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KLINGER
trusted. worldwide.

KLINGER YEARBOOK

Engineering what's next

www.klinger-international.com

Peter Müller, CFO
Daniel Schibli, CEO
Christoph Klinger-Lohr, CEO

Dear Customers,
Dear Partners,

The KLINGER family continues to grow. Despite the challenging overall market situation, 2025 was a year of successful expansion. This magazine features four acquisitions that have added companies with intricate histories and individual strengths to the Group. The new additions to the family are representative of KLINGER's varied portfolio, ranging from level management expertise (Hadro, page 12), high-quality valve products (Trust Valves, page 14), and market expansion in Southeast Asia (SJP Sealing Technology, page 16) to pneumatics and electromechanics (ARA Pneumatik, page 18). We open this yearbook with a strong line-up of acquisitions, demonstrating KLINGER's commitment to stability in uncertain waters.

When it comes to the flow of water and other fluids, uncertainty to us is a highly unpleasant concept. Here at KLINGER, we strive to contain fluids, in particular with gaskets and valves. We are therefore proud to present the new Ballostar KHI-F from KLINGER Fluid Control (see page 28). This upgraded ball valve will be welcomed not only by the paper industry, but by other sectors as well, as KLINGER's expert engineering efforts are ubiquitous. Another example is the expansion joints and valves provided for a flagship thermal power plant project in Hamburg, Germany (page 19). Two subsidiaries, KLINGER Turkey and KLINGER Fluid Control, joined forces to provide this cutting-edge technology.

Technical progress also brings a wide range of benefits to our ESG efforts. Our commitment to protecting the climate does not go unnoticed. This issue covers almost as many sustainability awards as it does acquisitions, starting on page 40. Another encouraging example of environmental responsibility comes from KLINGER Spain, where a new reusable packaging system provides customers with an eco-friendly way to receive their goods. (All you need to know about this innovative shipping is on page 42).

With zero percent filler material, we hope you will enjoy this issue of VISTA. 2025 was a memorable year for each and every one at the company – thanks in large part to the ongoing support and trust of our valued customers. Here's to continued success in 2026!

Christoph Klinger-Lohr
CEO

Daniel Schibli
CEO

Peter Müller
CFO

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Bediha Tezcan of KLINGER Turkey.

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Charity run

#teamKLINGER once again proved its commitment to social causes at the Wings for Life World Run.

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5 QUESTIONS

? What was the reduction in filler material according to KLINGER Spain's packaging system statistics?

» **Find out on page 42!**

? Which not-so-tiny, yet often overlooked component in a pulp and paper mill could quietly save the entire plant from a costly shutdown?

» **Learn more on page 34**

? What does "CHP" stand for?

» **The answer is on page 19!**

? In which year did Sonja Polychronova begin her work at a Bulgarian state-owned trading company?

» **Further details on page 9!**

? How many disposable filters has Henkel eliminated at one of its plants?

a) 2
b) 47
c) 700

» **Think you know the answer? Check on page 32!**

Interview with the KLINGER CEOs

Steady course

A look back and a look ahead: A YEARBOOK interview with KLINGER CEOs Daniel Schibli and Christoph Klinger-Lohr.

The year 2025 was marked by economic turbulence – characterized by global uncertainties, but also by glimmers of hope and growth. KLINGER contributed to the positive news with four acquisitions. Will you also look back on the past year in a positive light?

Daniel Schibli: Yes, absolutely. Since the pandemic, geopolitical events and the resulting uncertainties have become the new normal. It is up to us as a company to continually monitor political, social, and economic developments and anticipate their possible consequences as accurately as possible.

Christoph Klinger-Lohr: It shows once again that our business model is quite stable, even in times of uncertainty. But one thing we learned in 2025 was that we in Europe must go about finding a more rapid response to the dwindling sales in the chemical industry.

What is the mood for 2026?

Schibli: The mood is still dominated by short-lived, short-term events. People are nervous and that affects consumer spending, which in turn impacts the capital goods industry in which we operate. In other words, things can change very quickly.

Last year, the EU rowed back on some of the core aspects of its Green Deal, watering down the Supply Chain Act and loosening regulations on reporting requirements. Does this affect the ESG commitment at KLINGER?

Klinger-Lohr: All ESG activities make sense, even without legislative pressure behind them. The scope and depth of reporting are certainly open to debate, but the principle is correct. So we are sticking to our chosen course.

Christoph Klinger-Lohr (left) and Daniel Schibli (right), CEOs of the KLINGER Group, are sticking to their chosen course.

Looking back at the past year, what achievements and successes within the KLINGER family are you particularly proud of?

Schibli: We can be proud of the fact that we are continuing to position ourselves strategically with an expanded product portfolio in line with our customer segments. This allows us to create real added value for our customers.

Montevideo/Uruguay

KLINGER Uruguay: a presence that strengthens customer confidence

KLINGER is stengthening its South American presence with a new subsidiary in Uruguay, supporting the region's growing pulp and paper sector with local service and technical expertise.

As Uruguay's pulp and paper plants enter a new phase in their life cycle and new projects emerge, KLINGER has taken decisive action by establishing KLINGER Uruguay. In this interview, Axel Barman, the newly appointed General Manager, outlines the strategic motivations, market potential, and long-term ambitions behind the move.

What motivated the decision to establish a subsidiary in Uruguay? Why now?
We have been doing business in Uruguay since the early 2000s, when KLINGER Finland supplied solutions for major pulp and paper projects. Those plants are now reaching an age where the need for maintenance is increasing rapidly. At the same time, new mills are being planned in the region. Having a local presence enables us to support directly, efficiently, and in the customer's native language.

In what ways does Uruguay's P&P landscape differ from that of the rest of South America?
The plants themselves are similar. What sets Uruguay apart is that all its facilities are located in free-trade zones. Suppliers must also operate within these zones to remain competitive. This affects everything, from company registration to daily logistics.

What opportunities do you foresee?
We were one of the first companies to establish a local entity. This demonstrates our long-term commitment, increasing our value in both new projects and life cycle support. Having a local presence sends a strong message to our customers.

How will KLINGER Uruguay position itself in terms of technology, sustainability, and service quality?
We have nearly 100 years of global pulp and paper expertise. Ultimately, the most cost-effective solution is the one that minimizes downtime costs over the life cycle. Our task is to demonstrate that value.

What solutions will you offer?
We offer everything from gasket cutting and calculations to valve-actuator assemblies, consulting, and training. We start with the Finnish portfolio and adapt to regional needs.

Is the focus on new installations, upgrades, or MRO?
All of the above. Older mills require MRO services, recent projects are exiting their warranty phases, and new plants are in the planning stages. Uruguay is positioned for growth, and our setup supports every stage.

What are the next steps for KLINGER Uruguay?
Initial processes have been slowed by free-zone bureaucracy, but once they are complete, we will focus on learning from the customer interface. This insight will guide our development.

Axel Barman, General Manager of KLINGER Uruguay

KLINGER Uruguay has already put down roots.

Tuzla/Turkey

Expanding fluid control expertise

KLINGER Turkey is bringing valves and level gauges into its portfolio, marking a new era of integrated industrial solutions and deeper technical support.

Yasin Öztürk, Managing Director of KLINGER Turkey

In industrial process design, every connection, measurement point, and control element influences performance and reliability. For decades, KLINGER Turkey has been a trusted partner for engineered expansion joints and metal hoses that absorb movement and protect systems in demanding conditions. Now, the company is entering a new phase – becoming the exclusive Turkish partner for KLINGER Fluid Control valves and KLINGER Italy's level gauges – and expanding its role in customers' fluid control and monitoring strategies.

Roots in precision engineering

KLINGER Turkey's success is firmly grounded in engineered solutions. From custom expansion joints designed to manage thermal movement to braided metal hoses that withstand vibration and dynamic loads, its products support energy, petrochemical, and industrial infrastructure projects across the region. "These components are more than hardware; they are engineered responses to complex application requirements," says Yasin Öztürk, Managing Director of KLINGER Turkey.

From components to complete solutions

As the sole distributor in Turkey for KLINGER Fluid Control valves and KLINGER Italy's level gauges, KLINGER Turkey now delivers complete flow solutions. The portfolio includes valves with robust sealing, maintenance-free operation, and broad certification, alongside level gauges with transparent, reflex, and bi-color technologies that provide reliable visual indication in challenging operating conditions.

A unified technical approach

This expansion reflects a system-oriented mindset. Engineers benefit from harmonized specifications across expansion joints, hoses, valves, and level gauges, while procurement gains supply continuity and project teams reduce integration risk. Because KLINGER products comply with international standards, customers gain both performance and predictability.

"By integrating fluid control and level indication into our portfolio, we deliver deeper technical support and more complete engineering solutions – exactly where our customers need them," Yasin emphasizes. The result: fewer interface risks, improved engineering outcomes, and enhanced customer confidence.

KLINGER Turkey is the sole distributor for KLINGER Fluid Control valves.

> "These components are more than hardware; they are engineered responses to complex application requirements."
>
> Yasin Öztürk, Managing Director of KLINGER Turkey

Sofia/Bulgaria

The backbone of KLINGER in Bulgaria

KLINGER partner Polymat celebrates 30 years of excellence.

Founded in 1995, Polymat's roots can be traced back more than 20 years. Co-owner Sonja Polychronova began her career in 1973 at a Bulgarian state-owned trading company importing sealing sheets and sight glasses, which introduced her to KLINGER. This relationship has now lasted five decades. As Sonja built strong contacts across various industries, she developed a close rapport with Günter Hirsch, then KLINGER's representative in Bulgaria. With his support, Sonja and her husband Panayot Kabadaiev founded the privately owned company Polymat.

