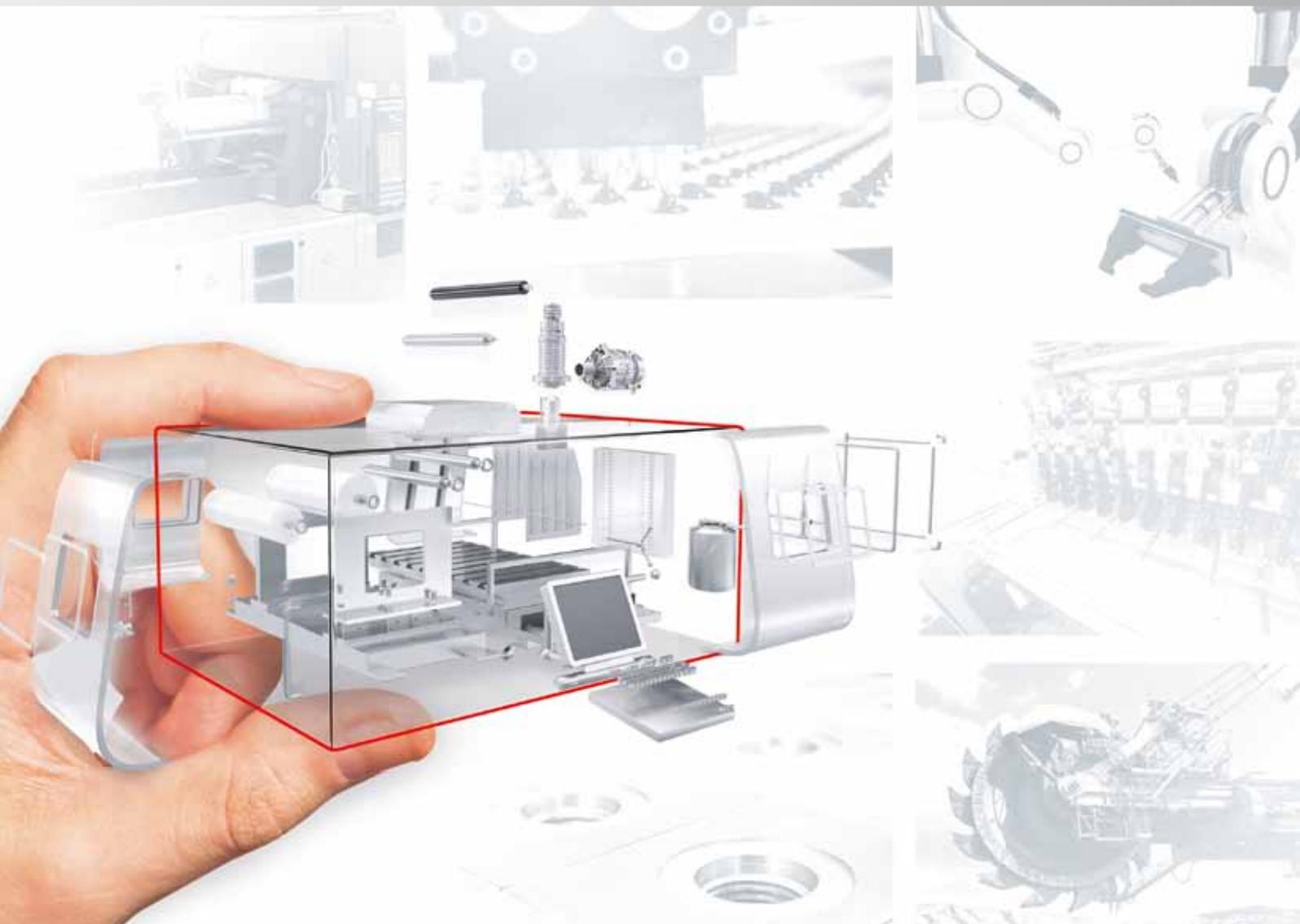


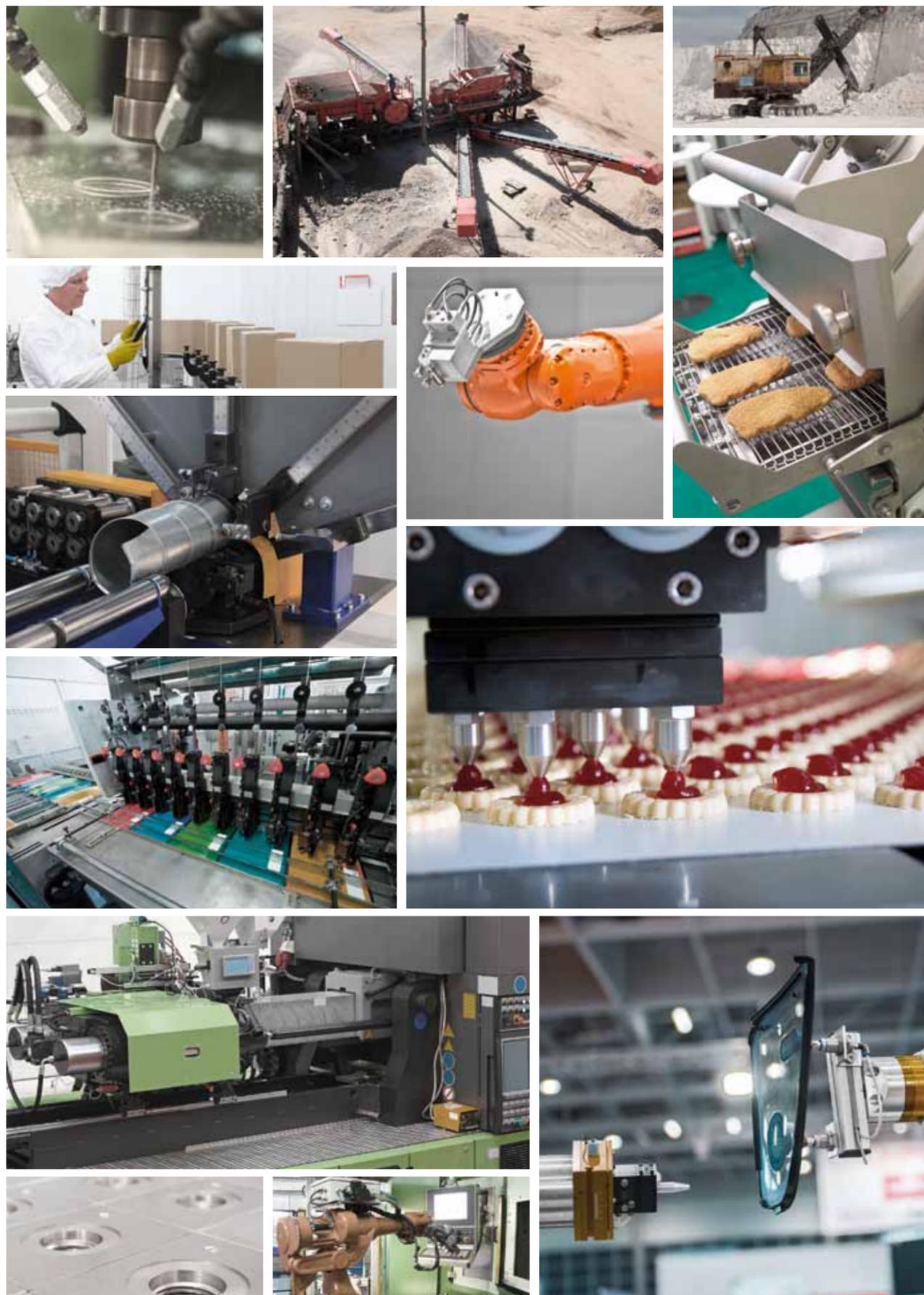
LOCTITE®
BONDERITE®
TEROSON®

Industrial Processing Machinery Industry

Adhesive, Sealant and Functional Coating Solutions



Excellence is our Passion



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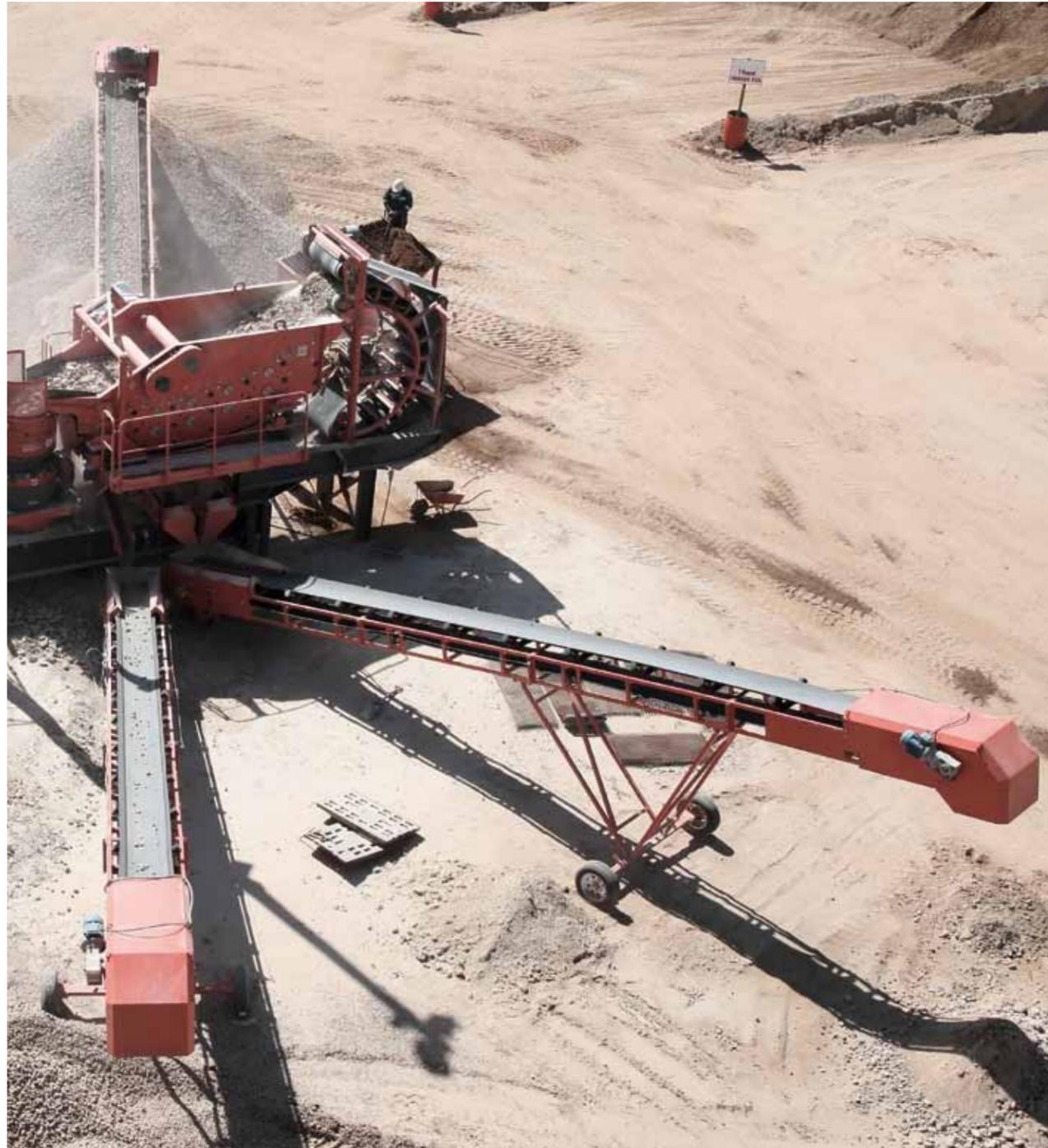
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1

Key Benefits



More Reliable and Productive Machines

The technologies provided by Henkel can help you improve your machines in several ways.

- TEROSON and LOCTITE flexible adhesives prevent unforeseen leakage and ingress of contaminants.
- LOCTITE thread sealers withstand the extremely high pressures encountered in pneumatic and hydraulic systems.
- In addition, compression thread sealers like LOCTITE 55 are fast to apply and provide more reliable instant sealing.
