water content.

Since October 2016, the Centre for Radiological and Nuclear Medicine in Lauf an der Pegnitz has had its own MRI scanner. To avoid interference from other electrical equipment and radio waves, the big white machine is housed in its own specially protected room. Dr Langlouis points through the viewing window: “The MRI machine really helps us a lot. Without the detailed images it provides, many diagnoses would not be possible at all.”

How do MRI machines work? Actually, they’re not as complicated as you might think. They use the principle of magnetism to produce sectional images of the inside of the body. The strength of the magnetic field used in today’s MRI machines is 1.5 tesla, or 50,000 times the strength of the earth’s magnetic field. It sounds like a lot, but MRIs are completely painless and in no way harmful to human health. The only problem is that patients have to lie in a tube during the examination, surrounded by the coil that generates the magnetic field: there’s no space to move around and it’s rather loud in there. As soon as the hydrogen atoms in the patient’s body have lined up along the magnetic field, a pulse of radio waves excites the atoms and knocks them out of their natural position. When the radio waves are switched off again, the
hydrogen atoms return to their original state. As a result, the tissue transmits a measurable signal which is then processed by the powerful computer system and converted into individual layered images – in cross-section, longitudinal or from the side, in colour, three-dimensional, or even in the form of moving pictures.

Precision work like this requires a lot of technology. Key Account Manager Jürgen Romahn: “The cost of buying an MRI machine is EUR 1.5 to 2 million. That’s a big investment, which needs to pay for itself as fast as possible. To function reliably, MRI machines need reliable cooling systems.” In order to produce the strong magnetic fields, “superconducting” magnets are used. These must be cooled to –269 °C.

Usually liquid helium is used for this, cooled by an electricity-powered cooling unit. Romahn: “In Lauf an der Pegnitz, the MC Chiller, with its additional outdoor cooler module on the roof, provides safe and efficient cooling.” The ultimate goal is to avoid temperature fluctuations: even the smallest deviations change the magnetic field, distorting the sectional images and thus the examination results.
When it's below 6 °C, the cooling module on the roof uses the air as an additional source of cooling.
MRI machines not only come with a hefty price tag, they’re also expensive to run. “Around 6,000 people will receive MRI scans in Lauf an der Pegnitz in 2017 alone. We can’t afford for the machine to break down,” says Langlou. “It has to keep working.” And it does – in fact, it has been working non-stop since it was first plugged in. MRI machines are never completely switched off as the liquid helium has to remain chilled even at night. The machine uses 7 kW on standby, compared to 50 kW during the day. This is where Riedel’s systems expertise come in. Romahn: “In addition to the MC Chiller, which is the main chiller, with three compressors attached directly to the MRI machine, we have installed a second module on the roof of the building, which we call the ‘outside’ cooler.” When the temperature outdoors is below 6 °C, the outside cooler uses the freely available ambient air as an additional source of cooling. This reduces power consumption, as the electrically operated compressors have less work to do. “When the temperature outside is below zero, the outside cooler produces enough power to supply the MRI running at full blast on its own,” says Romahn. This cuts the total cost of electricity by up to EUR 5,000 a year, reducing CO₂ emissions into the bargain. Not only that, Romahn and his colleagues are able to control the performance of the chiller anytime, anywhere via a remote management system, even optimising it while it is running. A system solution made by Riedel: precise, safe and maximally efficient.
We cool groceries.

Corner shop 2.0: Welcome to the grocery collection station.
Sausages from an online store? Yoghurt from the Internet? There’s still something odd about buying groceries on the Internet. Who does that, even? “Actually an amazing number of people already,” says Rüdiger Weimer. He taps on his large, metallic invention: the “emmasbox” – the automatic, perfectly refrigerated future of the corner store. “And the number of people ordering groceries is growing all the time.” Weimer, General Manager of open ideas GmbH, isn’t alone in his prognosis. Last year, for example, German supermarket chain REWE made a massive investment in its online business with REWE Digital. Soon it will be joined by Amazon Fresh; Germany’s largest mail-order company is planning to enter the fresh groceries business in 2017. So it’s a real future market. And Riedel, part of Glen Dimplex Thermal Solutions, is aiming to help shape that future through its collaboration with open ideas GmbH. Or should that be “cool-laboration”?