Modest beginnings

In its early days, Polymat operated from home, with the pair traveling constantly to customer sites and building the business on the road. Thanks to their work ethic and reputation, Sonja and Panayot leveraged long-term relationships to expand the company, and they continue to this day. In 2017, Emil Manchev joined as Managing Director. His management experience provided the foundation Polymat needed to navigate political and economic changes. Despite growth, the company has stayed true to its philosophy – investing in people and products. "The company has strong engineering capabilities and highly qualified staff. Our colleagues are responsible, proactive, and committed – this is our approach to building a successful company," Sonja and Emil explain.

Scaling through complexity

Today, Polymat is a well-recognized and trusted brand in Bulgaria, supplying high-quality valves, sealing materials, level gauges, and expansion joints to industrial companies nationwide. By offering the full KLINGER product range, Polymat benefits from strong synergy, positioning itself as an approved vendor for new plant construction across multiple sectors, including the chemical industry, district heating, oil and gas, power generation, pharmaceuticals, and the food industry.

The company also assembles KLINGER valves with various actuators, opening doors to participation in complex and diverse projects. Maintaining a large stock of sealing materials, valves, and spare parts gives Polymat a significant competitive advantage. These strengths have enabled Polymat to successfully navigate markets affected by regional and global volatility. In the last three decades of change, the company has remained committed to its founding objective: a deep understanding of customer needs combined with strong technical expertise in KLINGER products to consistently meet and exceed customers' expectations.



The management team of Polymat (from left to right): Sonja Polychronova, Emil Manchev, Panayot Kabadaiev

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supports iron ore operations in a tough environment.
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Moordrecht/The Netherlands

New expertise in level measurement

With the acquisition of Hadro, KLINGER The Netherlands is welcoming the Dutch manufacturer into the Group, strengthening KLINGER's instrumentation portfolio with magnetic level gauges and tailor-made solutions.

With a clear focus on expanding its product offerings in process instrumentation, KLINGER The Netherlands has acquired the Dutch manufacturer Hadro Techniek. The company became part of the KLINGER Group with effect from June 16, 2025, adding high-quality, certified level measurement devices to its instrumentation portfolio – a strategic step toward global growth and technical innovation.

Trusted names

KLINGER, a globally respected name in industrial sealing and fluid control, is taking another step toward consolidating expertise in level instrumentation by bringing Hadro Techniek on board. Founded in 1993, Hadro is renowned for designing and manufacturing tailor-made magnetic level indicators, serving both the industrial and maritime sectors with solutions that meet the highest international standards.

Strength in specialization

The Hadro team, which works at the production site in Moordrecht just 20 kilometers from KLINGER The Netherlands, will remain with KLINGER The Netherlands, ensuring continuity of service. Jasper Drost, the former owner of Hadro Techniek, will stay on as a consultant and work closely with Ton van Erkelens, Managing Director at KLINGER The Netherlands, and Gijs de Bakker, Project Manager Fluid Control & Steam Solutions at KLINGER The Netherlands. This setup guarantees technical continuity and ensures the seamless integration of Hadro into the KLINGER Group.

Marking a new era.

> "We see Hadro as a perfect strategic fit. Their products, quality standards, and commitment to customer solutions align perfectly with the KLINGER values."
>
> **Ton van Erkelens, Managing Director at KLINGER The Netherlands**

Hadro's headquarters are located in Moordrecht, just 20 kilometers from KLINGER The Netherlands.

New at KLINGER The Netherlands

Advanced magnetic level gauges

- Coated versions: E-CTFE, PFA, ETFA
- Special materials: plastic, Monel, Hastelloy, titanium, 6Mo
- Options with a steam jacket
- Certificates available: PED, ATEX / IECEx, Lloyd's Register, Bureau Veritas

Hadro magnetic level gauges for a hydrogen plant.

"We see Hadro as a perfect strategic fit. Their products, quality standards, and commitment to customer solutions align perfectly with the KLINGER values," Ton emphasizes.

With certifications such as PED, ATEX/IECEx, and maritime approvals including Lloyd's Register and Bureau Veritas, Hadro has earned a strong position in the highly specialized magnetic level gauge market. The acquisition enables KLINGER to further strengthen its level gauge business and make it directly accessible to all companies within the KLINGER Group.

Complementary to KLINGER's legacy

As the inventor of the glass reflex level gauge in 1891, KLINGER has long been associated with excellence in visual level indication. Now, with Hadro joining the KLINGER family, the Group is poised to strengthen and expand its instrumentation portfolio with a long-term vision.

"By joining KLINGER The Netherlands, we are securing the expertise of our company while opening up exciting new possibilities for innovation and growth on an international scale," says Jasper.

Value for the Group

The acquisition opens up new opportunities for all KLINGER subsidiaries by providing direct access to high-performance, tailor-made level indicators and engineering expertise. Hadro's experienced team and extensive technical knowledge allow KLINGER to better support customers in applications where safety, customization, and certification are paramount. "It's a win-win situation. The acquisition of Hadro sets the stage for further advancements in the KLINGER instrumentation portfolio," shares Daniel Schibli, CEO of the KLINGER Group. With shared values and a focus on quality as well as the benefits of local production, the collaboration will not only support existing customers but also unlock new markets across the globe.

> "By joining KLINGER The Netherlands, we are securing the expertise of our company while opening up exciting new possibilities for innovation and growth on an international scale."
>
> **Jasper Drost, former owner of Hadro Techniek**

Trust Valves is stocked with a multitude of different valve options.

Rovello Porro/Italy

KLINGER Italy is expanding its valve business

KLINGER Italy has acquired valve distributor Trust Valves to strengthen its portfolio for industrial fluid control solutions across Italy.

With the acquisition of Trust Valves, a specialized valve distributor, on July 10, 2025, KLINGER Italy has significantly strengthened its valve offering. Founded in 2008, Trust Valves provides comprehensive valve packages with a particular focus on the oil and gas, chemical, and water treatment industries. Its well-known "one-stop shop" approach offers a vast array of valves and services from a single, reliable source. Through this acquisition, KLINGER Italy will position itself as a leading supplier of industrial fluid control solutions.

> "Incorporating Trust Valves enables us to deliver more comprehensive and customized solutions to our customers, significantly enhancing our competitive edge and customer satisfaction."
>
> **Peppino Sampietro, Managing Director of KLINGER Italy**

Increasing efficiency

This strategic acquisition broadens KLINGER Italy's existing product offering to now include:

- Gate valves
- Check valves
- Globe valves
- Butterfly valves

Peppino Sampietro, the Managing Director of KLINGER Italy and now also Trust Valves, emphasizes: "Incorporating Trust Valves enables us to deliver more comprehensive and customized solutions to our customers, significantly enhancing our competitive edge and customer satisfaction."

Giuseppe Chierchetti, former shareholder of Trust Valves.

The Trust Valves site in Rovello Porro, just 17 kilometers from KLINGER Italy in Rho, facilitates seamless collaboration and operational efficiency. Its strong and established market presence perfectly complements KLINGER Italy's strategic growth objectives.

Long-term strategic vision

To ensure a smooth transition, Massimo Canevaro will continue in his role as Sales Director for valve distribution, leveraging Trust Valves' solid market reputation and expertise. Giuseppe Chierchetti, former shareholder of Trust Valves, says that by joining KLINGER, "tremendous opportunities for growth, shared success, and enhanced customer value are opening. We are excited about the prospects. This step is not only a secure one for the future of the company, but also offers new opportunities for innovation and growth." Daniel Schibli, CEO of the KLINGER Group, echoes this sentiment, saying, "The acquisition of Trust Valves accelerates our long-term strategic vision, positioning KLINGER Italy as a leading solution provider in the industrial valve sector."

> "By joining KLINGER, tremendous opportunities for growth, shared success, and enhanced customer value are opening."
>
> **Giuseppe Chierchetti, former shareholder of Trust Valves**

Peppino Sampietro (center), Daniel Schibli (third from right), Giuseppe Chierchetti (second from right)

Singapore

KLINGER acquires SJP Sealing Technology

KLINGER Holding takes over SJP Sealing Technology, expanding its global offering in gaskets, mechanical seals, and sealing services in Southeast Asia.

KLINGER Holding officially acquired SJP Sealing Technology with effect from September 10, 2025. Headquartered in Singapore, SJP is a leading provider of sealing solutions and pump services with further operations in Malaysia and business in Vietnam. This acquisition is a key step in KLINGER's international growth strategy and further strengthens its role as a solution provider in the global industrial landscape.

SJP: four decades of sealing expertise

Founded in 1984, SJP Sealing Technology started as a marine industry specialist and developed into a trusted full-service partner in sealing solutions and pump services. The company's product and service portfolio includes:

- Gasket cutting of fiber-reinforced materials
- Mechanical seals
- Metallic and semi-metallic gaskets
- Packings
- Pump service
- Industrial blasting and coating of pumps and components

In addition, SJP holds several product distribution rights in Singapore, Malaysia, and Vietnam and has built long-standing customer relationships across multiple industries. The company is particularly recognized for its technical knowledge, reliability, and flexibility in delivering customized solutions. "SJP has always been hands-on, customer-focused, and technically strong.

With six operations across Singapore and Malaysia and further business in Vietnam, SJP is geographically close to its customers.

From left to right: Daniel Schibli, CEO of the KLINGER Group; Stephen Tan, former shareholder and Chairman of SJP; Pamela Koay, former shareholder of SJP who is staying on as COO; Kevin Woolley, Managing Director of KLINGER Australia, KLINGER Thailand, and now also Director of SJP.

We're proud of what we've built – and we're ready to take it further with KLINGER," says Pamela Koay, former shareholder, who is staying on as Chief Operating Officer of SJP.

A change of ownership – and a new chapter

SJP is now a wholly owned subsidiary of KLINGER Holding. The transition in ownership also marks a change in leadership: Stephen Tan, who led the company for decades, is retiring. His confidence in the future is strong, saying, "KLINGER is the corporation I trust to take SJP to the next level and make it truly future-ready. We've always believed in strong values, and KLINGER shares that belief."

