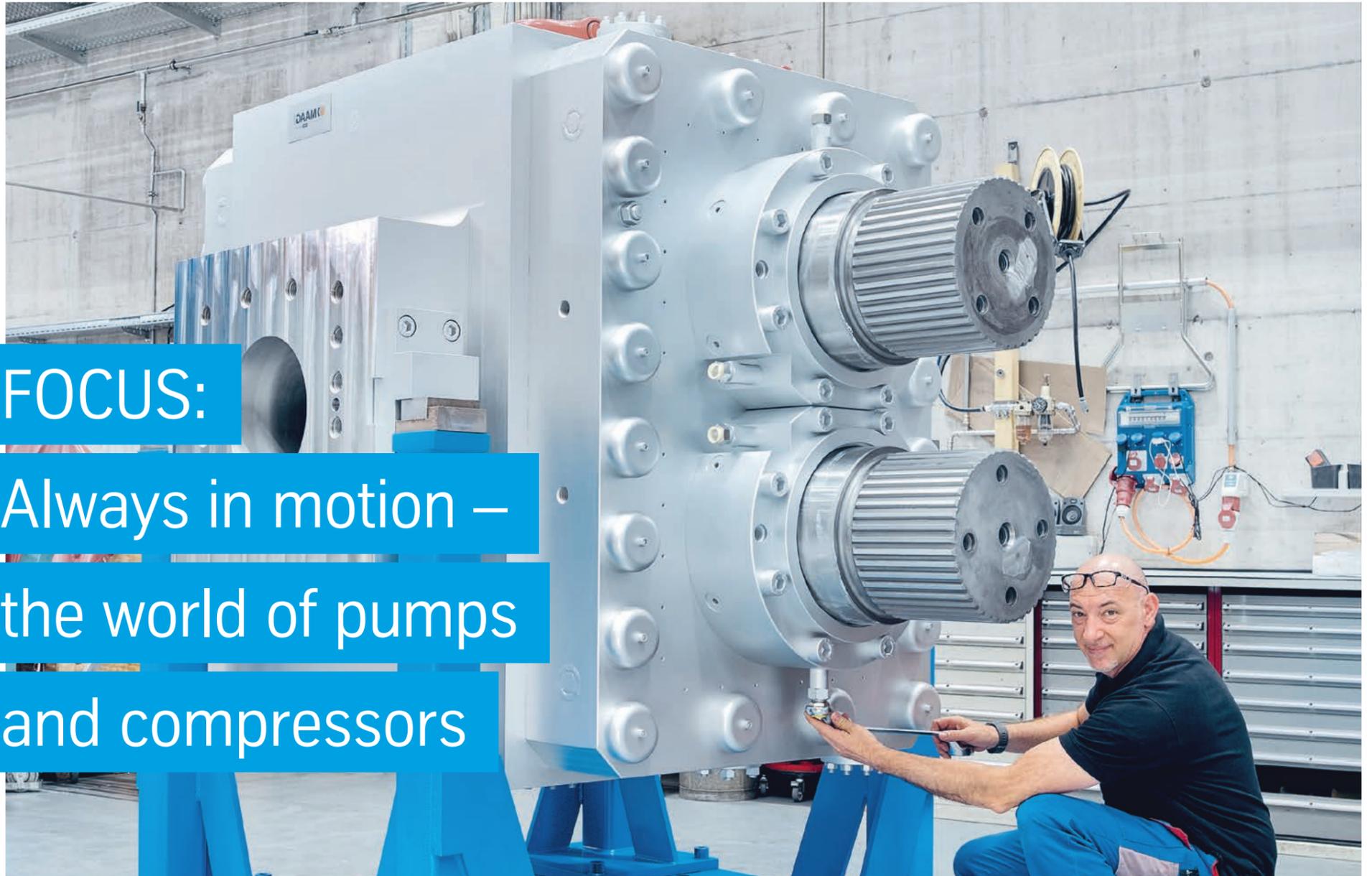


tk360

Customer magazine
thyssenkrupp Materials Schweiz AG
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FOCUS:

Always in motion –
the world of pumps
and compressors

Many Maag Pump Systems AG solutions need to withstand extreme conditions in daily use.