- BONDERITE corrosion protection guarantees the durability of metal surfaces treated, and prolongs metal part service life.
- LOCTITE threadlockers maintain bolt tension, enabling your machines to operate at faster speeds.

Henkel thread sealing solutions outperform traditional sealing systems to guarantee fluid system tightness.

	Hemp & Paste	PTFE	LOCTITE 55
Application onto thread	Requires expertise	Requires expertise	Easy to apply
Brushing in	Yes	Yes	No
Greasing	Yes	No	No
Allows repositioning	Yes	No	Yes
Assembly time per joint	1 min	1 min	0.5 min

Eco-Efficient Machinery

Henkel actively contributes to improving the sustainability of industrial operations by offering faster and less resource-consuming assembly and functional coating systems. Henkel's solutions deliver more value at a reduced ecological footprint.

- BONDERITE metal pre-treatment coatings require less energy and less raw material (water and additives), and generate less waste water for recycling.
- LOCTITE structural and TEROSON flexible adhesives are room temperature solutions that save energy and eliminate some of the equipment investment necessary for welding.
- LOCTITE structural adhesives enable customers to incorporate new materials such as composites, polymer concrete and other materials lighter than carbon steel alloys, offering significant weight savings. This in turn means a reduction in raw material consumption, a lower intermediates requirement and reduced final transportation weight. Lightweight machines also consume less energy during operation.



