

MAGAZINE

ZINE

ICE RESURFACING 2018



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Dear Readers,

behind every machine is a human being. Behind the ice resurfacers of WM ice technics there is a whole team. Over the course of thirty years, what began as a one-man business in the northern Italian province of South Tyrol has developed into a small industrial company with 25 employees and numerous partners throughout the world. We have one common aim: to provide our customers with high-quality, technically advanced ice resurfacers that will ensure a perfect ice surface, just as they want it.

In this magazine we present the people who give their best each day at work

here at WM ice technics. We offer a fascinating insight into the enterprise and present the results of our teamwork: with our Mammoth Auto Drive and Pinguino models, WM ice technics has succeeded in developing two innovative new ice resurfacers for our customers.

We hope you enjoy reading and look forward to meeting you!

Markus Kofler

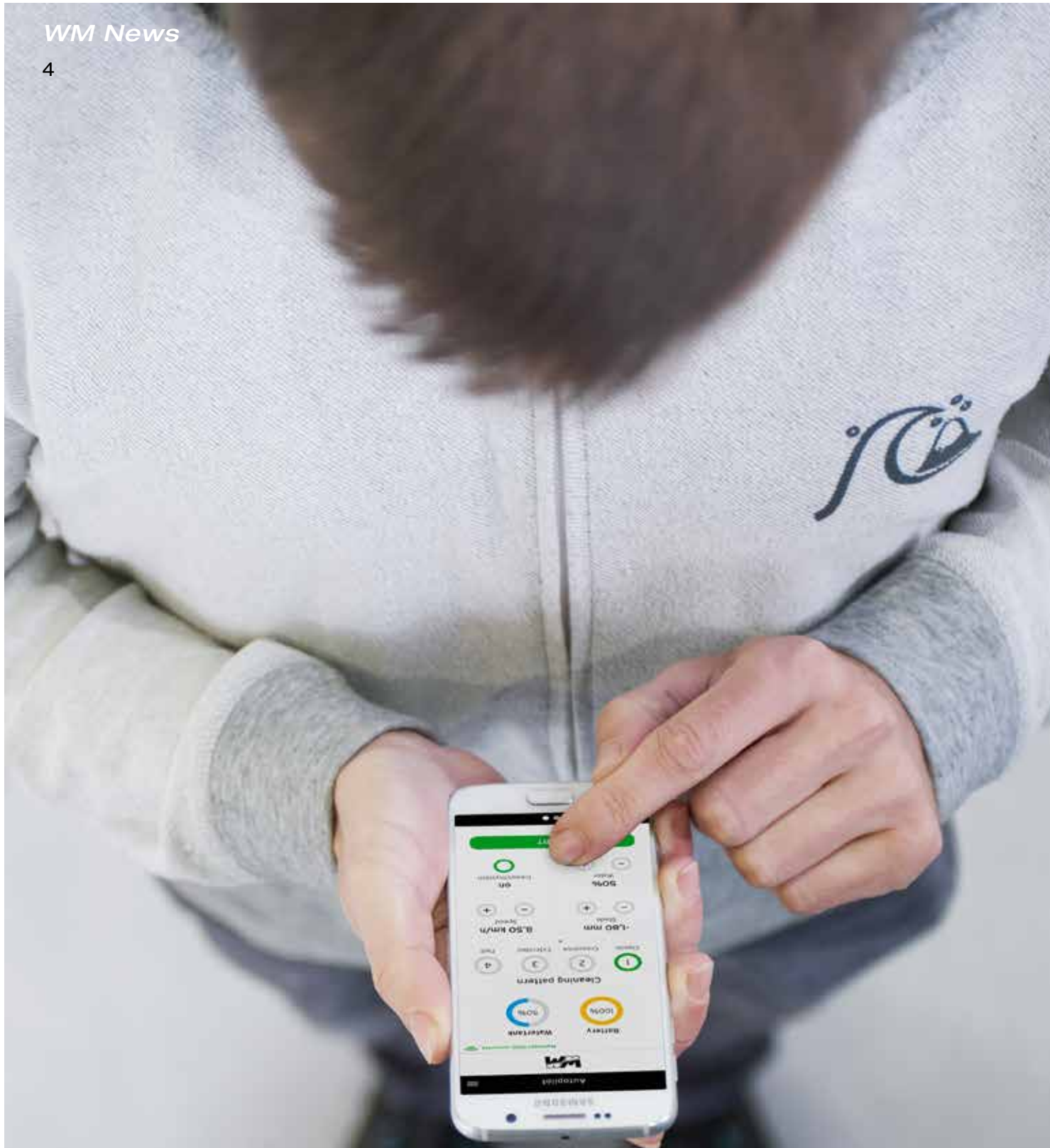
WM ice technics



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NEW!

***WM ICE TECHNICS PRESENTS ITS
SELF-DRIVING ICE RESURFACING
MACHINE - THE MAMMOTH AUTO DRIVE***



Many a visitor to an ice-rink will in future rub their eyes in surprise: an ice resurfacer is doing the rounds – with no one in the driver's seat! This is now possible thanks to WM ice technics, the home of innovative ice resurfacers in South Tyrol, Italy. In 2017 the company developed its self-driving Mammoth Auto Drive, which can automatically resurface regular ice rinks. Welcome to the future!

But that is by no means all: WM Mammoth offers plenty of other advantages:

- » Mammoth Auto Drive has a snow tank volume of 3 m³ (compressed 3.6 m³) with a water tank capacity of 1,000 litres.
- » LED lights ensure low energy consumption.
- » The extra seat means passengers can be carried for marketing actions.
- » The cab height of 2.52 metres ensures optimum visibility of the entire ice rink, including obstacles such as grandstands or entrances.
- » The conical snow tank is simple to empty and ensures a high degree of rigidity for the machine.
- » The comfortable driver's cab has a sprung seat, while the wide-area glazing provides all-round visibility.
- » The driver can control all important functions with the joystick: these are visible at a glance on the colour display.
- » The horizontal spring travel of the edger (approx. 5 cm) allows it to adapt to the edges and guarantees fatigue-free working.
- » The machine has an electrical wiping cloth lifter that lifts the wiping cloth when this is not in use.
- » The quick-change system for the blade minimises the risk of injury.

„Automation and assistance systems are the future“

Mr. Kofler, why is there a need for a self-driving ice resurfacer?

Markus Kofler: It is not easy for the operators of larger ice rinks to find qualified personnel to resurface the ice to a professional standard. Our self-driving WM Mammoth Auto Drive is the solution, as it assists the driver, who simply drives the machine onto the ice surface. It then covers the ice surface on a pre-defined route and resurfaces it as desired. The driver then only has to empty the snow tank and drive the machine back to its starting point. Ice resurfacing thus takes an exact amount of time: and time is particularly limited between ice hockey matches. The Mammoth Auto Drive ensures that operators and organisers can keep to this schedule while resurfacing the ice as efficiently as possible.

So automation is also making its mark on ice surfaces?