Supermarket 2.0 – the groceries business of the future – has been an upward trend for some years now. But to date there’s always been one big problem. “It’s what we call the last mile,” says Rüdiger Weimer, one of the heads of start-up open ideas GmbH. “That’s because delivery from warehouse to customer is what costs supermarket chains the most. The groceries must be painstakingly packed and cooled. And if the delivery van gets stuck in traffic, the consequences are obviously different from when a normal package delivery is held up.” The solution? The emmasbox, a refrigerated collection station for groceries. The name refers to the fact that corner shops are colloquially known as “Auntie Emma” shops in German. One such collection station sits in the middle of the Munich office of open ideas GmbH. Weimer demonstrates how it works. You simply pull out your smartphone, call up the bar code and scan it on the large reader. “Whooosh!” A refrigerated locker opens – hello pizza! Another “whooosh” and a second door springs open – there’s the salad. Fresh and crisp thanks to optimal refrigeration. The basic idea is simple. “The supermarkets are closed by the time some people leave work,” says Weimer. “That’s something I know from my own experience. If you don’t have milk for your muesli in the morning, it’s really frustrating.” In 2012, together with his colleagues Oliver Latka and Michael Reichelt, Weimer came up with the idea of building a collection station for groceries. From the very beginning it was obvious that they would need a partner who could supply plug’n’play, reliable, customisable refrigeration units. Without absolutely reliable cooling, the emmasbox would never have got off the ground. They quickly decided on Riedel.
“The decision was easy,” says Weimer. “Their level of experience in tailor-made commercial refrigeration is pretty much unrivalled.”

“Working with a start-up is a unique experience,” adds Key Account Manager at Riedel, Daniel Buchwald. “From very early on, the team at open ideas GmbH had a clear concept about what they wanted from the refrigeration solution for the emmasbox. We gave them compact units that are truly state of the art for every module.”

One particular challenge lay in the fact that the emmasbox requires three levels of refrigeration for different categories of groceries. The different levels have to work as efficiently as possible and allow for remote supervision. The modules also have to be easy to install. So Riedel developed three compact modules that can be flexibly combined depending on the volume of shopping: a freezer module (–20 °C to 0 °C), a normal cooling module (+1 °C to 20 °C) and a room-temperature module (20 °C). These modules, approved by German testing facility TÜV, each contain two Riedel refrigeration units, ensuring constant temperatures using the natural cooling agent R290. The additional operating module with touch display and code scanner controls the collection process. “If a customer has bought items at various cooling levels, the locker with the lowest temperature opens first,” explains Weimer. “Once that has been emptied, the next cooling level opens. And so on.”

It’s a concept that’s catching on. German supermarket chain Edeka and Austrian giant Interspar already use the modular grocery boxes. “Branch managers are counting on their customers preferring to pick up their own groceries rather than having them delivered,” says Weimer. “Particularly in the evening, people don’t have a lot of flexibility around waiting in for deliveries. You go to take the dog for a walk – and then you remember that the delivery is due. To say nothing of the packaging that has to be thrown away.” Now, if you order from the Interspar online shop, you can select a nearby emmasbox collection station and collect your shopping at any time, day or night, whenever suits. The surcharge is just one euro, compared to EUR 3.90 for home delivery. Plus you don’t waste valuable time standing in the check-out queue. “For families in particular, this is a major benefit, even during opening hours,” says Rüdiger Weimer. “Instead of running around the whole supermarket, you can collect your purchases conveniently, right there in the car park. It takes a load off your mind.” What a fresh idea. And, thanks to Riedel – totally cool.
How the emmasbox works:

1. Order
You order your shopping online – from the office, at home, or out and about – choosing one of the suggested time slots and a collection station.

2. Placement
The retailer puts the order together, then deposits it freshly packed in the right temperature zone of the emmasbox.

3. Notification
As soon as you complete the purchase, you receive a collection code via email or text message.

4. Collection
You pick up your groceries at whatever time suits you. All you have to do is enter the code on the touch display or scan the barcode using the reader.
Reference projects.
Where we cool and heat.
Overview of project locations.

Schloss Emsburg, Austria
Family home, Germany

Historical villa, Germany

Giant’s Causeway Visitor Centre, Northern Ireland

Shanghai Grand Theatre, China
Peace and Security Building, Ethiopia

Greenhouses, Japan

Paranal Observatory, Chile

OffTEC training centre, Germany
Stäubli assembly hall, Germany
Where we cool and heat.
Reference projects.
Schloss Emsburg
Salzburg, Austria

We heat historic monuments. Schloss Emsburg nestles in grounds that extend over eight hectares. Built in 1619, the diminutive palace has seen a few owners since then, from a princely bodyguard to a Franciscan community. Since 2010 it has been in private hands.