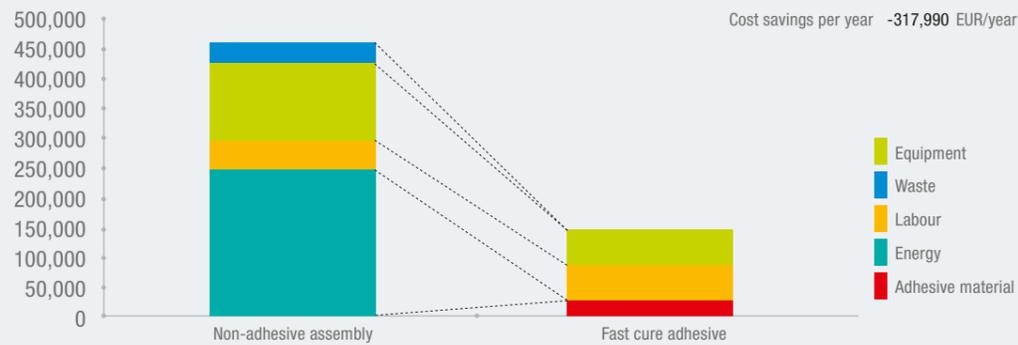
Precision and Accuracy

Our solutions help machinery manufacturers improve equipment precision without compromising machinery productivity.

- LOCTITE threadlockers maintain bolt tension **preventing** vibration loosening and keep mechanisms working under controlled conditions.
- LOCTITE liquid gaskets prevent fretting corrosion and relative movement between flanges.
- LOCTITE retainers improve the accuracy of cylindrical joints (bearings, rollers, shafts or gears), preventing chattering (typical in joints with keyways) or slippage (typical in press fit joints).
- LOCTITE flange coupling grades increase load transfer capacity and reduce the risk of slippage.
- LOCTITE structural and TEROSON flexible adhesives enable customers to incorporate new materials such as composites, polymer concrete and polymers. These materials provide properties such as impact resistance, vibration dampening, and reduced sensitivity to thermal changes due to lower thermal expansion coefficients. Lightweight elements offering lower moments of inertia etc. also become viable.
- LOCTITE and TEROSON direct glazing solutions allow customers to reduce panel weight, e.g. to build lighter doors that can be opened and closed during machinery operation without affecting machine accuracy.
- Sound deadening materials reduce vibration and noise, improving mechanism precision.

Fast cure adhesives can significantly reduce energy consumption and waste, contributing to a lower ecological footprint.

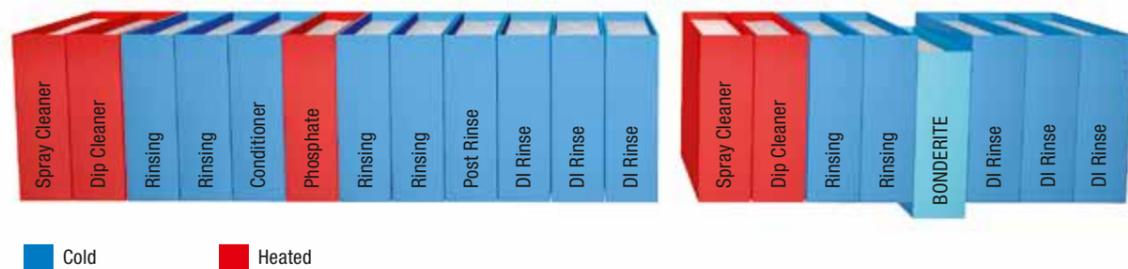
Cost Center View



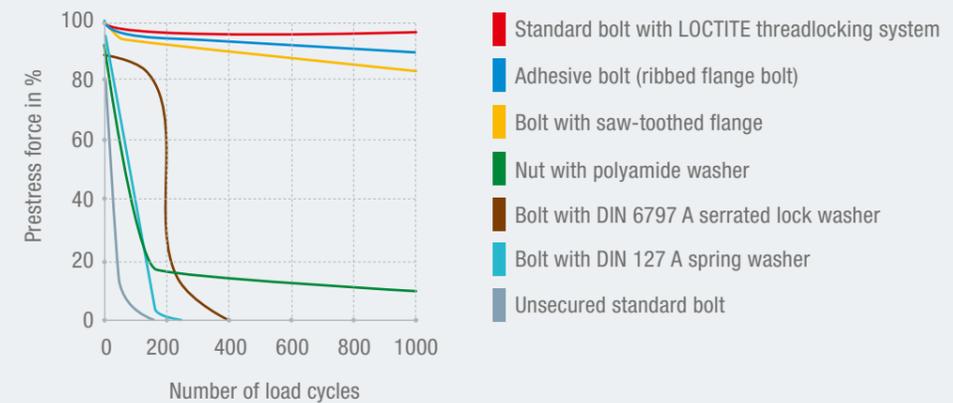
Henkel's functional coating solutions require fewer operational process steps and reduce water and energy consumption compared to traditional solutions.

Traditional Solutions

Henkel's Functional Coating Solutions



Threadlockers outperform other bolt locking systems, ensuring that assembled parts can better withstand vibrations and stress.





Endless Design Opportunities

Once a dream, the next generation of machines has become a reality thanks to Henkel's assembly solutions.