Markus Kofler: Correct, we are only at the beginning of the process! Automation and various assistance systems will become increasingly important in our sector. At WM ice technics we have been equipping the Mammoth model with an automatic mode for years now. This makes it possible to start all working units automatically at the push of a button. The self-driving Mammoth simply takes this assistance system to the next stage.

How complicated is it to start up the Mammoth Auto Drive?

Markus Kofler: It is not difficult at all to adjust the machine and its route to

a particular ice rink. If necessary our service technicians can help, but in principle any technician can make the appropriate start-up adjustments. It is not a major task!

WM ice technics repeatedly produces technological innovations. Is there somehow a greater desire for progress in the mountains of South Tyrol?

Markus Kofler: Our location probably plays a role. Logistically our mountainous region has its disadvantages, nor do we have a low-wage economy here. The basic conditions for the series production of cheap mass-market goods are thus unfavourable. But we in South Tyrol do have one huge advantage: well-trained and highly qualified specialists! This allows us to manufacture high-quality products and continuously further develop them. Innovation is for us not a necessary evil, however: on the contrary, we enthusiastically develop new technical solutions for the benefit of our customers.

While the motor industry is only now facing radical technical changes, it was over ten years ago that WM ice technics launched its first all-electric ice resurfacer with maintenance-free electric motors. How was this possible?

Markus Kofler: In contrast to the vehicle industry, we made the jump to all-electric machines in 2004-05. One of the reasons is that ice resurfacers do not face the same weight constraints as cars. The machines do not have to cope with significant gradients. Even a large, heavy battery will thus not sub-

stantially limit efficiency. Nor is range a major factor, as an ice resurfacer is always working in a limited area and recharging is therefore possible at any time.

Did you have no doubts about this all-electric concept?

Markus Kofler: Sure, at the beginning the all-electric drive was regarded quite sceptically, in particular as regards the performance of the ice resurfacers. We carried out numerous tests, allowed customers to try out the machines and, finally, everyone was happy with



the result. So now the WM Mammoth, just like the WM evo² for years now, is offered with a steplessly adjustable all-wheel electric drive. In terms of propulsion systems we have thus for a long time been where the automobile industry is only now starting out.

Will electrically-powered machines become generally accepted in future?

Markus Kofler: Of that I am sure! The triumphant advance of all-electric ice resurfacers will continue: one of the major advantages is their low operating costs. Depending upon their size, these machines may cost somewhat more to purchase, but the extra cost is recouped over the following years. The operating costs of an electrically-powered ice resurfacer are around one quarter of those of the petrol or diesel variants. ■



„Of particular value to us are the people who have great expertise in their areas. They make it possible to develop complex projects and bring them to the production stage. Our teamwork covers a wide area, as we design and make everything – from the mechanical aspects to the electrical installations and software – under one roof. This allows us to react quickly and directly to customer requests. Innovations can easily be implemented, which is a great advantage. And, last but not least, we have a great working atmosphere!“



Markus Kofler

30 years old, he came across WM ice technics by chance in 2001: he wanted to expand his training as an apprentice electrical engineer with experience in the mechanical engineering sector. In 2007, with his training finished, he joined the enterprise as a member of staff: first in quality control, while today he works in research and development, programming the ice resurfacers and advising customers.

DESIGN

„WE THINK OF THE CUSTOMER RIGHT FROM THE DESIGN PHASE!“



Martin and Bobo, what are the starting conditions for the new design of an ice resurfacer?

Bobo: We first have to determine the customer's wishes and what is needed. This gives us a starting point, for example the overall size of the machine or the capacity of the water and snow tanks. On this basis I can design the machine on the computer, component by component, so that it will function in theory. We then build the first prototype and see during various

test runs whether it will function properly on the ice or whether adjustments are necessary.

Martin: It is of course an advantage that we all have a very wide range of experience, know-how and specialist knowledge. This allows us to realise our ideas in the way that we imagine them, with everyone contributing their share.

What does WM ice technics consider to be especially important for its machines?

Bobo: One goal is always to design components so that they are both high-quality and functional, while keeping costs under control. It is far more difficult to design something simple and functional than to realise a complicated design: you always have to consider what is really required or where simplification is possible, all without compromising quality or functionality. Feedback from our colleagues is very helpful in this respect.

Martin: The entire chain has to be considered in design. Thus we have to be sure from the outset that the machine can be assembled easily and quickly. It must also be user-friendly, safe and easy to maintain. And of course it has to be capable of resurfacing the ice perfectly!



Pinguino is the latest model that you have developed. How did you come up with the idea of designing an ice resurfacer for mobile ice rinks?

Martin: The trend for mobile ice rinks is increasing. But there was no machine capable of resurfacing such small areas – just large machines or a brush! Willy Mulser produced a prototype of this size some years ago... since then it was kept under a tarpaulin, but we did not forget it. We knew

that we could build a cool, innovative machine – the first ice resurfacer where the driver sits in front!

What was the biggest headache in developing the Pinguino?

Martin: The biggest challenge in a machine of this size is integrating the planing function. This may sound simple, but the low deadweight of the machine made it quite a complicated task. But a clever blade position and



Bobo Neulichedl

22 years of age, he completed technical high school and has worked in the mechanical engineering department at WM ice technics since 2015. Bobo enjoys playing on his computer for the design and optimisation of ice resurfacers.

„To be honest I did not think after finishing my schooling that I would be designing ice resurfacers. But now I have a real passion for them! Working at WM ice technics is fun because everyone is a specialist in their particular field and the teamwork is great.“



Martin Zemmer

30 years of age, he completed his apprenticeship as a mechanical engineer with WM ice technics. Taking things to pieces and putting them back together again is something that has fascinated him since childhood, because „I always wanted to know what was inside“. Martin helped develop the WM Pinguino, performs the quality assurance and final inspection on each ice resurfacer and also works in customer service.

a suitable drive system provided the answer!

The Pinguino boasts a strikingly modern design...

Bobo: Yes, it is not just a continuation of our line of „ice animals“. The futuristic, dynamic design of the Pinguino draws on that of the Mammoth, and many elements are reproduced. We wanted to create a consistent design for all of our ice resurfacers.

You designed the Pinguino in just nine months. How was that possible?

Bobo: In a word, enthusiasm. Everyone set to their respective tasks and we pursued the common aim of developing an innovative ice resurfacer. This close co-operation helped enormously – not only in terms of speed, but also quality.