The strength
of steel for the
global market

Mobile walking excavators and special vehicles for sewer cleaning from KAISER AG, based in Liechtenstein, are in use in 116 countries worldwide. Behind this global success lies not only the great expertise of the company, but also a decades-long partnership with thyssenkrupp.

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In the end, it all comes down
to steel. Precision materials
for extreme conditions.

Whether it's gear pumps or systems for extrusion and granulating: Maag Pump Systems AG relies on highly resilient materials that are designed to withstand extreme pressures and aggressive media. Through ultrasonic tests, chemical analyses and precision processing such as deep hole drilling, thyssenkrupp ensures the quality and fitting accuracy of the components. The result is reduced downtime, faster production times and sustainable material cycles.

More on page 3

Save the date: See you in 2026!

This year, we will once again be exhibiting at important trade fairs and are excited about talking to you about innovative material solutions. We look forward to personal meetings and an exchange of ideas at the EPHJ in Geneva, the Fakuma in Friedrichshafen and the Eastern Switzerland Technology Symposium.

More on page 4



thyssenkrupp

Duplex 1.4462: a recommendation from practical application



Dear reader,

When I am asked in the course of daily customer contact about a material that is mechanically very resilient and can, at the same time, cope with demanding media, the discussion always tends to lead to 1.4462. And there are very good reasons for this – especially with regard to the forged version CUBEINOX.

Duplex steel combines a balanced mix of austenite and ferrite. For practical purposes, this means significantly higher strengths than those available in classic austenitic

stainless steels, combined with very good corrosion resistance. Especially when used for shafts, impellers and load-bearing components, this flexibility opens up considerable design freedom. Slimmer cross-sections, reduced material usage, and yet high operational reliability – these features are crucial to many designers in pump and compressor construction.

Another point that I always emphasise is the resistance to stress-corrosion cracking, especially in media containing chloride. Whether the medium is process water, seawater or chemically contaminated media, CUBEINOX-4462 provides an outstanding level of safety. A PREn value of 35 speaks for itself.

Why do we engage in forging? Quite simply because forged parts provide a dense, homogeneous structure with advantageous fibre orientation. This not only means extremely low-stress components but also a technology that pays off under dynamic stress and in terms of durability – aspects that are crucial in pump and compressor construction.

And last but not least, cost-effectiveness also plays a key role. The reduced nickel content makes CUBEINOX-4462 less susceptible to price fluctuations, and the higher strength often allows for material savings. Overall, the resulting material offers significant technical and economic advantages.

My conclusion: CUBEINOX-4462 is a well-established, tried-and-tested solution for sophisticated applications in pump and compressor design – provided that it is used in a deliberate and professional manner. We would be pleased to explain how this can be put to good use on your project.

Kind regards,

Reto Sennhauser
Project Manager Pumps & Compressors
thyssenkrupp Materials Schweiz AG



Materials under pressure – partners you can depend on

Have you ever imagined sitting in the capsule of a stratospheric balloon? As the distance between you and solid ground increases, countries and continents get smaller, and the atmosphere gets thinner. Without a doubt, this is an unforgettable experience that vividly shows how essential trust in materials and technology is as soon as extreme forces come into play. It is this dependability that makes all the difference when materials are under pressure.

In our daily practice as partners of industrial companies, topics such as costs, lead times and availability are just as much a challenge for our customers and us as pressures, temperatures and loads. Making the right decisions regarding raw materials and throughout the entire supply chain not only saves time and money but, above all, builds dependable partnerships. In this magazine, we show you in detail how such partnerships work in practice – and how all involved benefit.



Claudio Roth,
CEO thyssenkrupp
Materials Schweiz

For example, we support Maag Pump Systems AG in designing and manufacturing high-precision parts for the polymer and chemical industries that operate reliably even under extreme conditions. More than 20 years of cooperation with KAISER AG, based in Liechtenstein, is further evidence of this dependability: by supplying high-quality materials, we make a decisive contribution to ensuring that their innovative vehicles can maintain their quality leadership worldwide.