Challenge / The project called for a high-performance heating system that was both efficient and quiet for the main building and the six auxiliary buildings. It also had to conform to a host of heritage requirements. That meant, for instance, retaining the existing radiators to keep the impact of the renovations to a minimum.

Solution / With four brine-to-water heat pumps using ground water as a heat source via probes, Dimplex guarantees a high flow temperature of 70 °C for the radiators.

System benefit / Dimplex created an environmentally friendly, heritage-appropriate solution – without major building works.
Family home
Oberviechtach, Germany

We heat and ventilate sustainably. Clean lines, plenty of glass, refined internal axes and external vistas – all in an open-plan concept. This modern family house in eastern Bavaria sets new standards not just in architecture but in energy efficiency as well.

Challenge / The family of four required a sustainable energy concept – heating, hot water and a powerful ventilation system – for an almost air-tight house with excellent insulation. The better a building’s exterior is sealed, the more important it is to control its aeration and ventilation. That’s the only way to ensure that the house doesn’t sweat and that it stays pleasant inside.

Solution / The 220 m² family house is heated by a Dimplex LA 1.7TU heat pump, which also supplies the hot water. The central ZL 400 ventilation system from Dimplex ensures ample fresh air in every room, round the clock and extremely hygienically.

System benefit / 70% less energy consumption than oil heating and 30% lower CO₂ emissions. Year in, year out.
Historical villa
Ingelheim, Germany

We heat indoors and out. This imposing two-story villa in Rhineland-Palatinate was built in 1800 and lovingly restored in 2012, inside and out. The goal was to retain as much of the old fabric of the building as possible and to emphasise its architectural features.

Challenge / It wasn’t just the interior of the house that required efficient, environmentally friendly heating – the koi pond in the garden also had to be kept at the right temperature. Koi carp are highly sensitive to temperature fluctuations, so the water temperature had to be as stable as possible.

Solution / A powerful, high-temperature brine-to-water water and heat pump from Dimplex provides hot water for the house and heats the 430 m² living space as well as the koi pond. The existing radiators were retained, meaning shorter renovation time and lower installation costs. By activating a second compressor, the heating power can be quickly increased from 11.5 kW to 21.4 kW if necessary.

System benefit / 55% less energy consumption than oil heating and 52% lower CO₂ emissions.
We can both active and passive.

It was a giant that deposited the 40,000 or so almost identical basalt pillars that form Northern Ireland’s famous five-kilometre causeway – at least according to an old Irish legend. That’s why it bears the name Giant’s Causeway to this day. The volcano that actually wrought this wonder 60 million years ago has long since disappeared. In 2010, however, the UNESCO World Heritage site was provided with a new Visitor Centre.

Challenge / In winter the 1,800 m² Visitor Centre has to be kept warm – sustainably and at low cost. The operator, National Trust, also wanted a passive cooling function for the summer months.

Solution / Rather than just one high-performance heat pump, three brine-to-water heat pumps with lower outputs were installed, resulting in particularly impressive partial load operation behaviour. A horizontal collector was installed beneath the parking lot to act as a heat or cooling exchange as required, connected to the building via a brine-to-water heat pump.

System benefit / Sustainable, stable temperatures and outstanding efficiency.
The GDTS magazine.
Reference projects.
Grand Theatre
Shanghai, China

We wow Shanghai. In 1998 the modern building complex of the Shanghai opera house with its swooping roof opened its doors for the first time – and immediately became a landmark of the city. With three performance spaces and a total of 2,700 seats, the theatre is one of the biggest in the People’s Republic of China.

Challenge / The heating system for the 12,000 m² building not only had to ensure ideal temperatures with maximum efficiency, but also be visible to theatre visitors and part of the dramatic setting.

Solution / Eight reversible brine-to-water heat pumps operating in tandem, each with two compressors, provide optimal interior conditions throughout the year. The hydraulic connectors and the entire pipework of the heating and cooling system was clad in stainless steel and lit up, giving visitors a spectacular view of the opera house’s heating system.

System benefit / Perfect temperatures, regardless of whether it’s a full house or the summer break – with outstanding heating and cooling performance.
Peace and Security Building Addis Abeba, Ethiopia

We use every source of energy. Addis Abeba, the capital of Ethiopia, is home to both the African headquarters of the UN’s Economic Commission and the African Union. Since 2013 the African Union, so vital for the continent and its ongoing development, has had a new Peace and Security Building – a gift from Germany.