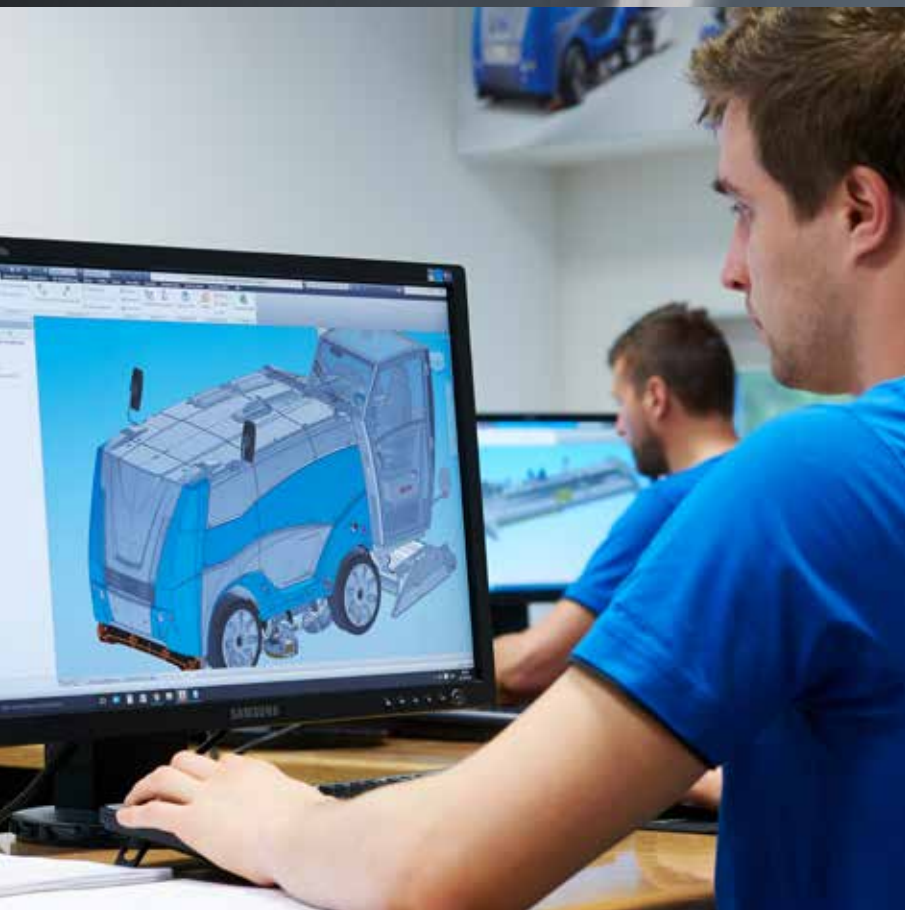
Martin: We are all highly motivated people who love playing around with technology and experimenting!

„We are all highly motivated and enthusiastic about technology here. When we design a machine, we want it to work smoothly and be sure that the customer will be satisfied with it.“ ■

WM ICE TECHNICS

A HOTBED OF INNOVATION FOR ICE RESURFACING MACHINES

Thirty years ago, Willy Mulser made his daring bid to construct a machine that would resurface ice rinks, perfectly and efficiently. Today WM ice technics from South Tyrol in Italy is a market leader in the production of high-quality ice resurfacers. The factors underlying its success are its collected know-how, precise working, love for innovation and close contact with customers. WM ice technics has grown from a small-scale craft enterprise, making technically advanced products to order, into a small industrial company that operates series production and employs 25 staff.



1986

Prototype WM 2300

The prototype was the result of a year's tinkering. A particular highlight is the inclined snow tank meaning that the front cover simply has to be raised and the snow will fall out of the machine of its own accord.

1986

Unimog

Willy Mulser develops an ice resurfacing attachment for the Unimog vehicle company.

1987

WM 2500

This was the only model with a tilt-up snow tank and a 2500 mm planing unit.

1991

WM 2300

The first prototype is further developed as a carrier for auxiliary devices. The first WM 2300 model is exported to Langenthal in Switzerland.

1995

WM 2301 High Tech

This machine replaced its predecessor, the WM 2300, and was produced in petrol, diesel and electrically driven versions.



1998

WM 2070 Junior for smaller ice rinks

The machine had a plane width of 2.07 metres and was produced in petrol, diesel and electrically driven versions.

1999

WM 1700 Mini for mobile ice rinks

An innovative model with joystick control and only produced in a diesel version, the WM 1700 Mini was manufactured until 2009.

2002

WM 1150 Micro for smaller ice surfaces

This was an attempt to design a micro machine on the basis of a lawnmower tractor: in place of the coupled variant, the mower mechanism was replaced by a planing unit. Unfortunately the lawnmower tractor proved too light and the snow could not be collected properly.

2004

WM Evolution for large ice surfaces

An innovative model with a colour display and newly developed quick-change system. The electrical variant has maintenance-free AC motors.

2009

WM Compact for small ice rinks

The agile successor to the WM 1700 Mini, controlled via a pedal instead of a joystick.



2015

WM evo² for ice rinks and larger ice surfaces

The successor to the WM Evolution with a greater snow and water tank capacity. The planing unit with its quick-change system was further developed and the colour display increased in size. Available for the first time with a diesel motor with a particulate filter. Type-examination tested.



2015

WM Mammoth for regular ice surfaces

The new generation of WM ice resurfacers has an innovative design (ADI Design Index 2016) with full electrical drive. Type-examination tested.

2017

WM Pinguino for mobile ice rinks

With a length of 3 metres and a height of 2 metres, this is the smallest ice resurfacer in our range. Type-examination tested. Available from spring 2018.



2017

WM Mammoth Auto Drive for regular ice surfaces

WM ice technics presents its self-driving WM Mammoth Auto Drive ice resurfacer in November. ■

WILLY MULSER

I CAN DO BETTER THAN THAT!

In 1986 Willy Mulser, technical designer, company founder and managing director of WM ice technics presented his first prototypes for an ice resurfacer. What drove him, which innovations did he develop and what was the time like around the company's start-up?

Mr Mulser, how did you come up with the idea of developing an ice resurfacer?

Willy Mulser: Thirty years ago I was president of the ice-hockey club in Blumau, near Bozen, and as our team did not have an ice rink of its own, we always had to play away from home. I saw how much effort they put in to resurface the ice and I asked how much the machine they were using cost: an astonishing 90 million lire (around 45,000 euros)! I thought that, for all that money, as a machine-builder I could produce a substantially better design myself.

How long was the development time for the first prototype?

