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# PERFORMANCE, COME RAIN OR SHINE

**Lycke Koersen, Maats, the Netherlands,**  
explains how important adaptable,  
high-quality equipment is when operating  
in extreme environments.

**A**s a pipeline equipment manufacturer and rental company, Maats is very aware of the widely differing conditions in which contractors have to work, from arctic conditions to extreme heat, and from monsoons and mud to extreme dry weather. In over 30 years, Maats has built up the expertise to perfectly match the quality and configurations of its equipment, with the circumstances under which it has to perform. When you ship your equipment all around the world, the word 'extreme' somewhat loses its original meaning, as the extreme becomes standard. Your equipment has to perform, come rain or shine (or heavy frost, or scorching heat...).

## **Equipped for the extremes**

Working in extreme conditions means your equipment needs to be outfitted for the specifics of the matter. As a rental company, Maats ships equipment to every far corner of the world; this means that the company's equipment needs to be up for any challenges that jobsites around the world may hold. As manufacturer of pipeline equipment, this means Maats takes those high demands into the values with which it designs and builds its equipment. To maintain flexibility, the company's equipment is, as standard, suitable for a wide variety of



terrain and weather conditions. Whether it's sales or rental, the standard of equipment has to be of appropriate quality, conversion and condition in order for it to do what it's meant to do, regardless of the circumstances.

No two jobsites are ever the same. Not only with regards to climate conditions, but also terrain as it widely differs and is not easily passable everywhere. That is why Maats' and Liebherr's pipeline equipment is designed for stability in all terrain conditions. Wide undercarriages, low ground pressure track plates and a low centre of gravity are already implemented throughout the lay-out of the machine. These factors highly optimise stability of the machines, whether they need to move around on muddy jobsites, on rocky slopes or in the fine sand of the Sahara desert.

Maats has seen firsthand that harsh working conditions will strain every nerve of the machine's components. Your machine has to take quite the battering from its surroundings, but downtime or obtaining spare parts (especially in a remote location) are costly and need



**Figure 1. Working in freezing temperatures calls for the right measures. Maats supplies an arctic conversion which allows equipment to work trouble-free in temperatures up to -40°.**



**Figure 2. The SR714 Welding Tractor has optimal machine stability and all attachments remain fully operational on inclinations up to 45°, allowing the machine to optimally function in difficult mountainous areas.**

to be avoided at all times. This makes it extra crucial to use the best and the right components. All Maats and Liebherr machines are designed with high-quality components, which can be optimally integrated to protect the components, limit wear and save fuel. Incorporating quality throughout the machine's lay-out highly optimises performance and provides technical reliability, even in demanding conditions.

Working in extreme conditions also calls for protecting the operator from the elements. By equipping machinery with enclosed cabins, with heater and/or air-conditioning, the operators are allowed to work in a conditioned environment. In the past, this was typically turned away by employers who deemed it as an 'unnecessary luxury', but over the last decade this has become more and more recognised as an important feature for both safety and performance of the operator. Especially in harsh conditions the operator needs to be able to optimally focus on his tasks, making it even more important to protect him from the impact of the outside environment. Providing a conditioned environment for the operator to work in allows him to fully focus on his tasks and safely perform his tasks, eliminating the risk of accidents, expensive downtime and repairs.

It is highly beneficial to work with equipment that is ready to handle any difficult conditions. But even having your equipment highly optimised for harsh conditions may not be sufficient for the absolute extremes. Maats has, over the years, come across some challenging working conditions, and for the absolute extreme temperatures, the company delivers its equipment specially outfitted with features to withstand the elements. The arctic conversion, for instance, includes a winter kit that holds components to suit working conditions up to -40°. Besides adapting the service items, the machine is outfitted with several extra components such as special batteries, heated components, preheating systems, undercarriage components, covers, double glazed cabins and more. By preparing its machines as needed, Maats can safely supply equipment that will withstand even the harshest specifics of a jobsite.