Kevin Woolley, who also leads KLINGER Australia and KLINGER Thailand, will be responsible for SJP within the KLINGER Group. Together with Pamela as COO, the new leadership team will ensure continuity and further develop the business in alignment with KLINGER's global standards. "We're not only expanding our capabilities, we are also strengthening our solutions and regional footprint," says Kevin. "SJP's technical services and product expertise fit perfectly into KLINGER's offerings."

> "Our customers, partners, and teams can rely on continuity, quality, and collaboration. We are excited to welcome SJP Sealing Technology into the KLINGER family."
>
> **Christoph Klinger-Lohr, CEO of the KLINGER Group**

Product-driven growth with a service mindset

The addition of SJP's technologies makes KLINGER's international portfolio of sealing solutions and services even more comprehensive. The acquisition reinforces the global presence in key technical fields:

- Gasket manufacturing and conversion: SJP's cutting and application know-how adds regional capacity.
- Mechanical seals and related services: Strong aftermarket knowledge and proven service procedures.
- Customized sealing packages: Application-driven, locally delivered, and globally supported.
- Pump services: Refurbishment, blasting, and coating with high technical precision.

These additions are fully aligned with KLINGER's claim: Safety, Solutions, Services. "The industrial world depends on high-performing, reliable sealing and service solutions. SJP delivers exactly that – making them a natural fit for KLINGER," explains Daniel Schibli, CEO of the KLINGER Group.

Scaling sealing solutions in Southeast Asia

For KLINGER, the acquisition is more than a strategic expansion. It's an investment in technical excellence, long-term relationships, and a shared future. SJP will maintain its local strength and proximity to customers, while having access to KLINGER's global network. "Our customers, partners, and teams can rely on continuity, quality, and collaboration. We are excited to welcome SJP Sealing Technology into the KLINGER family," emphasizes Christoph Klinger-Lohr, CEO of the KLINGER Group.

> "KLINGER is the corporation I trust to take SJP to the next level and make it truly future-ready. We've always believed in strong values, and KLINGER shares that belief."
>
> **Stephen Tan, former shareholder and Chairman of SJP**

Together, Markus Eder, Managing Director of KLINGER Gebetsroither and former Managing Director of KLINGER Poland, Tadeusz Kościelniak, former owner of ARA Pneumatik, and Mikołaj Kopiński, new Managing Director of KLINGER Poland, are looking forward to a striving business.

Wrocław/Poland

A strong match

KLINGER Poland acquired ARA Pneumatik on November 1, 2025 integrating actuated valves, pneumatics, and electromechanics to strengthen its market position.

Tadeusz Kościelniak is the former owner of ARA Pneumatik and is staying on as a strategic advisor.

KLINGER Poland is proud to announce that, effective November 1, 2025, it has acquired ARA Pneumatik, a leading Polish valve trading company based in Wroclaw. This strategic move marks a significant milestone in the KLINGER Group's growth journey, expanding its product portfolio and reinforcing its commitment to delivering comprehensive solutions to customers across industries.

ARA's legacy and integration with KLINGER Poland

With a history spanning over 30 years, ARA has established itself as a trusted supplier of actuated valves, pneumatics, electromechanics, and vacuum technology. The company operates from its modern office and warehouse in Wroclaw and employs 23 dedicated professionals. All ARA employees will join KLINGER Poland, ensuring continuity and leveraging their expertise for future success. ARA's product range serves industries like automotive, chemicals, paint production, marine, valve manufacturing, and petrochemicals.

> "We are excited to continue supporting the team and our customers during this transition."
>
> **Tadeusz Kościelniak, former owner and now strategic advisor**

Enhancing valve and automation solutions

The acquisition is a perfect strategic fit: while KLINGER Poland has specialized in non-actuated valves, ARA Pneumatik brings a strong focus on actuated valves and advanced pneumatics. This synergy enables KLINGER Poland to offer a more comprehensive product range and address a broader spectrum of customer needs. "ARA's technical expertise and marketing strength, combined with KLINGER Poland's trusted solutions, create a powerful partnership for the future," says Markus Eder, former Managing Director of KLINGER Poland who handed over his role to Mikołaj Kopiński on January 1, 2026.

Strategic acquisition for a stronger offering

This acquisition also opens the door for future portfolio expansion. "ARA's product range could be further enhanced with KLINGER products, providing even more value to our customers," notes Tadeusz Kościelniak, former owner and now strategic advisor. "We are excited to continue supporting the team and our customers during this transition."

Daniel Schibli, CEO of the KLINGER Group, emphasizes the significance of this step: "The integration of ARA into KLINGER Poland is a testament to our commitment to growth and innovation. By welcoming the entire ARA team, we ensure that our customers benefit from a seamless transition and an even stronger offering."

Hamburg/Germany

Reduce, reuse, reheat

KLINGER Turkey provided custom expansion joints for a new thermal power plant in Hamburg, Germany. For KLINGER Fluid Control, who supplied around 2,000 valves for this project, it is one of the largest orders in the company's history.

Combined heat and power (CHP) is the simultaneous production of thermal energy and electricity from a single fuel source. While traditional systems use separate processes to create these two utilities, CHP captures and repurposes the heat that is produced during electricity generation. This method increases operational efficiency from 50 to 90 percent while also putting less strain on grid infrastructure, and will be implemented at the new Dradenau combined heat and power plant at the port of Hamburg. This technology is highly preferred by regions pushing to meet net zero obligations, leading to a wave of plant conversions.

Custom joint expertise

As a trusted manufacturer of precision expansion joints, KLINGER Turkey is uniquely positioned to meet the needs of this ambitious and groundbreaking power plant, and it was awarded the contract for the project managed by the joint venture Uniper-ENKA, the contractors. Natural gas turbines and

The KLINGER Turkey team with the Dradenau expansion joints.

Kaşif Demet (left) and Hilal Pehlivan (right) of KLINGER Turkey are proud of what the team achieved.

a waste heat recovery system will be supported by KLINGER inline pressure balanced and elbow pressure balanced expansion joints, in sizes ranging from DN 150 to DN 1600. These custom joints are used on critical pipelines to cushion movement, reduce thermal stress from extreme temperature changes, and absorb dynamic loads. As explained by Sales Engineer Hilal Pehlivan, KLINGER Turkey's involvement early in the planning stages was a major factor in ensuring that everything proceeded according to plan. "From the very beginning of the project, all analyses and preliminary studies were conducted in coordination with the stress analysis team," she says. "Our expertise on the subject made a significant difference." Also key to the project's success was Sales Manager Kaşif Demet, who led the sales strategy and managed project coordination from start to finish.

An inline pressure balanced and elbow pressure balanced expansion joint by KLINGER Turkey.

Extensive technical and quality checks during the design, manufacturing, and installation processes are yet another way that KLINGER Turkey earns customer trust. All materials for Dradenau met stringent temperature and corrosion specifications, while the joints were designed and manufactured in accordance with the EJMA, EN14917, EN13480-3, and VGB R507 L standards. Quality control also complied fully with ISO 9001 and customer-specific audits. KLINGER Turkey delivered the largest and heaviest expansion joints to date, even faster than listed in the original proposal. Before packaging, each joint was subjected to full radiographic testing, liquid penetrant testing, and hydrostatic testing. By following an exacting quality plan, KLINGER Turkey was able to prove safety, quality, and traceability for every shipped part.

Large-scale contract

A lot of parts were also shipped from another KLINGER site: Sales Manager Andreas Schwarz recalls the challenge of wading through an Excel spreadsheet of around 1,000 items. The reason for this marathon: KLINGER Fluid Control had been awarded an unusually large-scale contract to supply ball valves for the project. The total order volume was five million euros. Naturally, this also involved ample work for KLINGER Fluid Control. Uniper-ENKA ordered a total of 2,000 ball valves. KLINGER Fluid Control received the request for a quotation in

Custom expansion joints being prepared for Dradenau.

In total, 2,000 Ballostar ball valves have been installed at the CHP plant in Hamburg, Germany.

Andreas Schwarz, Sales Manager in Germany for KLINGER Fluid Control, relied on his wealth of experience with large-scale energy projects.

January 2023. “It took us seven months to agree the exact technical specifications and draw up the service specifications. We finally won the contract in August,” says Andreas. In the course of the collaboration, the challenges mounted. As nominal widths, materials, and drive types changed as the project progressed, numerous revisions had to be made to the valves.

Negotiating the details

For KLINGER Fluid Control, the project evolved into a highly time-sensitive undertaking: the originally scheduled delivery date in early 2024 was adjusted in line with the project’s dynamic requirements. “At the same time, the power plant’s construction schedule was also revised. This proved advantageous, as it provided additional scope to refine the technical details together with the customer,” says Andreas. And there was indeed much to coordinate, including the selection of different valve types. Many of the supplied valves were of the double block and bleed type, for example. “With these, you can check the function of the seals and gaskets using a test and drain cock. These are needed when maintenance is carried out on pipework, which the valve must seal off reliably,” explains Andreas. In general, district heating pipework is designed to operate reliably for many decades, and maintenance work on it is the exception rather than the rule. But should an unlikely event occur and a valve causes problems, KLINGER Fluid Control has it covered: “All ball valves are designed with multi-part housings. This means they are easy to maintain and can be fully dismantled, if necessary,” says Andreas.

Some months will pass before the valves see active use at the Dradenau power plant. Hamburger Energiewerke plans to decommission the Wedel cogeneration plant at the end of 2026. The Hafen energy park with its combined heat and power turbine plant will then take over heat production for western Hamburg. Wanting to move the energy transition along, Germany is planning further gas-fired power stations. For KLINGER Fluid Control, this means further opportunities for major contracts, for example in Hamburg and Berlin, where the company is again tendering for major projects.