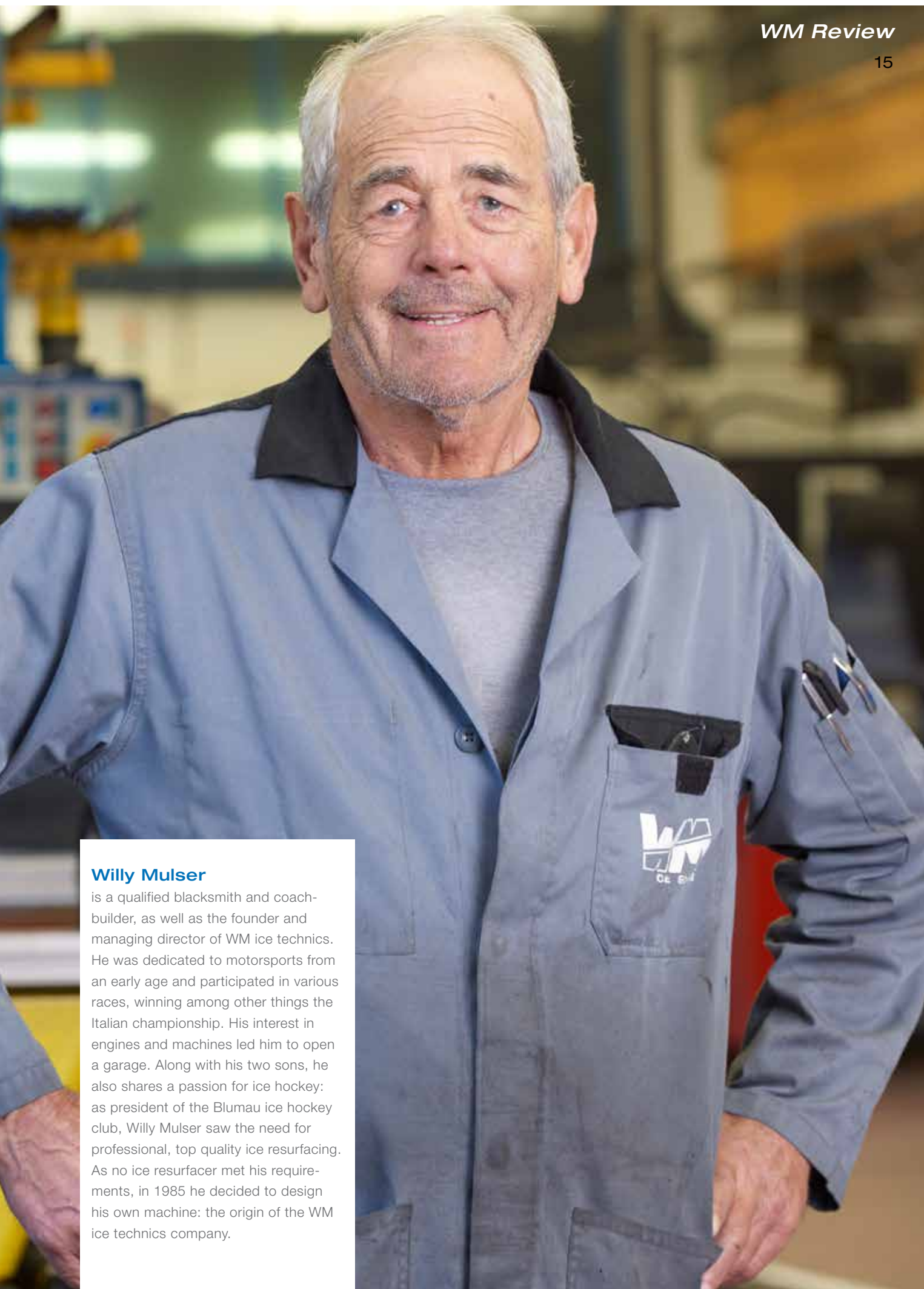
Willy Mulser: I played around with the idea for a good year and finished the first prototype in 1986. We tested it on the ice rink up on the Ritten mountain

and the technician was very enthusiastic: he encouraged me to specialise in the design of ice resurfacers. Two years later and my second prototype was finished. It is still in use today on the speed skating track and the ice-hockey rink up there!

What is so different about your designs?

Willy Mulser: Just about everything! For example, my ice resurfacers have an inclined snow tank: you just have to lift the front cover and the snow falls out of its own accord. I also fitted the machine with an electric blade adjuster, allowing the blade to be adjusted by even a few tenths of a millimetre with just one push of a button. The edger was also completely new at that time: I fitted it directly on to the machine, although everyone told me that was impossible. I however thought that it would be practical if the edge of the ice could also be planed as part of the process. I also designed the machine with a driver's cab so that the technician can work in the warmth. Today it is not as cold as it used to be, when temperatures of minus twenty were not unusual: the ice man would turn into an iceman!





Willy Mulser

is a qualified blacksmith and coach-builder, as well as the founder and managing director of WM ice technics. He was dedicated to motorsports from an early age and participated in various races, winning among other things the Italian championship. His interest in engines and machines led him to open a garage. Along with his two sons, he also shares a passion for ice hockey: as president of the Blumau ice hockey club, Willy Mulser saw the need for professional, top quality ice resurfacing. As no ice resurfacer met his requirements, in 1985 he decided to design his own machine: the origin of the WM ice technics company.



What are the innovations you are now producing in your workshop?

Willy Mulser: In the past, resurfacing the ice meant spraying it with water from hoses, which was very time-consuming. So I developed a water sprayer: I fitted a pump to the machine to suck in water from the water tank and spray it some ten metres up into the air so it would rain down on the ice surface and be more evenly distributed. I also designed the Whiteman, a device to colour the ice gleaming white so the surface would look much better. Some of my ideas have been taken up by others – but for me the most important thing is that development continues to make progress.

Where do you get your ideas from?

Willy Mulser: I am in constant close contact with the people who use the ice resurfacers. I have had numerous lengthy discussions with the technician up on the Ritten. He learned his job from the bottom up and knows exactly where there is a need for improvement or what he wants from a machine. I

then built a machine to match his suggestions.

Do you have any special method to find the right solution?

Willy Mulser: You have to try everything! First you have to recognise the problem clearly and then try out the hundreds of possible approaches in practice until you find the right solution. There is in my view no one brilliant idea that will suddenly come down from heaven; rather, you often have to think and experiment for years – this is the only way to ensure development! There is ultimately a solution to every problem – you just have to persevere. As a mechanic I could implement many a good idea, as I have a good spiritual guide to help me.

What is for you the most exciting thing about developing a product?

Willy Mulser: Making something that others cannot! I have enormous confidence in my abilities – but then I really have no choice. Who will believe in me if not myself? And there are also plenty

of people who are ready to help. I always compare the work of a developer with that of a farmer: you sow, but you never know what you will reap or even if there will be a harvest at all. You mustn't give up and then you will surely achieve your aim.

What were the initial problems you faced?

Willy Mulser: The biggest problem was financing the ice resurfacers. At first we were fighting for survival. We had to establish a new product and get the money to develop it. That was difficult. In America, if you have a good idea you can be sure of selling it. In Europe on the other hand developers face scepticism and people demand 150% security. Fortunately my wife looked after the financing aspects – she has a real gift for it! I was also fortunate that people trusted me as a person and believed in us. Some of our first customers paid upfront for their machines even before they received them, just so I could continue working on them.

How did your first customers react to the WM ice resurfacers?

Willy Mulser: We presented the first prototypes in Switzerland and people were delighted. But the Italian Lira was overvalued in the 1990s and the machines cost too much. In 1992 the devaluation of the Lira occurred, which helped us and many other enterprises in South Tyrol and Italy. We were then able to sell the first machines in Switzerland, in South Tyrol, in Austria and soon throughout the world. Our production had a job to keep up with

demand! I would often spend all day in the workshop and then go and visit customers in the evening. Fortunately I have never been ill in my life – I have never had the time.

How do you see the future of WM ice technics?