**Figure 3. The scorching heat of the dessert calls for a conditioned working environment to protect the operator from the elements and allow him to focus on the task at hand.**

## Suitable from the outset

Making your equipment suitable for extreme circumstances is partially a matter of equipping it with the right features, but that only serves a purpose if the original design is already made with those extreme circumstances in mind. That is why the materials, design and lay-out of the equipment are just as important. By selecting the right materials, the equipment is highly prepared for any extreme.

Those extremes can be temperatures and working conditions, but it could also be the physical boundaries

that can be stretched to its limit. A good example of that is bending equipment. Over the years, the standards for pipe steel have shifted from X52 to X70 and higher, with even X100 nowadays. Developments in pipe steel and pipeline design were way faster than the common lifecycle of the very machine that needs to bend the pipes.

This rapid development created difficulties with bending machines onsite, as bending the heavy-wall, high strength steel pipes released a whole new category of forces on the bending machines. One forthcoming problem that Maats detected in its rental fleet was that the frames

had trouble taking in these 'new' high forces during bending, which caused cracks in the frame and components to fail. That's when Maats decided to build its own bending machine; one that would be able to easily cope with the new pipe steel specifications, and be prepared to keep up with future developments.

By calculating strength and capacity for hydraulics and components, the needed force for bending high strength steel pipe and heavy wall thicknesses was ensured. After that, a comprehensive stress calculation was made in order to construct a frame that would be able to handle the high bending forces. The combination, in total, had a unique outcome; the Maats bending machines have the capacity to bend X100 pipe, up to 1 in. wall thickness of the largest loadable pipe size. By calculating the stress for several ambient temperatures, the machine is able to retain its bending specs even in arctic and tropical temperatures.

## Optimise maintenance and knowledge

Maintenance of equipment is always the key factor for optimal performance. Besides the scheduled maintenance and service, it is essential that operators perform a walk-around inspection, keeping track of any possible wear and identifying possible technical problems in time. Working in harsh conditions can be very demanding on the machine and components, adding



**Figure 4.** Prepared for extremes, the Maats bending machines can bend X100 steel pipe up to 1 in. wall thickness of the largest loadable pipe size. The specially developed frames allow the machines to even carry out work in arctic or tropic conditions without compromising its unique bending specs.



**Figure 5.** The advanced machine lay-out of the Maats RL24 provides a high lift capacity, great torque and optimal stability even in difficult ground conditions.



even more importance to performing the right maintenance and having the knowledge to do so. To make sure that both service personnel and operators are well informed of their tasks and specifics of the equipment, Maats prefers to have an extensive commissioning onsite. This way, the company is able to focus on any difficulties that the specifics of the jobsite may present and illustrate the best way to operate the machine in those specific conditions. The machines are equipped with very sophisticated and convenient features, and by learning to work with and maintain the machine in the best way, optimal use of the machinery is assured, productivity is increased and the risk of downtime is highly reduced.

Through commissioning and training, the company has – over the years – been able to reach a lot of operators and mechanics. Maats' mechanics have travelled the world to provide commissioning and training, and the company has welcomed many of its customers' mechanics at its premises in the Netherlands for schooling and training. Every professional will have a good understanding of their tasks, but getting a detailed explanation of the specifics of the equipment is very well received and – as Maats notices first hand with its rental fleet – largely contributes to safety, reliability and productivity.

## Summary

By setting high standards for the quality and configuration of your equipment, you can be prepared for a wide range of difficult circumstances. As both a manufacturer and rental company of pipeline equipment, Maats understands what is needed to optimise the performance and technical reliability of equipment. Harsh working conditions require high-quality equipment and smart solutions to withstand the specifics of a jobsite. Maats has had its equipment operate on jobsites around the globe for over three decades. The knowledge Maats has gained by delivering equipment to virtually every type of working environment, allows the company to translate the necessities into the design and performance of its equipment, and by providing extensive commissioning and training, it makes sure that the equipment is used to its fullest potential.

Extreme working conditions are demanding on equipment, which is why you should be demanding too. Demand the best to make sure your equipment is up for the job. As extreme working conditions push your equipment to the limit, Maats is making sure that limit is set high. 