- LOCTITE structural and TEROSON flexible adhesives enable customers to incorporate new materials and produce innovative shapes, giving them more design freedom in the creation of functional components and more attractive guards and covers.
- LOCTITE and TEROSON direct glazing solutions allow customers to reduce panel weight, e.g. to build lighter doors that can be opened and closed during machinery operation without affecting process accuracy.



Comprehensive Solutions

Henkel offers comprehensive expertise within the machinery industry, combining an extensive and industry-proven product portfolio with a unique level of know-how covering both the entire value chain and the full machinery life cycle.

1. Product Portfolio

Benefit from our extensive portfolio of industry-proven products in delivery forms ranging from small 0.5ml tubes to large multi-kg drums and containers.



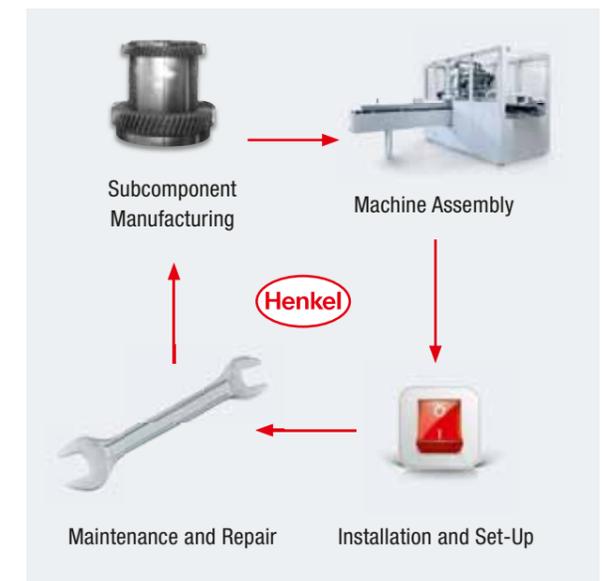
2. Value Chain

Henkel offers you more than state-of-the-art adhesive, sealant and functional coating products. We give you access to our unique expertise covering the entire value chain. So whatever you build, assemble, repair or maintain, make the most of our technical consultancy and expert training courses – services that complement our engineering solutions to generate the best results for your machinery needs.