Willy Mulser: We today have a fantastic, thoroughly competent young team. Everyone does their utmost in their particular area and helps in further developing both the machines and the enterprise. I just concentrate

on the mechanical aspects, which is what I know best. We have now been in business for thirty years and have always been leaders in technological development – and so it should remain!

What is the customer feedback you most like to hear?

Willy Mulser: When customers thank you for supplying a machine that lets them do their work really well. I am also always delighted to hear that we are the number one. ■



Waltraud Mulser

wife of Willy Mulser, she is the guiding light of the company. She took care of the company's financing, organisation and administration, in particular during its start-up phase. Waltraud Mulser was heavily involved in setting up the network of representatives for WM ice technics and still today keeps in regular touch with its long-established partners. Even after thirty years she comes into the office each day to perform numerous administrative functions.

WM ICE TECHNICS

„TECHNICALLY ADVANCED MACHINES TO MEET EVERY CUSTOMER REQUIREMENT“



Mr Sparber, WM ice technics has grown from a craft enterprise into a small industrial enterprise that now operates series production. To what extent do customers benefit from this expansion?

Mirko Sparber: The customer gains the advantage that ice resurfacers can be supplied very quickly: for example, if necessary we can deliver the WM Mammoth within two weeks. This is made possible among other things through our structured and planned workflow. In the past we would only manufacture from the summer to the winter months: there was no production in the spring or early summer. Rising demand has seen us establish-

ing continuous manufacturing in recent years so that we can promptly meet our customer orders. Our machines are series-manufactured following a type examination, so that no further tests are necessary after final inspection and the machine can be delivered immediately after the final quality check.

All departments are under one roof in the WM ice technics production plant. Does this also aid the prompt completion of orders?

Mirko Sparber: Of course! The interaction between the various departments accelerates the manufacturing process and makes short response times pos-

sible. Special customer requests can be directly clarified: what is feasible, or which components will have to be specially made in our manufacturing department. These matters can be discussed in an internal planning meeting with all those involved so that we can efficiently produce what the customer wants. Various options can still be installed even after purchase.

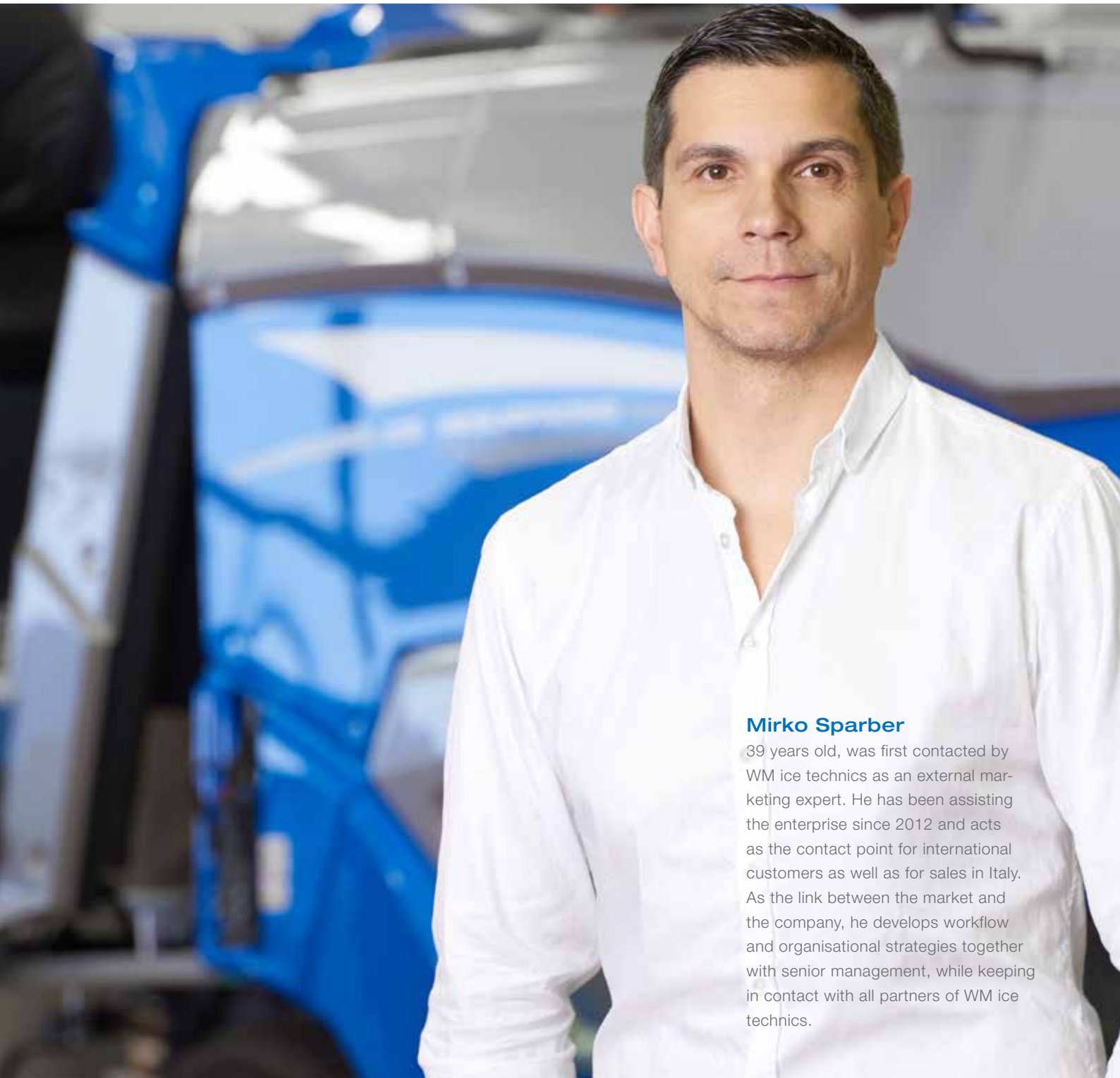
Does series production also increase product quality?

Mirko Sparber: It ensures that all models will meet the same quality standards that are usual in the motor industry. In addition, three of our four ice resurfacing models are type-examined, thus guaranteeing a high degree of health and safety protection for the user that goes far beyond the minimum standards.

The Pinguino and self-driving Mammoth models are the latest additions to the WM ice technics product portfolio. Have you stopped with the innovations for now?

Mirko Sparber: Certainly not! We now have fully functioning ice resurfacers in all categories – for mobile ice rinks, regular ice tracks or ice rinks – so customers can find a technically advanced, state-of-the-art machine for every requirement. But we are definitely not resting on our laurels! We are continuously optimising our existing machines and new developments are sure to follow. ■

„WM ice technics is an enterprise with incredible potential! I am delighted to support it in its development and am pleased to be part of its growth. Strengthening the WM ice technics brand, keeping in regular contact with all our partners and welcoming new developments all makes for challenging but exciting work!“



Mirko Sparber

39 years old, was first contacted by WM ice technics as an external marketing expert. He has been assisting the enterprise since 2012 and acts as the contact point for international customers as well as for sales in Italy. As the link between the market and the company, he develops workflow and organisational strategies together with senior management, while keeping in contact with all partners of WM ice technics.