Our 360° service strategy goes far beyond mere delivery of materials. The responsibility is on our shoulders, from selecting the best metals for each high-pressure solution – including our own brands CUBEINOX, CUBESTEEL and CUBETOOL-STEEL for components subject to high loads – through to high-precision preliminary processing, and down to the last millimetre.

We are convinced that only genuine expertise in materials can lead to dependable systems that you can count on in any situation – both up in space and here on Earth.

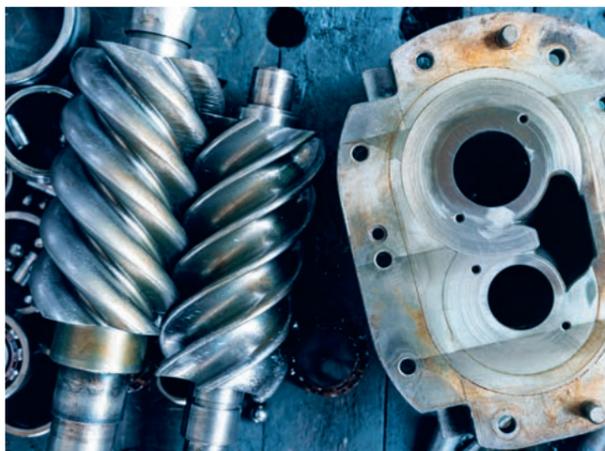
Kind regards,

Claudio Roth
CEO thyssenkrupp Materials Schweiz



Screw connections seizing up? Nitronic® 60 provides the solution

Anyone who has had to deal with V2A or V4A screw connections is familiar with the challenges associated with them: lubricants are (often) not permitted, and galling is practically guaranteed, especially when it's time to loosen the connection. With Nitronic® 60, we can offer you a tried-and-proven solution.



To prevent galling with screw connections, the use of Nitronic® 60 can make a world of difference.

Galling is a form of attritive wear affecting metal surfaces that can render a component unusable in seconds. This is a major challenge in four areas of application: threaded connections, valve linings, rotors of positive displacement pumps, and hinges for medical instruments.

Nitronic® 60, paired with austenite, duplex steels or martensitic stainless steels, offers a cost-effective way to control wear and abrasion at room temperature. In the high-temperature range, the silver plating of austenitic steels is no longer required; Nitronic® 60 is used without any coating.

We are pleased to make our expertise in the application technology of this fascinating material available to you, even for special dimensions or high-strength variants of Nitronic® 60. Nitronic® is a registered trademark of AK Steel Corporation.

Daniel Hagen / Sales Manager Special Alloys

When performance matters: Maag Pump Systems relies on proven materials expertise

Learn more about
Maag Pump Systems AG



Maag Pump Systems AG, based in Oberglatt, Zurich, is one of the leading providers of precision solutions for plastics and polymer processing, chemicals/petrochemicals and the food industry. With a broad portfolio of gear and melt pumps, as well as complete systems for extrusion, filtering and granulating, Maag supplies high-precision technologies that operate reliably and efficiently even under extreme conditions. We are proud to support the company with our materials expertise and supply chain solutions.

Behind the innovative solutions of Maag Pump Systems AG is also a complex history of materials, along the lines of “in the end, it all comes down to steel”. We are aware of our responsibility to contribute the best possible metallic materials with perfectly matched dimensional accuracy for the best pumps in the world. At the same time, it is important to strike the right balance throughout the supply chain to ensure reliable supply – because the supply chain for such products is more complex and more challenging than ever before.

Global procurement for maximum efficiency

We take on global material procurement for Maag Pump Systems, and in doing so, we maintain a well-planned quantity of specific materials in stock so that Maag can access the required materials at any time. It is our task to time procurement perfectly, understand the global flow of metal supplies and optimise every step of the supply chain – for maximum efficiency, dependability and materials availability. It goes without saying that only selected suppliers that have been pre-audited and meet the highest quality standards are considered. Thanks to the t-kontrol® app for optimising the transparency of supply chains, Maag also has a digital overview of the order documents at all times, which enables quick and easy incoming goods inspection in addition to the customer-specific packaging instructions. With t-kontrol®, we also provide Maag with an instrument that improves the traceability of the materials.