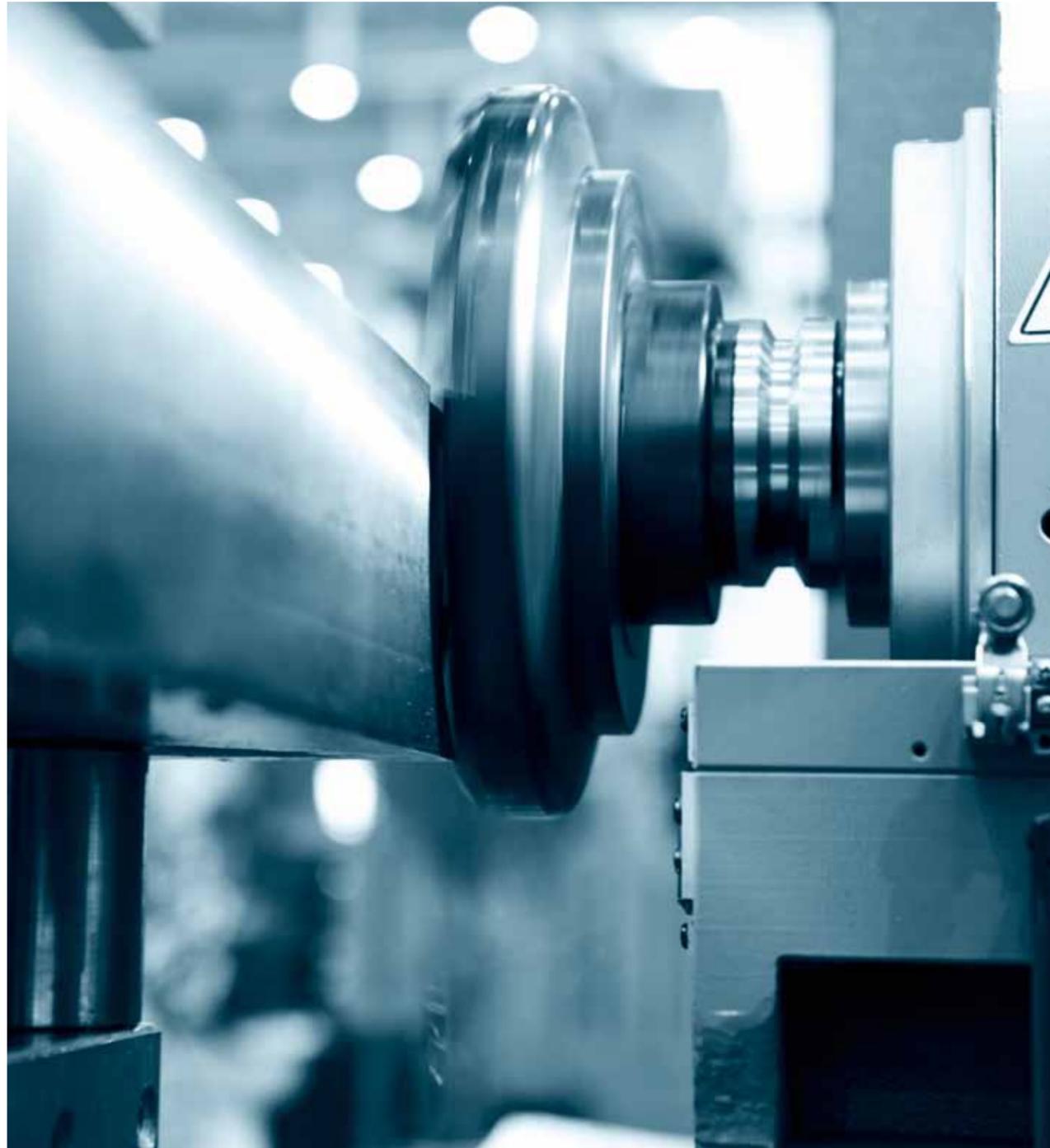
3. Machinery Life Cycle

- Benefit from our proven know-how in maintenance to improve the reliability of your machines.
- Our solutions ensure excellence in manufacturing subcomponents and when assembling, installing, and maintaining the machine.
- Our comprehensive portfolio is designed to cover most of your needs as encountered during assembly, sealing and functional coating operations.



2

Applications



Direct Glazing

What?

Direct glazing is a modern joining method designed to secure glass panels within their frames.

Why?

Direct glazing guarantees a good seal and significantly contributes to lightweight construction, enabling window panels to add stiffness and strength to their frames.

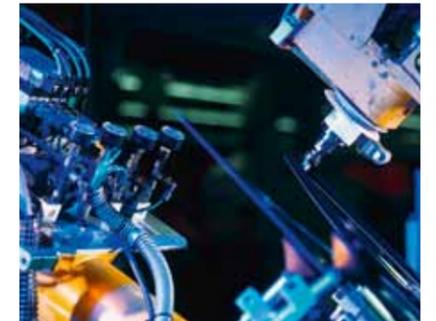
Where?

For inspection and safety windows, protection panels and machinery covers.

How?

High-performance, flexible adhesives make direct glazing an easy operation, as exemplified in the automobile industry.

Broken window replacement is not a major issue, as repairs can be carried out rapidly, safely and securely at the customer's facilities with easy-to-use handheld tools.



Did you know?

Windscreens are quickly replaced in the automobile repair shops in 30 minutes – with the same procedure available to major machinery manufacturers.





Flexible Bonding and Sealing

What?

Flexible bonding and sealing products enable machinery manufacturers to join and seal metal, plastic and composite parts likely to undergo relative movement.

Why?

Flexible adhesives absorb and transfer loads while guaranteeing structural integrity and tightness, especially between dissimilar materials. They can be also used to seal and/or protect other assembly types, e.g. riveted or welded fabrications.

Where?

Cover and protection panels, frames and structures, as well as other subcomponents in contact with fluids.

How?

Flexible bonding and sealing products are available in different packaging forms, ranging from cartridges for manual application to drums for mass production.

1K long-open-time and 2K accelerated-cure grades are available in user-friendly cartridges.



Structural Bonding

What?

Structural bonding is a unique system used in the manufacture and assembly of structural elements such as panels, covers and frames.

Why?

Structural bonding allows lightweight construction through the incorporation of new materials such as composites and plastics, and new designs such as thinner metal panels reinforced with stiffeners, outperforming traditional joining methods like welding, riveting or bolting.

Where?

Cover and protection panels, bearing members in structures, guard panels and subcomponents to any of the afore-mentioned.

How?

From manual assembly to highly automated lines, structural bonding offers a wide variety of manufacturing possibilities.

Dissimilar materials can be easily joined, enabling material selection according to purely functional requirements rather than the limitations of the joining system.

In addition, bonding allows assembly of structures of all sizes.



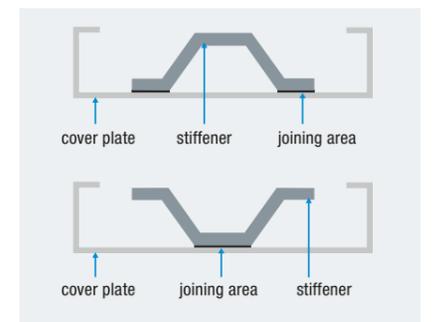
Did you know?