Learn more about the KLINGER Group’s energy solutions

Order list:

Valves by KLINGER Fluid Control:

» 220 Ballostar KHSVI DN 150 – DN 800 series
» 1,780 Ballostar KHA DN 15 – DN 100

Expansion joints by KLINGER Turkey:

» inline pressure balanced expansion joints DN 150 – DN 1600
» elbow pressure balanced expansion joints DN 150 – DN 1600

Celebrating progress on the Kansanshi oxygen plant insulation project – showcasing skill, unity, and strong on-site collaboration.

Kitwe/Zambia

Insulation precision

KLINGER Zambia completed a high-performance insulation system for the Kansanshi oxygen plant – delivering precision engineering, local skills, and on-schedule execution.

When Kansanshi Mining expanded its processing capabilities in copper production with a new oxygen plant, the reliability of its thermal insulation system became mission-critical. KLINGER Zambia was selected to engineer and execute a complete insulation package – hot, cold, and acoustic – under strict compliance requirements and a non-negotiable schedule tied to international commissioning timelines.

A multi-scope project under one mandate: precision

The project was executed through three simultaneous purchase orders, each addressing a different core requirement:

- Hot insulation to minimize heat loss and stabilize high-temperature processes
- Cold insulation for cryogenic and low-temperature systems where thermal integrity is essential
- Acoustic insulation to reduce noise emissions and enhance plant safety

All work aligned with internationally recognized standards, including ASTM C533/C547, ISO 12241, EN 14303, and ARI RP 521. "Our goal was simple but demanding: deliver a fully compliant insulation system that met every functional, technical, and safety requirement within an extremely tight schedule," says Jaco Sadie, General Manager of KLINGER Zambia.

Engineering rigor from start to finish

The project followed a structured workflow beginning with design reviews and material verification, ensuring correct thermal conductivity, corrosion resistance, and acoustic performance. Surface preparation prevented CUI risks (Corrosion Under Isolation), followed by the application of high-grade materials such as calcium silicate, polyurethane foam, and mineral wool. Stainless steel and aluminum jacketing provided mechanical protection and weatherproofing. Quality assurance included thermal performance testing, acoustic verification, integrity checks, customer-specific protocols, and OSHA-aligned audits (Occupational Safety and Health Administration standards).

Local expertise at the core

What set the project apart was not only its technical complexity but the team behind it. Of the 33 personnel on site, 27 were Zambian professionals – 20 of them seasoned experts with more than two decades of industrial experience. Before mobilization, KLINGER Zambia conducted intensive train-

Jaco Sadie (left), General Manager of KLINGER Zambia, was honored for his contributions by Phillip Herbst, Managing Director of KLINGER South Africa.

Moment of completion at the Kansanshi oxygen plant.

ing programs and classroom sessions to ensure that every team member performed at international standards. Drone-based aerial monitoring provided precise progress tracking, allowing real-time decision-making and ensuring insulation was completed before the arrival of Australian commissioning engineers. “This project proved that a locally empowered team can deliver an international-grade result,” Jaco emphasizes.

A strong partnership

Kansanshi Mining praised KLINGER Zambia for outstanding workmanship, schedule adherence, and seamless collaboration between the Zambia and South Africa teams.

> “Our goal was simple but demanding: deliver a fully compliant insulation system that met every functional, technical, and safety requirement within an extremely tight schedule.”
>
> **Jaco Sadie, General Manager of KLINGER Zambia**

Technicians secure aluminum jacketing on insulated process piping, ensuring full compliance with international thermal performance standards.

Seven Zambian team members of Kansanshi Mining earned performance experience certificates, strengthening local expertise for future industrial projects.

The Kansanshi oxygen plant insulation project was more than a technical assignment – it became a showcase of engineering precision, local capability, and KLINGER’s commitment to raising industry standards across Africa.

Key achievements

- Three simultaneous purchase orders completed
- Full compliance with ASTM, ISO, EN, and API standards
- Drone-supported progress monitoring
- On-schedule delivery for commissioning

Food producer Spitz operates an expansive plant in Upper Austria.

Attnang-Puchheim/Austria

A case for the steam detectives

There is one inconspicuous little component in steam systems that, when defective, causes energy costs to rocket: the steam trap. This can be mitigated with targeted measures to reduce steam losses, cut operating costs, and reduce CO_2 emissions.

Industrial enterprises that rely on steam as an energy source are increasingly faced with the challenge of minimizing energy losses. The key to this lies in systematically optimizing the steam traps, which are crucial for the efficient operation of steam systems. The example of KLINGER Gebetsroither customer S. Spitz GmbH demonstrates how specific measures can yield massive savings.

Rudolf Holzinger, Energy Manager at Spitz

The steam trap: inconspicuous but indispensable

Steam traps drain condensate from the system while preventing live steam losses. They are crucial in ensuring the efficient operation of steam systems. But these inconspicuous components are prone to hidden wear. And once defective, they cause considerable energy losses along with rising costs.

In industrial systems that are not regularly inspected, up to 30 percent of steam traps have been found to malfunction. The consequences: needless fuel consumption, higher CO_2 emissions, and the risk of water hammer.

Case study: S. Spitz GmbH

When Austrian food producer Spitz recorded a significant hike in energy costs and steam losses in 2022, the company initiated an energy efficiency project in collaboration with KLINGER Gebetsroither. After extensive testing, defective steam traps were identified and replaced. They also established a safety valve inspection program and introduced thermal recovery as well as modern energy controlling using Siemens Energy Manager Pro. Digital monitoring systems are increasingly indispensable in optimizing steam systems. Smart steam traps with built-in real-time monitoring

allow inefficient system components to be identified and dealt with in good time before significant energy losses occur.

Targeted measures boost energy efficiency

To minimize energy losses, KLINGER Gebetsroither recommends regular testing of steam traps. This should be done at least once a year. Modern diagnostic methods such as ultrasound, thermography, and pressure measurement enable precise, reliable fault detection. “In addition to repairing defective steam traps, companies can benefit from a full replacement if a repair proves uneconomical,” says Markus Fröller, Sales Representative at KLINGER Gebetsroither.

> “The expert testing by KLINGER Gebetsroither and the transparent visualization of the energy flows made all the difference for us.”
>
> **Rudolf Holzinger,**
> **Energy Manager at Spitz**

To repair or to replace?

A frequent point of discussion is at what point to replace a steam trap rather than have it repaired. As a general rule, it is more economical to replace steam traps that are older or badly damaged. “KLINGER Gebetsroither offers optimized steam traps that are designed for maximum energy efficiency and a long service life,” says Martin Klein, Sales Representative and specialist for steam and condensate solutions at KLINGER Gebetsroither.

For Spitz, optimizing the steam traps is not a luxury, but an essential energy- and cost-saving measure. Targeted testing, strategic maintenance, and digital solutions can lead to significant savings – both financially and environmentally. The example of Spitz shows that it pays to aim for greater efficiency.

Savings at a glance

- Reduced steam consumption at Spitz of about 25 percent
- Reduction in condensate losses from 30 down to 15 percent (2024); the aim is to achieve further reduction to below ten percent
- Double-digit percentage savings on energy costs
- Significantly reduced CO_2 emissions

Wadeville/South Africa

Local shield power

KLINGER South Africa launches in-house spray shield manufacturing – resulting in faster lead times, enhanced quality, and innovative design features for safer plants.

Andries Fouche, Business Unit Manager for Pipe Products at KLINGER South Africa

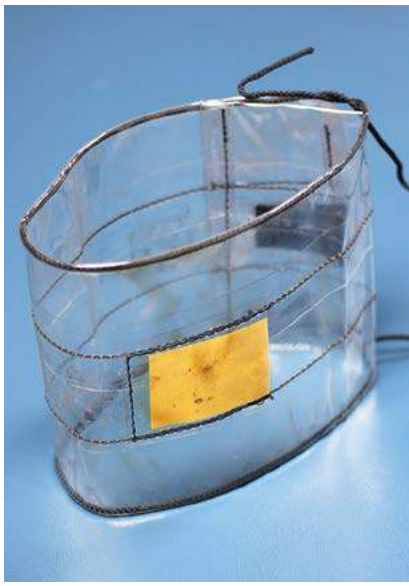
When KLINGER South Africa set out to transform its spray shield offering, the goal was clear: bring production in-house to improve quality, speed, and cost efficiency. What followed was a decisive shift that strengthened local capability and set a new benchmark for industrial safety products in the region.

Spray shields play a critical role in industrial environments by reducing the velocity and spread of leaks at bolted flange joints. They help prevent chemical spray-outs, safeguard personnel, and protect equipment from damage from hazardous and corrosive liquids. Previously imported from the United States, these shields required long lead times and exposed customers to fluctuating exchange rates. With regional markets demanding shorter turnarounds and higher flexibility, KLINGER South Africa took action.

A new era of local manufacturing

The move to internal production in Wadeville, South Africa, significantly reshaped the company's service offering. Lead times dropped from weeks to just days, enabling KLINGER to respond quickly to urgent requirements and reduce the need for large stockholdings. Just as important, the team gained full control of material selection, design precision, and final quality. "As the OEM, we can now

Spray shields come in different materials, designs, and sizes.



With local manufacturing, KLINGER South Africa significantly reduced lead times of spray shield covers – almost halving the waiting period – and enhanced quality control and consistency.

react quickly and cost-effectively to quality requirements," says Andries Fouche, Business Unit Manager for Pipe Products at KLINGER South Africa, who led the implementation process. "This ensures superior consistency and lets us adapt rapidly to customer specifications."

Design upgrades that make a difference

Developing the shield range in-house also opened the door for innovation. KLINGER replaced temperature-sensitive Velcro with robust stainless steel press studs, increasing durability in demanding environments. The addition of KLINGER South Africa's own braided modified yarn – known for its high tensile strength and chemical resistance – further reinforced performance, especially in critical applications.

For customers, the benefits are measurable: faster access to essential safety components, more competitive pricing, and the option to fully customize configurations.