Materials expertise for maximum reliability

The requirements in the markets served by Maag Pump Systems are stringent. High pressures and temperatures, aggressive or corrosive media and the need for precise metering and minimal downtime require materials and systems of the highest quality standard. Maag meets these requirements with innovative technology and uncompromising precision – for processes that function reliably under the most extreme conditions. To ensure the longevity and reliability of its pumps, Maag relies on the expertise of thyssenkrupp Materials Switzerland.



Pump cover with special US certification. Pre-processed by thyssenkrupp.

Every material is rigorously tested

We are not just a supplier, but a 360° materials service provider: from the selection of high-strength materials to support in processing, whether for deep hole drilling, coarse machining or precision grinding of pump covers. Ultrasound tests, chemical analyses and appraisals of mechanical properties such as strength and impact tests ensure the flawless quality of the materials used by Maag. Even under extreme temperatures and taking into account national and international standards such as ASTM, AISI, ASME and the AD pressure equipment directive, the materials meet the highest standards.

A durable partnership that goes beyond deliveries

Thanks to short lead times and a comprehensive range of services, thyssenkrupp gives Maag Pump Systems AG the opportunity to reduce the manufacturing times of the pumps and increase production capacity. The close cooperation between our two

companies goes far beyond the supply of materials: each year, common goals are defined to ensure continuous performance improvements. Practical examples of this innovative collaboration include the use of high-strength materials for gears and sliding bearings and the recovery of raw materials for reuse in the materials cycle. These activities reduce downtimes and foster sustainability.



Guilherme Vargas
Director of Operations
of Maag Pump
Systems AG



“For us, the collaboration with thyssenkrupp Materials Schweiz is a real asset. We particularly appreciate the extremely fast response time and the impressive flexibility with which the team addresses our needs. Whether special steel as a raw material or precisely machined components, we can always rely on a solution-orientated, reliable implementation. Thanks to this partnership, we are able to advance our own projects more efficiently and with the highest quality.”

What really makes a high-pressure pump watertight?

The reliable sealing of a pump cover in a petrochemicals environment is the result of precise technology and careful assembly work. First and foremost, it is essential for the sealing surfaces to be an absolutely perfect match: by grinding or lapping, the metal mating surfaces are processed so precisely that they are smooth and flat to the nearest micron. This accuracy forms the basis for a reliable seal.

Once this has been achieved, the next important step is the choice of the seal. Depending on the pressure level, medium and temperature, a number of different sealing concepts are used – ring type joints (RTJ), metal gaskets and O-rings. Each type of seal is tailored to the specific operating conditions to ensure maximum safety and durability.

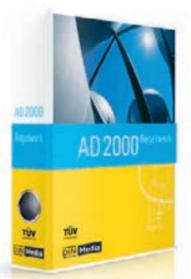
Equally important is the exact screw preload. The lid screws must be tightened in precisely defined steps and sequences so that the seal is evenly pressed in place and fits smoothly. Only in this way can the necessary surface compression be achieved, which enables a high-pressure seal. Another key point in selecting the seal is to find suitable materials that can withstand the chemical requirements of the medium as well as the extreme pressures and temperatures. High-strength steels, corrosion-resistant alloys and temperature-stable seals are standard.

In conclusion, careful assembly and inspection, particularly through standardised pressure tests, ensure that the assembled pump safely fulfils its role and withstands the high requirements of petrochemicals. At thyssenkrupp Materials Schweiz, we are well acquainted with all the processes. We support our customers individually according to their needs – and always supply the best possible quality.

What is the AD 2000 code?

AD 2000 is a set of technical rules that define the requirements for the safe design of pressure equipment – such as pressure vessels, heat exchangers and certain equipment parts. The individual rules are called AD 2000 data sheets.