The new LOCTITE SI 5616 fast-cure flexible sealant in the coaxial cartridge can be applied using standard handguns to produce cured beads in less than 15 minutes.

Did you know?

Many sectors have benefited from lightweight structures. Elevator cabs are now more than 50% lighter thanks to the switch from heavy steel panels to bonded stiffeners as a means of reinforcing thinner and lighter sheet materials.

Stiffener Design
Example of two typical panel configurations using bonded stiffeners:





Instant Bonding

What?

Instant bonding solutions are used to join all kinds of materials and elements, including rubber seals, plastic pads, and tags.

Why?

Offering a unique assembly method for quickly connecting small to medium-sized elements, culminating in clean, strong and durable joints: Good performance and appealing aesthetics in one.

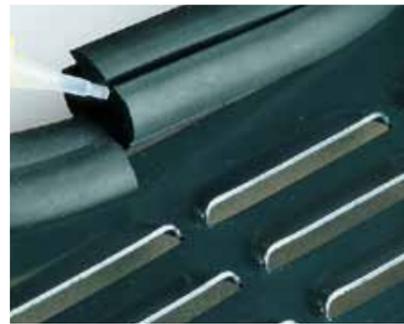
Where?

Protection and sealing elements, such as plastic and rubber straps, seals, beads, gaskets and pads. Also suitable for identification tags.

How?

Instant adhesives can be applied from their original container when assembling and maintaining the machine.

Dispensing equipment available for repetitive operations or mass component production requirements.



Threadlocking

What?

Threadlocking is a locking system designed to guarantee threaded connections (e.g. bolts and nuts) neither lose clamping force nor come undone during operation.

Why?

Threaded connections are prone to losing clamping force due to a number of factors, including vibration, impact, temperature changes, and overpressure. Anaerobic threadlockers offer a unique combination of high performance and comparatively low cost.

Where?

In bolted connections on structures and guards, mechanical assemblies in the form of cases, motors and gearboxes, and flanged connections. Subcomponent mounting bolts including those used on drivers, indexers and gearboxes.

How?

Threadlockers are a viable alternative to mechanical locking solutions such as washers or safety nuts. The products are simply applied directly onto the threads before assembly.

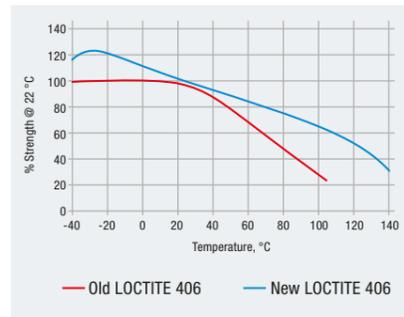
Bolted joints can be disassembled with regular tools and reused. Heat might be needed where large mating surfaces are involved.



Did you know?

Providing greater stability and thermal resistance at temperatures up to +120°C, LOCTITE instant adhesives offer significant advantages over competitor products.

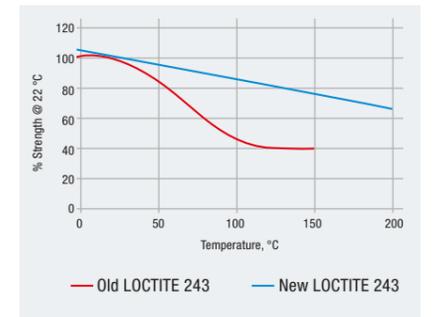
Comparison of the hot strength of LOCTITE 406, old and new formulation



Did you know?

With their improved formulations, LOCTITE threadlockers tolerate light contamination, quickly cure on most surfaces, and are able to withstand high temperatures.

Comparison of the hot strength of LOCTITE 243, old and new formulations





Thread Sealing

What?

Thread sealers are necessary to keep threaded connections tight regardless of the fluid, temperature and pressure.

Why?

Traditional thread sealers such as hemp or PTFE tape are still in use. However, modern LOCTITE thread sealers outperform them and bring significant manufacturing cost savings.

Where?

When assembling threaded connections in fluid management systems (lubrication, pneumatic, refrigeration, cutting fluids, chemicals, food and beverage production, etc.).

How?

Anaerobic LOCTITE thread sealers are applied on the threads prior to assembly. LOCTITE yarn gives instant seal and enables customers to make multiple seals faster than traditional methods.

LOCTITE thread sealants are designed to enable controlled disassembly. Part reuse is allowed in most cases.



Gasketing and Flange Coupling

What?

Gasketing materials are necessary to seal and/or reinforce covers and flanges.

Why?

Traditional gaskets may lose tightness over the time and do not reinforce flanges. LOCTITE gasketing and flange coupling grades guarantee high-performance sealing and increase load transfer capacity.

Where?