> "We keep things flowing – without interruption."
>
> **Andries Fouche, Business Unit Manager Pipe Products at KLINGER South Africa**

The shields help reduce the risk of process fluid spray-outs, minimizing contamination, equipment damage, and downtime.

Commitment to local manufacturing

Local production also aligns with KLINGER South Africa's "buy local" commitment by strengthening the regional supply chain and supporting future skills development. As demand grows, the company expects to expand capacity and create additional job opportunities.

KLINGER South Africa is already developing stainless steel spray shields for high-pressure steam applications, expanding opportunities in petrochemical and power generation sectors. This milestone supports KLINGER South Africa's "Route 2025" strategy by encouraging innovation and reinforcing its leadership in sealing and safety solutions. Andries sums it up clearly: "KLINGER South Africa is committed to investing in local capability and innovation to provide complete, high-quality solutions. We keep things flowing – without interruption."

Key enhancements

- Stainless steel press studs for improved heat resistance
- KLINGER-made braided yarn for higher tensile strength
- Faster delivery through local production
- Custom shapes, designs, and materials, such as Standard PTFE, Premium PTFE, Clear PTFE, or Orange Vinyl (PVC)
- Availability of stainless steel spray shields and FME covers

More than just an evolution of the Ballostar KHI, the new Ballostar KHI-F opens up new areas of application where valves must withstand extreme conditions.

Gumpoldskirchen/Austria

Ballostar KHI-F: new features at a glance

The new Ballostar KHI-F from KLINGER Fluid Control sets new standards in the paper industry. Other sectors, too, will benefit from the upgrade to the tried-and-tested ball valve.

The highly corrosive or abrasive media and media with a high solids content occurring in the paper industry place extreme demands on valves. "But valves must withstand challenging conditions in other sectors, too, such as the steel industry and geothermal energy. In short, the Ballostar KHI-F is used wherever other valves hit the limit," says Gerhard Gruber, Application Engineer at KLINGER Fluid Control. He was involved in the development of the new ball valve at KLINGER Fluid Control and knows its technical specifications like the back of his hand.

And they pack a punch: "Compared to the size DN 200 predecessor, for example, we were able to reduce the weight of the valve body from 107 to 85 kilograms for the KHI-F. We achieved this by reducing the body's wall thickness and the weight of the ball by 24 percent," says Gerhard. As well as

> "Compared to the size DN 200 predecessor, for example, we were able to reduce the weight of the valve body from 107 to 85 kilograms for the KHI-F."
>
> **Gerhard Gruber, Application Engineer at KLINGER Fluid Control**

making it easier to install the valve, this saves on materials, thereby reducing the production costs. These savings, in turn, are passed on to the customers.

Increased temperature range

Improvements were also achieved in the temperature range. Thanks to the new O-rings that seal the shaft stem, the KHI-F can now operate at temperatures from –10 to +250 °C (+14 to +482 °F). “For applications that handle very cold media, down to –45 °C (–49 °F), we can fit special low-temperature O-rings. For ammonia applications in the temperature range from –30 to +125 °C (–22 to 257 °F), we use a special ammonia O-ring, and for gas applications from 0 to +150 °C (0 to 302 °F), a special gas O-ring is used,” says Gerhard. But the most significant improvement, he adds, is in the flange that gives the valve its name.

The flange makes all the difference

By fitting what are known as welding neck flanges, the team at KLINGER Fluid Control has been able to significantly expand the ball valve’s range of applications. “By offering the right flange for various pressure ranges, we have increased the diversity of possible flange connections. The flange plate is now of a standard design, which will make work much easier in many applications,” says Gerhard. Production of the KHI-F at the Gumpoldskirchen site has already started, and some units have already been delivered: a pulp and paper project using the new valves was recently completed in Spain. Gerhard estimates that around 200 to 300 units of the KHI-F will roll off the production line at KLINGER Fluid Control each year.

The new valves from KLINGER are designed for use in pulp and paper plants.

Gerhard Gruber is an Application Engineer at KLINGER Fluid Control and knows what the new Ballostar KHI-F is capable of.

Did you know...?

…that the Ballostar KHI-F is supplied with Nord-Lock washers for the trunnion as standard? These ensure that the screws do not work loose. This is particularly important in pipework that is prone to vibration, which could potentially be transmitted to the trunnion of the ball valve.

…that KLINGER Fluid Control has also improved the way the body halves of the KHI-F are joined? The previously used nuts and bolts have been replaced with cap screws, which simplifies handling and increases the valves’ mechanical strength.

…that the KHI-F has additional KLINGERSIL C-4430 gaskets at the joint between the two body halves and at the trunnion, and therefore, unlike its predecessor, fulfills the Fire-Safe and ISO 15848 requirements?

Itabira/Brazil

Proven packing performance for Vale's iron ore operations

KLINGER Brazil's K7302DL packing improved sealing reliability at Vale's Cauê Mine, delivering longer service life, fewer interventions, and safer operations.

At Vale's Cauê Mine in Itabira, Brazil, sealing reliability plays a critical role in maintaining stable production. Pumps operating in grinding and desliming circuits rely on sealing water – yet the low quality of this water created persistent problems. Excess leakage and contamination of internal pump components caused frequent stoppages, rising maintenance costs, and operational risks. The plant's engineering team turned to KLINGER Brazil, a long-standing technical partner, to evaluate the failure and recommend a durable, efficient alternative.

Elias Machado, Key Account Manager for the Mining sector at KLINGER Brazil

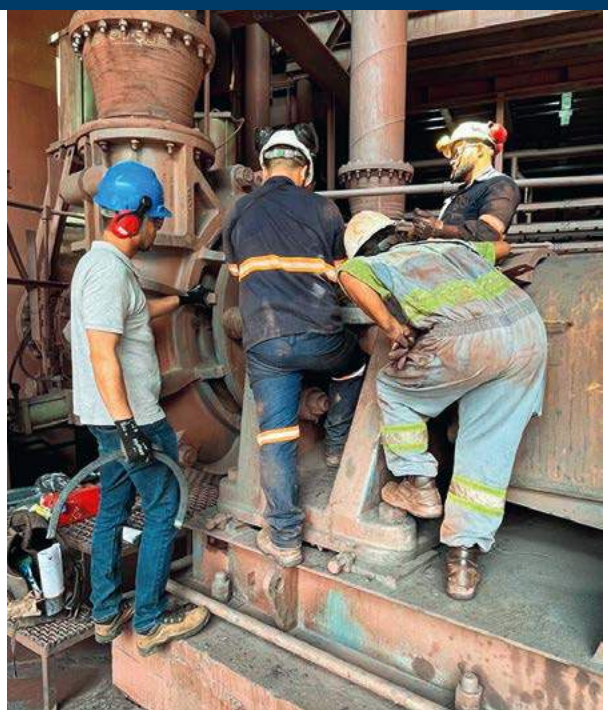
Technical challenge in a demanding environment

The packing previously in use could not withstand the abrasive, low-quality sealing water circulating in the iron ore beneficiation

TopLine K7302DL packing – manufactured locally by KLINGER Brazil.

> "With proper guidance and the right adjustments, the packing settled perfectly into the equipment."

Vinicius Tomiati, Product Specialist at KLINGER Brazil



Vinicius Tomiati (left) oversaw the installation of the packings at Vale's Cauê Mine in Itabira, Brazil.

process. As a result, the plant faced recurring shutdowns, reduced throughput, and elevated safety concerns due to repeated manual interventions. Vale required a solution that could withstand aggressive process conditions without major equipment modifications.

A reliable fit: TopLine K7302DL

After on-site assessment, KLINGER Brazil recommended the TopLine K7302DL, a packing constructed from continuous virgin textured fibers and impregnated with KLINGER's proprietary Doulon® oil. Engineered for low wear and high abrasion resistance, it is specifically suited for abrasive mining media. The KLINGER Brazil team provided hands-on training and support to the maintenance staff during installation, ensuring proper assembly and carrying out checks during start-up. "The process was precise and straightforward. With proper guidance and the right adjustments, the packing settled perfectly into the equipment," says Vinicius Tomiati, Product Specialist at KLINGER Brazil.

Installation gains: fewer interventions, more uptime

The results were immediate and measurable. The K7302DL extended service life by 3.68 times compared with the previous packing. The plant reduced three packing changes to just one, adding 954 hours of continuous operation. The annual average dropped from 26 replacements to 7, significantly minimizing pump stoppages and reducing leakage.

These improvements led to lower maintenance costs, fewer corrective tasks, and increased operational safety – thanks to reduced exposure of maintenance personnel to rotating equipment.

Vale's technical team emphasized KLINGER's involvement throughout the process. According to Elias Machado, Key Account Manager for the Mining sector at KLINGER Brazil: "Mining requires reliability above all else. Our role is to deliver robust solutions and stay close to the customer throughout implementation and performance validation."

Key outcomes

- 3.68× longer service life
- 954 hours of additional uptime
- Maintenance interventions reduced from 26 to 7 per year
- Lower water consumption
- Improved operational safety and stability
- Significant reduction of operational costs
- Increased equipment availability and productivity
- Lower environmental impact and enhanced technical performance

"Our role is to deliver robust solutions and stay close to the customer throughout implementation and performance validation."

Elias Machado, Key Account Manager for the Mining sector at KLINGER Brazil

Browse avdanced solutions for the mining industry

The first Henkel facility to use the new KLINGER system is located near Brussels, Belgium.

Brussels/Belgium

A better way

With a new self-cleaning filtration system, KLINGER Belgium is challenging the status quo.

A story of unknown origin credits automotive inventor Henry Ford as saying "If I had asked my customers what they wanted, they would have told me a faster horse." Much like Ford's vision for quicker transport, KLINGER Belgium is transforming industrial filtration by improving processes that others accept as the only option. Adhesives manufacturer Henkel in Brussels, Belgium, worked with KLINGER to implement self-cleaning filters in a collaboration that is saving the company 38,000 euros a year and creating six tons less waste per year than the old method.