WM Everything produced in-house

20

MAKING PROGRESS TOGETHER





The professionals at WM ice technics are not lone warriors: they enthusiastically work together as a team. It is to their benefit that all phases of production are carried out under one roof at the company's Blumau plant, where strategies are developed, customer requests received, ice resurfacers designed, numerous individual parts manufactured, combined into modules and assembled as the finished machine. Everyone does their best in their given area, as individual members of staff design, weld, mill, install, check, laugh and play around in the search for solutions. Everyone contributes their specialised knowledge and practical experiences so as to recognise and implement opportunities for improvement. Ideas are exchanged, issues resolved, developments promoted. Why do they all this do? In order to produce the perfect ice resurfacer, something of which they can be proud and with which the customer will be happy. ■



MANUFACTURING

**„PRECISION MANUFACTURING HAS
NUMEROUS ADVANTAGES OF ITS OWN!“**



Tobias, which machine parts do you make?

Tobias: We manufacture all the precision turned and milled pieces as well as doing the sheet-metal working. The most important components of our ice resurfacers are thus produced in our own manufacturing department: milling, drilling, turning, welding and bending are all part of the job! We only get the standard elements from manufacturers who we know can supply the right quality.

What is particularly important during the manufacturing process?

Tobias: Our aim is to manufacture all the individual parts so that they can

be installed problem-free and without major effort during final assembly. We even think a further step ahead: service technicians worldwide must be able to service the machines without difficulty, without special work or complex dismantling. They should be as happy with our machines as we and our customers are.

What are the advantages of machining in the production plant?

Tobias: We can ensure the highest quality standards because we take care to ensure precision machining for each individual part, then we inspect every element once again. We precision manufacture all our machine tools here, meaning higher quality and lower costs. It also makes us much faster and more flexible in producing our ice resurfacers because we can react directly to customer requests. As everything is done under one roof, from design and manufacturing all the way through to final assembly, this means shorter processes: an issue that would otherwise take a whole day can be clarified in two hours in-house.

How important are the exchanges with fitters to ensure constant optimisation of your machines?

Tobias: Very important! Our colleagues in final assembly provide us with valuable feedback, for example on how individual components or materials behave, such as the high-grade steel used in assembly. This



„It is a great feeling to make a perfect individual component from a rough piece of steel that may even form the very heart of the machine. It is a joy to see this shining part after it has been processed! I am also happy optimising processes: if at first I need five hours for machining and can reduce this to three, this makes me quite proud. I am always on the look-out for the finishing touch to improve matters!“



Tobias Falser

27 years old, he is a trained mould-maker who during his training at vocational school gained his first insights into industry and motor manufacturing. His father was a fitter and, even as a boy, Tobias enjoyed visiting the workshop. He has been working for WM ice technics for one and a half years now, as a machine-builder and as a department head in manufacturing. He co-ordinates and optimises workflow, ensures all components are available, finds solutions to problems, checks the quality of individual parts and promotes further development in the workshop.

is often only seen on production of a prototype. We can then react to these practical results in manufacturing and adapt and optimise individual components to the relevant conditions.

Does the same hold true for designing?

Tobias: Yes, absolutely! Just because something is well designed, it is by no means the case that it can also

be easily manufactured. The practical experience gained from manufacturing and final assembly are also incorporated into the design process, ensuring constant further development. We all enjoy developing new ideas and innovative solutions together! It is a great feeling to see how well the finished ice resurfacer works and what are the results of your own work. ■

Thomas Putzer

39 years old, he has been with WM ice technics for two years now. Thomas worked as a trained fitter for some years, then as a truck driver. Now he has returned to the occupation he trained for and works in the pre-assembly department, where he manufactures individual modules for final assembly and inspects them for quality. Thomas also ensures that all individual components are available and checks that the modules are in stock.

PRE-ASSEMBLY

***„HIGH-PRECISION WORKING
IS AN ABSOLUTE NECESSITY“***



„One thing about my work I particularly like is that I can determine my schedule and workflow very freely and execute them independently in arrangement with my colleagues. We also have a great team here: they all get on and work very well together!“



Thomas, what are your tasks in pre-assembly?

Thomas: We combine various individual parts into different modules. For example, we completely prepare the hydraulic tank for the ice resurfacers, equipping it with all the necessary pumps, connections or tank seals. We also prepare the carriages, the driver and passenger seats and numerous other modules here.

What are the conditions for manufacturing these modules?

Thomas: Pre-assembly is only possible because all our machines are con-

structed identically and manufactured in series, the same as they do in the vehicle industry. The construction method and the individual components and modules are thus standardised so we do not have to think each time how to put together our standard ice resurfacer models.

What are the advantages of this?

Thomas: It increases the efficiency of the final assembly process, which can be completed far more quickly and simply as the relevant modules are ready to hand. They just have to be mounted, attached and filled as necessary.

Does pre-assembly also increase manufacturing quality?

Thomas: Yes, definitely. As the individual modules are always pre-mounted by the same people, they know exactly what to look out for. We can concentrate on the respective modules, which

we know down to the last detail. There is also a detailed quality assurance inspection after pre-assembly and before we release the components for final assembly. We also mostly prepare the modules in series batches of twenty: this not only saves time, but also ensures the traceability of the individual series.

What special responsibility do you have when assembling modules?

Thomas: Speed is not the most important thing: on the contrary, meticulous and high-precision working is the order of the day. Just one error, such as not properly tightening a screw, which then causes oil to leak onto the ice surface, can have major consequences. Such apparently small oversights are mostly only discovered once the machine is in use somewhere else in the world. The costs of error tracing and recovery can then be enormous. ■



ASSEMBLY

***„TEAMWORK MAKES US
FAST AND EFFICIENT“***



Lukas, how much time do you need for the final assembly of the ice resurfacers?

Lukas: There are five of us in our team and the time depends on the model and the customer requests: we reckon with about four to five days for the final assembly of the Mammoth, approximately two weeks for the evo² and three to four days for the Pinguino. So if necessary a Mammoth can be supplied in around two weeks following order placement.

How can you manage completion so quickly?

Lukas: This is possible because of series manufacturing. The individual processes are set out in detail and checked, the assembly instructions are clear – all of this speeds up the final assembly. In addition the work process is very well structured: our manufacturing department produces

the individual components in such a way that we can install them without any extra effort. The pre-assembled modules also reduce the time required for final assembly, since these kits can be installed directly onto the machine. We thus work as a whole team, which in turn makes us fast and efficient. We have also developed various devices for the assembly to optimise individual work procedures.

Can special requirements also be incorporated into standard models?

Lukas: Sure, for example the Mammoth can be customised in over twenty different ways. We discuss the individual customer requests together in a planning meeting and check them for feasibility. Our task is then to manufacture the machines in such a way that the customer is satisfied. This is exciting, sometimes challenging, but also enjoyable work!