The AD 2000 data sheets specify how pressure equipment must be designed, constructed, calculated, manufactured, tested and documented. AD 2000 and the CE marking are inherently linked: In order for pressure equipment to be sold or operated in the EU, it must comply with the Pressure Equipment Directive 2014/68/EU (PED). Only then can the manufacturer affix the CE mark. A company working in compliance with AD 2000 automatically meets the safety requirements of the EU Directive. Behind the AD 2000 regulations are the associations DGUV, VDEh, VCI, VDMA, VAIS, vgb energy, and the publisher TÜV.





Dependable partnership for sustainable success



Find out more about
KAISER AG

KAISER AG, based in Schaanwald, Liechtenstein, is the world's leading manufacturer of vehicles for sewer cleaning and industrial waste disposal, as well as mobile walking excavators. For more than 20 years, we have had the privilege of working alongside this visionary company from the Principality of Liechtenstein as a materials partner.

The family-run KAISER AG has stood for innovative and technical excellence since 1913, with products that are used in 116 countries on five continents. To ensure their global delivery capability and quality leadership, a reliable materials partner is crucial. By supplying stainless steel and structural steel of consistently high quality, we are able to contribute to the success story of KAISER AG and its product lines.

Expertise that creates trust

Our two companies share identical values. This means that KAISER AG values not only our expertise in materials but also the high-quality standards of our products and services. The combination of our peak dependability and unconditional delivery reliability means we can always ensure materials supply to match the customer's needs, even in difficult times.

Designing the future together

We would like to thank KAISER for their long-standing loyalty and confidence. Our collaboration shows how a stable, competent, forward-looking materials partnership can become a real competitive advantage, true to our claim: "Shaping innovation, growing and winning together with our customers"



2026 trade shows:
We look forward
to your visit



16–19 June
EPHJ Geneva



12–16 October
Fakuma Friedrichshafen



5 November
Eastern Switzerland Technology
Symposium, St.Gallen



Football World Cup 2026: Register for the drawing now

The biggest football World Cup of all time in the United States, Canada and Mexico is looming large on the horizon. Sign up for the thyssenkrupp forecasts drawing today and look forward to lots of fun, excitement and great prizes. For data privacy-conscious people, nothing gets in the way of fun: data protection is ensured at every stage of the drawing.



Register now
(in german)

Three questions for Reto Sennhauser

Who is Reto Sennhauser, Project Manager Pumps & Compressors of thyssenkrupp Materials Schweiz AG, what constitutes his day-to-day work, and what does his private life look like? In the short interview, you will find out more about him.

How long have you been working at thyssenkrupp Materials Schweiz, and what tasks are you responsible for?

I have been part of thyssenkrupp Materials Schweiz for almost 13 years. In my role as Key Account Manager and Project Manager for the Pumps and Compressors division, I manage strategic clients and am involved in challenging projects – from technical consultation to the development of optimal material solutions.

What is it about the Pumps & Compressors division that you like most, and where do the biggest challenges currently lie?

The division offers such a remarkable variety of materials and the many technical possibilities that arise from it. What I find equally appealing is working with standards and specifications that require high precision. The current strong pressure on prices is a central challenge for us, while, at the same time, requirements for the quality and performance of the materials are increasing. Our job is to find the most economically viable solution for customers – without compromising on the required quality.

What is important to you in your personal life, and how do you find balance alongside your professional routine?

My family, especially my two daughters, is the most important source of balance for me. I also feel a strong connection to nature and enjoy working on garden projects – regularly putting my 'green fingers' to good use. As an enthusiastic DIYer, I also work on many projects in my home workshop, where my metalworking experience and the diverse range of thyssenkrupp materials benefit me.



Reto Sennhauser and his two daughters planting winter spinach in their raised flower bed.

"tk360" No. 5 on the topics of tool & mould making

The next issue of the customer magazine "tk360" will be published in the run-up to Fakuma in Friedrichshafen and will focus, in line with the specialist trade fair for plastics processing, on our services in the field of tool and mould making. We are looking forward to giving you more exciting insights into our work.

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