Solving a sticky problem

Industrial adhesives are a vital but challenging product. Ingredient viscosities allow particles to easily adhere to filters, requiring frequent cartridge replacement. Filter housings must then be cleaned using pyrolysis, a time-consuming and expensive process. In addition, this work is done manually, with staff donning personal protective equipment to avoid chemical exposure. Waste disposal is cumbersome and expensive, requiring special handling to ensure environmental and personnel safety. Despite these downsides, the process has gone unchanged for so long that manufacturers often see it as immutable. David Wallenus, Key Account Manager at KLINGER Belgium, explains, "It's one of those cases where the old methods worked. So, if you go to a customer, they say, 'Everything works fine' because they don't know there's a better way. They were used to having this amount of waste, so it was not conceived as a problem."

Reducing waste and maintenance at Henkel

Despite the industry standard, KLINGER Belgium believed there was room for improvement. With Henkel's blessing, they created a system of self-cleaning filters that fit the existing infrastructure without any

> “The collaboration with KLINGER has resulted in a sustainable and efficient solution. The system fits in well with our objective of reducing waste streams and improving processes.”
>
> **Carl Anckaert, Head of Maintenance & Engineering at Henkel**

need for modifications. Now, timed scrapers rotate around the filters, carrying away build-up for discharge into a receptor. After monitoring the new system for a test period, staff adjusted the scraping and discharge timers to optimize for viscosity, preventing the material from congealing before it can be removed. This has allowed Henkel to reduce hands-on maintenance from once every week to once every three months, and has eliminated more than 700 disposable filters from the system. The decrease in filter material used also creates fewer CO_2 emissions during pyrolysis, helping Henkel to reduce their carbon footprint.

David Wallenus, Key Account Manager at KLINGER Belgium

Carl Anckaert, Head of Maintenance & Engineering at Henkel

Building a scalable system

With this system up and running, KLINGER Belgium has proof of concept and is ready to scale. A second production line is now undergoing a retrofit, this time with a different adhesive. A third project is also planned for a facility in Antwerp. At each site, the KLINGER team is carefully monitoring the system during fitting and after return to production. Customizing the metrics for each adhesive formula is key, which takes live testing and fine-tuning.

Though this upgrade is a clear win for the innovative Henkel team, it may take time for more traditional companies to come around to a new filtration process. As David points out, “It’s really a process change, not a one-on-one change.” Despite the obstacles involved when making enterprise-wide alterations, KLINGER is confident that the results speak for themselves. With long-term monitoring, the Belgium team is gathering plenty of data to prove that Henkel’s new system is sustainable and cost effective. Furthermore, verbal feedback has been nothing but praise. “The collaboration with KLINGER has resulted in a sustainable and efficient solution. The system fits in well with our objective of reducing waste streams and improving processes,” says Carl Anckaert, Head of Maintenance & Engineering at Henkel. “It’s very rare for a project to be so unilaterally positive that you don’t have any drawbacks,” David says. “The cost advantage is clear, the safety advantage is clear. It rarely happens that way, so it’s a very nice thing to hear.”

Butterfly valves manufactured by KLINGER Die Erste.

Vilar de Pinheiro/Portugal

When reliability is factored into design

KLINGER Portugal supports pulp and paper plants with engineered valves and expansion joints that deliver reliability in extreme process conditions.

Helder Almeida, Sales Manager for Fluid Control and Sealing Solutions at KLINGER Portugal

In a pulp and paper mill, the most critical moments rarely occur during commissioning. They emerge months or years later, when production runs at full load, temperatures peak, and aggressive media circulate through the system. At that point, reliability is no longer a design objective – it becomes decisive for uptime, safety, and cost control.

For plant operators, the difference between stable operation and an unplanned shutdown often lies in components that receive little attention once installed. Valves and expansion joints are among them. When correctly engineered, they remain invisible. When they fail, they immediately affect productivity, maintenance effort, and operational continuity.

This reality shapes the way KLINGER Portugal works with pulp and paper plants. Active in the industry since its early days, the company supports several projects per year – each different in scope yet sharing one requirement: components must perform reliably in conditions where failure is not an option.

Where operational risks often arise

Valves and expansion joints rarely become critical because of their basic function. Instead, weaknesses emerge from the process conditions in which they operate. Aggressive liquors, crystallization in evaporation processes, abrasive media in causticization, and extreme thermal cycling near recovery boilers place sustained stress on materials and designs. In these conditions, even minor deviations in material choice or internal valve design can have significant long-term effects.

One of the most common challenges in pulp and paper applications is incorrect material selection or unsuitable valve seat designs. While such choices may appear acceptable during procurement, their consequences surface during operation. "Unstable behavior, excessive pressure losses, accelerated wear, or unexpected shutdowns are typical outcomes – each with direct implications for plant safety, maintenance effort, and production output," says Helder Almeida, Sales Manager for Fluid Control and Sealing Solutions at KLINGER Portugal.

Large-diameter expansion joints, manufactured by KLINGER Turkey, were supplied to a pulp and paper mill in Portugal.

KLINGER Portugal specializes in supplying high-pressure valves for several applications.

Engineering decisions that reduce downstream impact

To mitigate these risks, KLINGER Portugal focuses on early involvement during the specification phase. Rather than addressing individual components in isolation, plant processes are evaluated as a whole – considering media characteristics, pressure, temperature, thermal cycles, vibration, and regulatory requirements together.

This approach proved decisive in a recent recovery boiler project, where large-diameter metallic expansion joints (DN 1100, DN 1300, DN 1700) were installed in evaporation gas extraction ducts. Operating in high temperatures and vibration, these joints had to absorb movement without transferring excessive loads to connected piping. Dimensional calculations and vibration analyses by expansion joint specialists from the manufacturer, KLINGER Turkey, formed the basis for technical approval and long-term operational stability. For the plant operator, this upfront engineering reduced the risk of installation conflicts and premature component fatigue.

Valves that quietly do their job

The same benefit-driven logic applies to valve applications across other projects. In evaporation systems handling black liquor, ball and butterfly valves made from exotic alloys were selected to withstand crystallization and chemical attack. In bleaching areas, lined ball valves were used to manage corrosive media while ensuring tight shut-off and predictable performance.

When these components perform as intended, they attract little attention. Their value becomes evident over time – through uninterrupted operation, reduced maintenance interventions, and consistent process control.

The twist

Perhaps the clearest indicator of success in pulp and paper plants is the absence of incidents. No emergency calls during peak production. No unplanned shutdowns caused by component failure. No rapid replacements under pressure. The system simply runs.

“In pulp and paper plants, reliability does not happen by chance. It is engineered by understanding the process, selecting the right materials, and considering the system as a whole rather than individual parts,” says Helder. By supporting plant engineers from specification through operation and ongoing MRO activities, KLINGER Portugal helps transform technical complexity into operational continuity – an advantage that directly supports competitiveness in a demanding industry.

Learn more about KLINGER products for the pulp and paper industry

> “In pulp and paper plants, reliability does not happen by chance. It is engineered by understanding the process, selecting the right materials, and considering the system as a whole rather than individual parts.”

Helder Almeida, Sales Manager for Fluid Control and Sealing Solutions at KLINGER Portugal

Selection of projects

- Recovery boiler systems: DN 1100 – DN 1700 expansion joints for evaporation gas ducts
- Evaporation plants: ball and butterfly valves for black liquor, including exotic alloys
- Bleaching areas: full packages of lined ball valves for corrosive media
- Plant-wide MRO: gaskets, valves, instrumentation, and expansion joints

SUSTAINABILITY COME TRUE


Team KLINGER
is running for charity all over the world.
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KLINGER Schöneberg
wins big at the EcoVadis certification.
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KLINGER Kempchen
takes pride in another EcoVadis Gold Award.
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Bediha Tezcan gets profiled.
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KLINGER Holding

A year of foundations

In 2025, the KLINGER Group laid important foundations for transparent, robust, and future-proof sustainability and ESG reporting.

Regardless of the fact that mandatory reporting has been deferred thanks to a simplification of the regulations, KLINGER has decided to use the time gained strategically. Waiting was not an option. At KLINGER, we regard sustainability as a long-term strategy, because “transparency is increasingly becoming a key factor for building trust and a competitive edge,” says Yusuf Avci, ESG Manager at KLINGER Holding.

Yusuf Avci and Ines Weikl, responsible for sustainability at KLINGER Holding, created a common database for the entire Group in 2025.