„I like putting a machine together from scratch: I can see each individual part that will go into the machine! It is often not possible to see from outside just how many individual components are used. Each individual part is important and must be precisely installed, otherwise the machine as a whole will not function. Assembling ice resurfacers is very varied, covering the hydraulic, electrical and mechanical aspects. That makes it fascinating: you are constantly learning new things in each area.“

What are the abilities required for a skilled assembly worker?

Lukas: Besides technical knowledge, you need to be able to work in a precise, conscientious way. And you should have a feeling for how to install

the individual parts in the right way. If for example we do not carefully tighten certain connections, that will not only mean annoyance for the customer, but also high costs. You always have to bear this responsibility in mind during

assembly! After completion our machines are once more carefully inspected: this final inspection takes around one day, depending on the model and equipment.

To what extent is your experience important in constantly developing the machines?

Lukas: We constantly exchange ideas with our colleagues in the design, manufacturing and pre-assembly departments: If several people pool their ideas and knowledge this can simplify or optimise numerous things. Our practical experiences all flow together and the result is further development.

How has the assembly process changed as the enterprise has grown?

Lukas: We have introduced an exact planning and execution process so that we can be sure to meet the agreed delivery deadlines. Before we had just one production line that only ran at certain times, whereas now we manufacture our ice resurfacers on two parallel lines throughout the year. ■



Lukas Valtingoier

26 years old, he completed his training as a machine-builder with WM ice technics. Lukas has been working for the company for eleven years and is a department head in assembly. Along with final assembly, he plans the workflow to ensure delivery deadlines are met.

HIGH QUALITY FOR LONG-LASTING PERFORMANCE

For its electric ice resurfacers, WM ice technics has chosen the Selectiva battery charging system by Fronius. Why?

There is plenty to think about when purchasing an ice resurfacer; a battery charging system is perhaps not up-permost among such thoughts. But, as Markus Kofler of WM ice technics explains: „This has wide-ranging effects on the running costs and energy efficiency of the machine. It can significantly influence the battery’s lifetime as well as the energy and maintenance

costs“. Ensuring the highest quality in this regard is also a vital point for him – and thus WM ice technics has decided for the Selectiva battery charging system by the leading technology company Fronius. „This gives us a strong partner who can offer a unique solution with international service centres“, says Markus Kofler, „Fronius and ourselves have the same goals as

regards quality, innovation, reliability and customer friendliness, meaning we can work closely together.“

Innovative Ri charging process.

Even the Fronius production system is different from the usual: their battery chargers are made to order in the Austrian town of Wels, with one



Andrea Baldacci
Fronius



employee completing the process from beginning to end. The intelligent Ri charging process is unique and patented: „A battery is a bit like a sponge: if the sponge is new or dry, it is also more absorbent, so it can absorb more water faster. If the sponge is older and thus more porous or wet, it takes longer to top up with water. The same principle applies to charging the battery with a current“, says Andrea Baldacci from Fronius. The Ri charging process determines the battery condition via its internal resistance (Ri). The battery charger can then automatically recognise the battery's age and charge level and adapt the charging process accordingly: the battery is supplied with no more current than is needed for a full charge. The advantages are significant: battery lifetime is maximised while charging losses are

minimised. Fewer explosive gases are released during the charging process and the well-known „charging smell“ is hardly noticeable.

Increased energy efficiency, reduced operating costs.

The Selectiva battery charging system can do more, however. With an overall efficiency of up to 84%, current consumption is significantly reduced – up to 30% depending upon application. The enterprise can also accurately control current consumption over time and make use of cheaper electricity tariffs, for instance overnight. The cost-saving Ri charging process also avoids battery overloading and thus energy loss. Damage to the battery is likewise prevented, reducing maintenance costs.

„This high-quality charging system is more expensive to buy, but will substantially save in long-term operating costs“, says Markus Kofler. „Buying quality pays off in the long run!“

USB interface for updates and data export.

All data can be evaluated via an USB interface: application errors, incorrect adjustments, defects or misapplications are thus immediately visible. The I-SPoT Viewer tool gives a perfect overview. „We also use the interface for software updates. Customers thus benefit from our developments and the battery charging system always reflects the state of the art“, states Andrea Baldacci.

Extremely user-friendly.

Multi-coloured LED lights indicate the charging status. „As well as full charge, the user can see when the battery has cooled down and is thus in its optimum state for use“, says Andrea Baldacci. Top-up charging is also fully possible. The battery chargers can be connected to the battery and various batteries used – forklift trucks can also be charged using the same battery charger as for the ice resurfer. The compact and light battery charging system saves space and, should a problem arise, an ingenious service concept permits rapid on-the-spot maintenance by certified personnel. The battery chargers themselves are maintenance-free.

For further information see www.fronius.com ■

BERNHARD LEIMEGGER TRUST IS GOOD, INTEGRATED SAFETY IS BETTER



Certified safety: as the only manufacturers on the international market, WM ice technics submits its Mammoth, evo² and Pinguino ice resurfacers to a type examination.

Every machine has to meet the rules and standards set out in the European Machinery Directive 2006/42/EC. These regulations serve to ensure safe working, prevent accidents and protect the health of users and persons in the vicinity. In most cases the manufacturer will issue self-certification to state that it has met all the prescribed rules and standards. The necessary inspections are performed by the manufacturer, who then issues the relevant declaration of conformity (CE-marking).

WM ice technics uses an independent inspection body.

WM ice technics however went one step further from the very outset: „Before the manufacturer signs the declaration of conformity, it is vital first to know the extent of liability in relation to the users and surroundings. This must also be repeatedly and critically analysed“, says Bernhard Leimegger of consulting firm Systemt, which assists WM ice technics in product certification. Thus it was decided, in addition to the in-house inspection process, to have the Mammoth, evo² and Pinguino ice resurfacers inspected by an independent third party: Suva, the largest Swiss accident insurance firm and a

designated body for type examinations. This is no matter of course: at present no other manufacturer of ice resurfacers on the international market subjects its machines to such type examinations.

Far beyond the minimum standard.

The comprehensive inspection is carried by a team of experts that checks the machines for practically every aspect of product safety, including safety in use and user-friendliness, ergonomics and human-machine communication, for example by means of the operating instructions or display information. The inspections also concentrate on checking the risk-free operation and maintenance of the machine. „The standards are far beyond the minimum“, says Bernhard Leimegger. „Certification provides the customer with the assurance that the machines have been examined in detail by an independent body in addition to the in-house inspections.“


The certification is valid for five years. During this period, proof of quality-assurance measures must be constantly provided to certify that each machine is identically built and that each individual model corresponds to the certified safety standards. The health and safety of users are the ultimate priority! ■





OUR MACHINES
LOOK AFTER
THE ICE.
WE LOOK
AFTER THE
RELATIONSHIP
WITH OUR
CUSTOMERS.

ALMOST EVERYONE SAYS THAT CUSTOMER SATISFACTION AND CUSTOMER CARE ARE THE HIGHEST PRIORITY. AT WM ICE TECHNICS WE ALSO DO EVERYTHING WE CAN TO ACHIEVE THIS.