Challenge / The building needed to provide comfortable temperatures for over 360 staff members throughout its 13,500 m² of office space. A fire pond in the garden was also pegged as an energy source.

Solution / Key components of the sustainable heating and cooling concept were the two sprinkler tanks, one with 100 m³ of water and the other with 140 m³. One tank is used as a cold water source in summer, the resulting waste heat being transferred to the other tank to be used as a heat reservoir for heating. A collector in the pond also helps the building cope with peak loads.

System benefit / Site-specific factors such as the fire pond were integrated and used in an optimal fashion to increase efficiency.
Greenhouses
Hokkaido, Japan

We ensure the right weather. The northern part of the island of Hokkaido is not just home of the eponymous pumpkin, it is also the country’s main supplier of rice and potatoes. But the climate is a challenge to anyone growing plant crops: winter temperatures can drop to –12 °C, while in summer the mercury tops out at 22 °C.

Challenge / However extreme the outside temperature, the greenhouses have to maintain a constant temperature of 22 °C. The large-scale agricultural concern Hokkaido Green House Co. Ltd. wanted to replace its old kerosene burners with modern heat-pump technology – and in so doing save as much on energy and operating costs as possible.

Solution / After testing various alternatives, the favoured device also turned out to have the lowest energy consumption: air-to-water heat pumps in combination with brine-to-water heat pumps, plus waste heat recovery.

System benefit / Reliable, environmentally friendly heating, even when it’s –12 °C outside.
What lies at the centre of the Milky Way? Are we alone in the universe? The European Southern Observatory (ESO) seeks answers to some of humanity’s most fundamental questions. By planning, building and operating astronomical observation facilities, this science and technology organisation makes revolutionary discoveries possible. With a little help from the cooling specialists at Glen Dimplex Thermal Solutions.
We provide precision cooling in earthquake zones. In the middle of northern Chile’s Atacama Desert, four 22-watt lasers create artificial guiding stars. They serve to balance out the optical blurring that arises from the Earth’s atmosphere, ensuring sharper images for the telescope.

Challenge / The laser sources require compact, low-vibration cooling inside a temperature-neutral exterior, which should get by with as little maintenance as possible and provide leakage monitoring in case the worst comes to the worst. Earthquake and frost protection are essential in this region of South America.

Solution / A cooling system that is so safe and low-maintenance that it can be run without intervention for two years at a stretch – a big advantage in a region far from major transport routes. Special features help achieve this goal, such as the insulating material that doesn’t swell despite an altitude of over 2,500 metres. The low-vibration construction prevents earthquake-related outage, while the brine pump and fan are speed-regulated to compensate for any resonance vibrations on site.

System benefit / Exact cooling: the inner temperature of the device has a maximum deviation of +/-1 Kelvin relative to the ambient temperature.
OffTEC training centre
Enge-Sande, Germany

We heat the tides. Offshore wind farms on the high seas are major suppliers of green electricity. However, building and maintaining them is an enormous challenge. In North Frisia, OffTEC ensures that employees working in offshore wind farms are prepared for the extreme working conditions they encounter. For example, with artificially generated waves more than two metres high.

Challenge / Sustainability was a must. The new heating concept should use energy from the nearby wind farm and a solar plant to heat 2,000 m³ of North Sea water and service water every day, as well as heating two halls.

Solution / After a geological survey established that the company premises were located on a sand dune, which ruled out drilling boreholes, Dimplex knew that air-to-water pumps were the only way to go.

System benefit / Eight devices, connected in series and divided between two temperature zones, enable the varying heating requirements of the new and existing structures to be met with maximum efficiency.
Stäubli assembly hall Bayreuth, Germany

We heat and cool in integrated networks. The town of Bayreuth, in north-eastern Bavaria, is home not just to the world-famous annual festival of Richard Wagner’s operas but also to the Swiss technology company Stäubli.

Challenge / The newly built 1,700 m² assembly hall had to be heated and cooled with maximum efficiency. That meant it had to be both energy efficient and environmentally friendly.

Solution / Two Dimplex air-to-water heat pumps ensure the right temperatures all year round. Once the outdoor temperature drops below 4 °C, a secondary heat source in the form of a pellet boiler kicks in. The heating or cooling water is distributed via industrial panel heating in the concrete core of the hall floor. Two buffer tanks ensure that both heating systems run with consistent efficiency.

System benefit / Depending on requirements and outside temperatures, the hall can be efficiently cooled or heated.