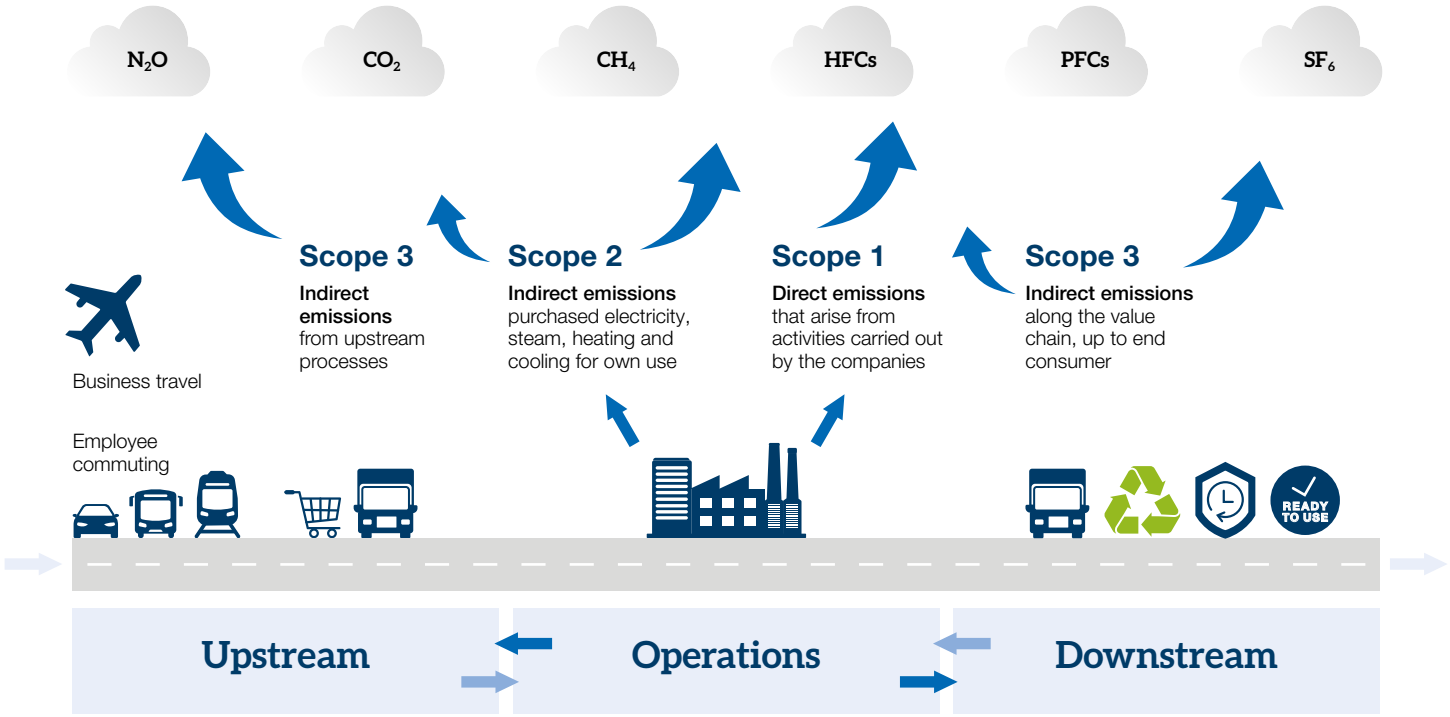
Clear ESG priorities

KLINGER established a common understanding of ESG data back in 2024, followed by the definition of clear responsibilities and operational implementation in 2025. The three key fields of action are:

1. Implementation of standardized ESG software
2. Establishment of structured data provisioning across all KLINGER companies
3. Further development of greenhouse gas accounting, in particular Scope 3

To avoid additional interfaces, utilize existing expertise, and create a uniform, audit-capable data basis, KLINGER Holding has implemented ESG software that is based on the same platform as the existing financial reporting system. Each subsidiary records its ESG data independently, while the holding company consolidates this data throughout the Group to ensure a consistent overall picture.

All about the KLINGER Group’s sustainability efforts



KLINGER's carbon emissions comprise three different scopes.

Data is created where responsibility lies

"While Scope 1 and 2 are already well established, Scope 3 was our biggest challenge," says Ines Weikl of Group Controlling at KLINGER Holding. Scope 3 comprises numerous indirect emissions along the entire value chain. With 55 business units and 93 locations, the base year 2024 provides a comprehensive, realistic data set as a benchmark for comparability, prioritization of the key emission sources, and targeted action planning. Structured processes, transparent communication, and Group-wide harmonization proved to be critical to the project's success. With a uniform ESG system, clearly defined responsibilities, a defined base year, and in-depth greenhouse gas accounting, KLINGER has laid a solid foundation for a more sustainable future.

> "Transparency is increasingly becoming a key factor for building trust and a competitive edge."
>
> **Yusuf Avci, ESG Manager at KLINGER Holding**

For two consecutive years, KLINGER Schöneberg has successfully maintained its position in the EcoVadis Sustainability Rating and was awarded "Gold" status.

Graben-Neudorf/Germany

Double EcoVadis honors

KLINGER Schöneberg has once again achieved EcoVadis Gold, ranking among the top 5% of companies worldwide for sustainability and responsible business.

Marcel Gossman, Managing Director of KLINGER Schöneberg

For the second year in a row, KLINGER Schöneberg has been recognized with the prestigious EcoVadis Gold Medal. This distinction places the company in the 96th percentile, ranking among the top 5% of more than 130,000 companies assessed worldwide. It underscores not only consistent progress but also the responsibility demonstrated by every employee at the company's Graben-Neudorf site.

Sustained excellence in key areas

KLINGER Schöneberg has steadily improved its sustainability performance in areas such as ethics, sustainable procurement, and environmental protection. These achievements are the result of systematic policies, long-term goals, and a culture that embeds sustainability into every decision. The company's approach focuses on reducing negative impacts, minimizing risks, and increasing efficiency across the entire value chain.

> "Sustainability is not a one-time project but an ongoing commitment that safeguards the environment, strengthens partnerships, and ensures future readiness."
>
> Marcel Gossman, Managing Director of KLINGER Schöneberg

Beyond compliance: taking responsibility

To strengthen and professionalize its sustainability strategy, KLINGER Schöneberg works closely with DFGE – Institute for Energy, Ecology and Economy. Their expertise supports the company in measuring, evaluating, and optimizing performance, ensuring that improvements are both measurable and lasting.

KLINGER Schöneberg's efforts go beyond regulatory requirements. Key initiatives include:

- Comprehensive codes of conduct defining ethical business practices
- Resource efficiency in production and logistics
- Transparent supplier partnerships with a focus on fair working conditions
- A strong corporate culture that engages employees in sustainability initiatives

These measures demonstrate how responsibility is embedded not only in strategy but also in daily operations.

Recognition that inspires

The second consecutive Gold award is both a recognition of the company's achievements and an incentive to keep moving forward. For Marcel Gossman, Managing Director of KLINGER Schöneberg, and his team, "sustainability is not a one-time project but an ongoing commitment that safeguards the environment, strengthens partnerships, and ensures future readiness."

Oberhausen/Germany

Team spirit rewarded with Gold

KLINGER Kempchen celebrates yet another win with EcoVadis.

For KLINGER Kempchen, 2024 was a year of many challenges – and plenty of successes. The team set itself the mammoth task of meeting the stringent requirements of EcoVadis and achieve Gold status. With combined forces, commitment, and collaboration among the newly formed team, the company has scored a success. This places KLINGER Kempchen among the top five percent of assessed companies worldwide – an impressive result that underlines its commitment to acting responsibly, sustainably, and ethically.

The areas of activity in detail

Sustainability is about more than just fulfilling formal requirements; it is an applied mindset that informs the company's daily actions. KLINGER Kempchen has implemented reliable solutions in the following areas, among others:

- By using modern, energy-efficient technologies such as LED lighting and heat recovery, precise monitoring, and targeted measures, as well as reusing and reducing packaging materials, KLINGER Kempchen is continually reducing its CO_2 emissions.
- Strict waste management and training for employees ensure that sustainability is part and parcel of daily operations in all areas.
- Investment in digital processes reduces paper consumption, while innovative new products with a longer service life also have a smaller ecological footprint.
- To further enhance its supply chain, KLINGER Kempchen has introduced a code of conduct for suppliers, which stipulates requirements regarding ethical behavior, occupational health and safety, environmental protection, and fair business practices. This also ensures sustainability beyond the bounds of the company.

In their respective roles, Stephanie Strickland (Sustainability Manager), Marcus Schafaff (Quality Manager), and Sandra Linnemann (Head of Human Resources) help put the company's sustainability guidelines into action and ensure that they are firmly integrated in all relevant processes.

A CSR report based on the United Nations' 17 Sustainable Development Goals (SDGs) demonstrates the transparency at KLINGER Kempchen. More than just a set of rules, its procurement policy is a promise of quality, responsibility, and long-term partnerships that minimize the ecological footprint and strengthen social standards.

EcoVadis requirements and new statutory specifications are becoming ever more complex and extensive. Rather than resting on its laurels, KLINGER Kempchen aims to keep pushing the boundaries of its sustainability drive.

Mari Carmen Arnal, Quality Manager at KLINGER Spain

Madrid/Spain

Wrap battle

KLINGER Spain's new reusable packaging system is a mic drop for eco-friendly shipping.

Fluid control systems use a variety of heavy and irregular parts, requiring careful packaging and shipment. Despite KLINGER Spain's excellent audit metrics and multiple regulatory certifications, the team knew there was still room for improvement. Mari Carmen Arnal, Quality Manager at KLINGER Spain, saw an opportunity: the logistics department already had rigorous testing in place for both incoming supplier materials and outgoing KLINGER materials. Was there a way to combine the two, and make the process more sustainable?

Reducing and reusing

Replacing purchased box filler with recycled supplier packaging materials would allow KLINGER Spain to maintain less packaging inventory, but preparing the materials for reuse would require a few additional steps. New tools, including a cardboard shredder and paper cushioning system, allow the team to turn received shipping materials into reclaimed packaging.

Rather than requiring custom sizes to fit the wide range of KLINGER valves and accessories, these machines reshape paper and cardboard into corrugated packs that are easily formed into a variety of shapes. Outgoing shipments are visually consistent, with branding prominent on the exterior packaging. Interior packaging consists of the materials best suited to each product,

The new packaging process maintains branding and quality consistency.

This paper cushioning system creates custom-length corrugated pads from 100% recycled paper.

> This is something that we didn't used to think about. Now that we are in this movement, we are more creative in looking for improvements. This is going to be imperative for our customers. I think that is something good for us, and also for the business."

Mari Carmen Arnal, Quality Manager at KLINGER Spain

such as cardboard and paper fillers, bubble wrap, or shrink wrap. The reuse of supplier packaging has allowed KLINGER Spain to reduce waste by more than two tons per year, minimizing both the branch's carbon footprint and its expenses.

Testing and customer input helped the team to fine tune the new process. According to feedback, rough handling and settling during shipping were major issues. As Carmen explains, "There is a lot of movement in these boxes during transport. What we try to do is to protect the material as much as possible." The top priority was to increase padding with corrugated and air-filled materials, anchoring the parts in place and preventing them from striking any hard surfaces. Because transport conditions can be unpredictable, cushioning the product is the best way to ensure a successful shipment. This method has proven effective, with customer shipping complaints dropping by more than half (from 1.1% to 0.4%) in one year. "Some customers told us that they have seen an improvement with this packaging," Carmen says. "So that's where we can see that the changes are okay, and the customers appreciate that."