User friendly from A to Z

We think about our customers: not just at the moment of sale, but long before, when designing our ice resurfacers. How can you tell? We deliver a high-performance machine that is convenient and easy to use, from application to maintenance.

The right machine for each ice surface

Whether for a mobile ice rink or a large skating rink, we offer a technologically advanced ice resurfacer for each surface. We will advise you honestly on which model is best for you.

Special requests? Of course!

Numerous optional extras for standard models, customisation or even individual manufacture: special customer requests are for us a matter of course, not an annoying add-on! Retrofitting may even be possible after an order is placed.

Punctual delivery

Order today, delivery in two weeks – no problem for WM ice technics! We will meet the agreed date of delivery and keep our word.

Your safety and health have priority

Your safety at work and protecting your health are priorities for us. We thus build our ice resurfacers as reliably and ergonomically as possible: independent type examination by the certified accreditation body Suva in Switzerland will confirm this.

Reliable service wherever you are

Both our customer service team and the service technicians of our sales partners offer the best possible care, directly on the spot and when you need them. Whether for start-up, repair or maintenance, we are always here for you, whether in person, by smartphone or via remote maintenance!

YOU NEED A REPLACEMENT PART? NO PROBLEM!

Mr Mulser, how many parts actually make up an ice resurfacer?

Werner Mulser: Each of our machines consists of about 2,000 to 3,000 individual parts, many of which we make to a high standard ourselves. That is no mean quantity!

How do you keep track of them all?

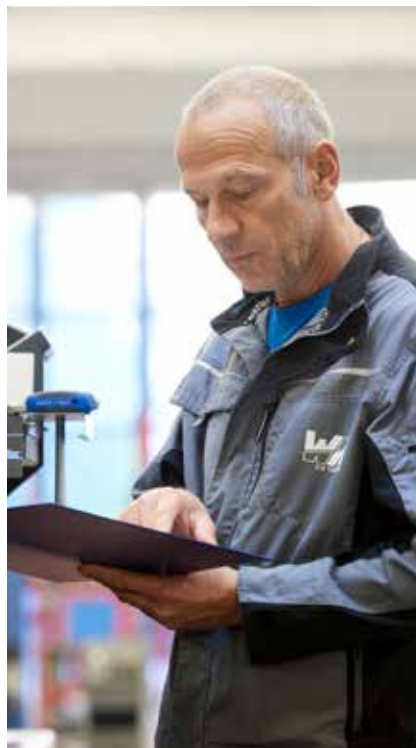
Werner Mulser: We have drawn up detailed replacement part catalogues with drawings and given these a code so that customers can conveniently order their parts. We always have around 5,000 replacement parts in stock: if a customer thus needs a certain part, we can supply it as fast as possible.

The underlying logistical challenge must however be significant. What are the important aspects?

Werner Mulser: On the one hand we naturally need to have a full overview of our stock of replacement parts: if a customer wants a part, it is usually needed as fast as possible. We must therefore have what is required available: some of the parts that we acquire from other manufacturers may have a delivery time of between six and twelve months. Prudent planning and organisation of stock are thus vital. The shipping of replacement parts can also

be quite complex to organise: differing customs regulations and other factors often mean a lot of red tape. But our customers can rest assured that they will get what they need from us! ■

„Everyone here really does help everyone else – it is wonderful to see! We have a very good, enthusiastic team that tackles its work with great energy. Everyone has their own capabilities to contribute. We are all going in the same direction, which is what constitutes our strength.“



Werner Mulser

51 years of age, the son of company founder Willy Mulser and a part of WM ice technics since the very beginning. Werner showed his enthusiasm for technology as a boy, building himself a motorcycle and a go-kart: „I always learned by watching others“, he says. He has worked in every department of the enterprise and today mainly concerns himself with the organisation of stocks and the delivery of replacement parts.

ALL ABOUT WM ICE TECHNICS



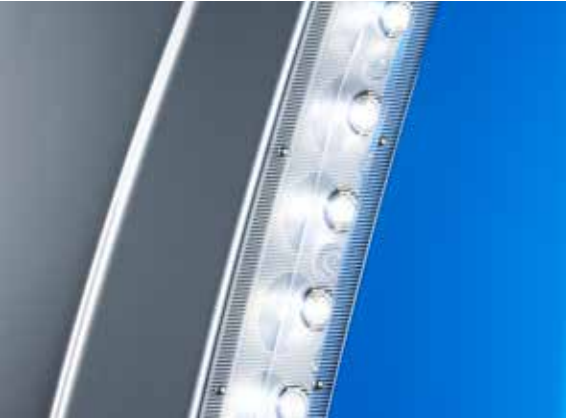
WM ICE TECHNICS AS A TECHNICAL PARTNER FOR THE 2017 ICE HOCKEY WORLD CHAMPIONSHIPS

It was a high point in the history of the company: WM ice technics was a technical partner for the **2017 IIHF Ice Hockey World Championship!** The event was held from 5 to 21 May 2017 at venues that included the LANXESS Arena in Cologne, Germany, with 16 teams from around the world competing for the title of ice hockey world champion. Up to six games were played each day on the ice – which had at all times to be in top condition. No problem for the evo² and Mammoth resurfacing machines from WM ice technics! ■



WM MAMMOTH IN ATTENDANCE AT THE ICE HOCKEY WORLD CHAMPIONSHIPS

As in 2017, WM ice technic's ice resurfacers will be in operation once again for the **2018 IIHF Ice Hockey World Championships:** Four WM Mammoths will ensure that the ice rinks are surfaced to perfection during the tournament! The 82nd men's Ice Hockey World Championship will be held from 4 to 20 May at Copenhagen's Royal Arena and at the Jyske Bank Boxen Arena in Herning, Denmark, where 16 national teams from all over the world will be battling for victory. Up to six games are played on the ice every day and, needless to say, it has to be in top condition for every one of them. A considerable responsibility for our WM Mammoths, who nonetheless mastered it to perfection in 2017! ■



WM MAMMOTH INCLUDED IN ADI DESIGN INDEX



ADI DESIGN INDEX 2016

The ADI Design Index, published annually by the Italian Association for Industrial Design, highlights outstanding product developments in the field of industrial design in Italy. Inclusion in the index is a true accolade: our joy at WM ice technics was all the greater when in 2016 our WM Mammoth received this honour for its innovative design. The product developments featured in the index are also considered as a preselection for the „Compasso d'Oro International“: presented every two years, this is a design prize of European renown and the oldest award in Europe for trend-setting industrial design. ■

OUR CHAMPIONS



Snow tank: 1 m³ (compacted 1,25 m³)



Snow tank: 1,8 m³ (compacted 2,25 m³)



Snow tank: 3 m³ (compacted 3,7 m³)

In conformity with Suva no. E 7138.e type-examination certificates



www.vitrac.it



evo suva^{pro}
CERTIFICATION CE



Snow tank: 4,1 m³ (compacted 5,1 m³)

In conformity with Suva no. E 7139.e
type-examination certificates

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