Thinking green

The new system has been a success in more ways than one. Not only has a greener packaging process decreased resource consumption, it has also spurned a more innovative environment throughout the rest of the business. Seeing this successful project has inspired the team to think cross-functionally, incorporating greener behavior throughout the entire project life cycle. Upcoming efforts will include examining power and water use by the department. Carmen shares: "This is something that we didn't used to think about. Now that we are in this movement, we are more creative in looking for improvements. This is going to be imperative for our customers. I think that is something good for us, and also for the business."

KLINGER Spain's packaging system statistics

KLINGER Spain	2023	2024
Total costs of packaging	€145,171	€115,673
Costs of packaging vs. Sales	0.38%	0.30%
Packing waste	€4,146 (24.9t)	€2,194 (22.8t)
Filler material	Reduction of 33.3% of the costs	
CCRP* because of packaging	1.1%	0.4%

* Customer Complaint Resolution Process

Tuzla/Turkey

Instructions not included

Engineer Bediha Tezcan is mastering the mechanics of uncertainty.

While Bediha Tezcan excelled as a student, it's more accurate to call her a lifelong learner. Armed with a rigorous mechanical engineering degree, she graduated into an industrial sales role that required a delicate balance of technical precision and interpersonal intuition. Her innate curiosity made customers feel heard, allowing her to flourish in roles where the human element matters as much as the hard skills. With effort and consistency, she supplemented her extensive book learning with the less tangible lessons taught by time and practice. Now, Bediha navigates her career by embracing the trial and error of experience.

Learning how to learn

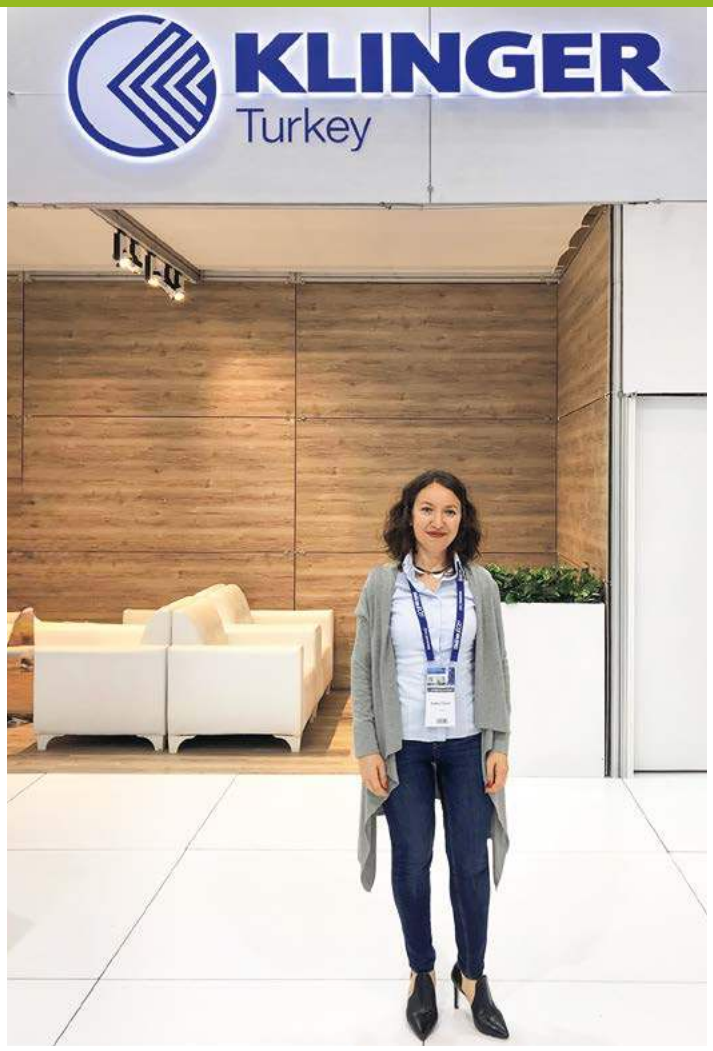
Some of the best advice she received early in her career was from an older colleague, who pointed out that the ability to learn was far more valuable than the knowledge itself. Bediha explains: "He told me, 'Don't think that you know everything. Just know where you should go for the solution.' I don't have to know everything if I know how to find it." That framework has built customer trust, positioning her as a collaborative problem solver rather than as someone relying only on static expertise. Of course, building foundational knowledge was also key to her success. Her early career included work at a KLINGER subsidiary, where she gained extensive sealing and valve experience. After almost ten years in export sales, Bediha joined KLINGER Turkey. She started as a Senior Sales Engineer, then quickly moved into an Export Key Account Executive role, where she thrives to this day.

> "Don't think that you know everything. Just know where you should go for the solution."
>
> **Bediha Tezcan, Export Key Account Executive at KLINGER Turkey, quoting an older colleague**

The relationships Bediha has built throughout her career are extensive, often leading to fortunate reconnection as paths cross again in later years. One KLINGER customer knew her from her 20 years earlier and was eager to catch up. Returning to the KLINGER Group brought a feeling of coming full circle, especially from the perspective of learning from colleagues. "I started with KLINGER, maybe I will finish with KLINGER," Bediha muses. "It's good to share your experience with the new generation. If you have been working for a long time, and you know the company for a long time, you transfer the knowledge to other people." While she never stops learning from her peers and from her customers, being able to give back by doing the same for her newer colleagues offers a satisfying symmetry.

Insight through immersion

While formal education and peer guidance have taken her far, some things Bediha has simply had to learn by doing. This was especially apparent when she had her son in 2023. "Even when you read the books, you still have no idea," she laughs. "You have to learn from your child, what he likes and what he doesn't."



Bediha Tezcan, Export Key Account Executive at KLINGER Turkey

Bediha learns a lot from her son, too.

She has also discovered through practice that coming to the office helps her to optimize a work-life balance. Engaging in her professional identity during the day lets Bediha be more present when she returns home. “My husband says, maybe you should go every day, because you are much happier or rather balanced when you come home. I like to speak, to share the things, to see the people,” she says.

As a woman in engineering, Bediha is well aware that cultivating a strong network of female colleagues is essential for navigating her industry’s unique challenges. She also makes a point of learning by observing, following the careers of her fellow women through industry news and LinkedIn. Women’s attention to detail is an advantage, she finds, in a field that relies on tight tolerances and precise specifications. Her inquisitive nature continues to serve her well, and as her knowledge base grows, so does her advice for younger peers. The most important aspect: never stop learning. “At any age, at any time of your life, you keep trying to improve yourself,” she shares. “You can achieve this. It’s not easy, but it’s not impossible.”

Bediha on site with an expansion joint.

> “At any age, at any time of your life, you keep trying to improve yourself.”
>
> **Bediha Tezcan, Export Key Account Executive at KLINGER Turkey**

Team KLINGER

KLINGER runs worldwide for a good cause

The KLINGER Group demonstrated impressive team spirit at the Wings for Life World Run 2025. More than 149 employees worldwide took part and raised more than €5,000 for spinal cord research.

25
KLINGER companies

TEAM RANK
116
GLOBAL

149
participants

On May 4, 2025, the KLINGER Group participated in the Wings for Life World Run for the first time as a united #teamKLINGER. Participants joined the official flagship runs in Vienna, Austria and Breda, Netherlands, gathered in groups at other international locations, or ran individually on their preferred routes via the app-run. Everyone ran simultaneously to support those who could not.

United for a good cause

KLINGER Group CEO Christoph Klinger-Lohr, who was among the 13,500 participants at the flagship run in Vienna, was enthusiastic: "It was fantastic to be part of this incredible atmosphere and to run together with thousands of others for a good cause." KLINGER Holding's CFO Peter Müller, who also ran in Vienna, added enthusiastically: "The energy and motivation during the run was absolutely contagious. This makes running a real pleasure".

149 runners worldwide

The event started simultaneously around the world at 13:00 (UTC+1) on Sunday, May 4, 2025. While KLINGER colleagues in Europe started running in the early afternoon, teams from Peru, Mexico, Argentina, or Texas (USA) started their races in the early morning. Jasmin Ladinig, Head of Group Marketing & Communications at KLINGER Holding, was particularly pleased with the global participation: "149 colleagues from 25 KLINGER companies in 19 countries around the world – this is fantastic and has further strengthened our sense of community."

Boosting team spirit

In addition to the athletic commitment, the professional apparel provided to all participants greatly enhanced the team spirit. Jasmin explains: "To ensure a consistent brand presence, we provided all runners with KLINGER-designed shirts. This not only increased visibility, but also boosted our collective spirit."

Donations for spinal cord research

KLINGER Holding covered the entry fees in full. Cornelia Weiser, Head of Group Controlling at KLINGER Holding, said: "We paid the entry fees for all our employees because 100% of these fees go to spinal cord research. This is a cause close to our hearts, and we are proud to support the goal of finding a cure for spinal cord injuries." In total, #TeamKLINGER donated over €5,000.

The team is ready to run and walk again in May 2026 – together for a good cause.

#teamKLINGER
Distance
1,187 km
742 mi

Wings for Life World Run

In 2025, the Wings for Life World Run broke all previous records with 310,719 participants from 191 nationalities in 170 countries running simultaneously for charity. The event raised an impressive €8.6 million – a new milestone. Most importantly, 100% of these funds will go directly to spinal cord research to find a cure for spinal cord injury. Learn more at www.wingsforlifeworldrun.com.

Watch the recap video

KLINGER Holding GmbH
Am Kanal 8-10 » A-2352 Gumpoldskirchen
T +43 2252 607 186
office@klinger-international.com

www.klinger-international.com

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