All kinds of flanged connections in subcomponents (pumps, gearboxes, indexers, etc.) and when assembling the machine structures and subcomponents.

How?

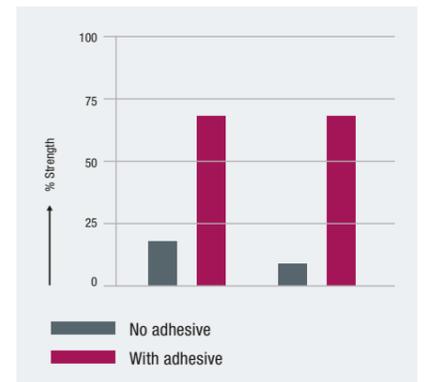
Anaerobic LOCTITE gasketing grades are easily applied to the clean flanges. The flanges are then assembled following standard procedures.

Flanges can be disassembled and gasketing material residues easily removed, so the parts can be reused.



Did you know?

Flanges coupled with LOCTITE anaerobics are able to transmit up to three times more torque without any design change!



Did you know?

LOCTITE 55 instant compression thread sealant saves up to 50% of the installation time compared to traditional systems such as PTFE tape or hemp and paste.



Retaining

What?

Retaining is a means of securing for cylindrical joints such as gears and bearings on shafts or in housings.

Why?

Traditional retention systems such as welding or keyways are costly to manufacture and have performance limitations (e.g. fatigue). Anaerobic retainers improve both the assembly process and performance.

Where?

In components such as rollers, gearboxes and motors, as well as when assembling and coupling these elements in the machinery.

How?

Anaerobic retainers are applied to the clean mating surfaces. They can be combined with an interference fit for highly stressed or high-load joints.

The disassembly force is related to the adhesive strength. On bearings, for example, mid-strength anaerobics allow disassembly with standard tools without compromising operating performance.



Functional Coating

What?

Metal pre-treatments dramatically improve coating adhesion and reduce the rate of surface corrosion when paint film is potentially compromised.

Why?

Prior to painting, substrates are often dusty, oily and/or corroded. Therefore a high-quality cleaning and conversion coating is essential for the durability of painted metal parts.

Where?

Cleaning, corrosion protection and pre-painting preparation of metal surfaces in guards or structures in order to promote adhesion of the subsequently applied organic film.

How?

The new generation of BONDERITE offers process savings combined with improved environmental performance: no toxic heavy metals, less waste water disposal and low energy cost. It forms a thin conversion coating layer, even on multi-metal surfaces (steel, Zn, Al).



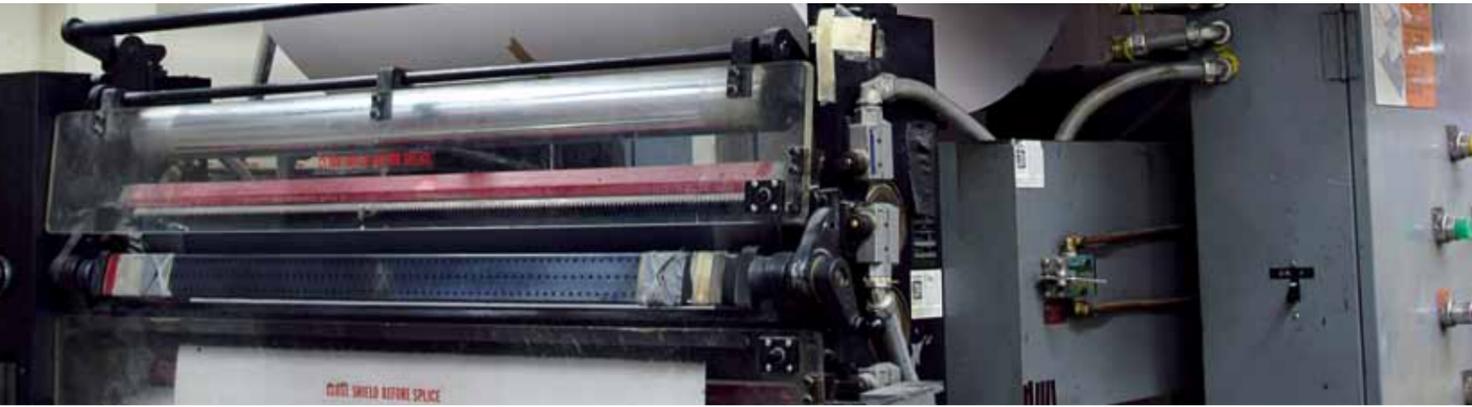
Did you know?

Industrial rollers can be easily manufactured using LOCTITE retaining adhesives, saving significant costs without compromising roller performance.



Did you know?

Without proper pre-treatment, premature failure of the finished system is highly likely. Paint systems are designed to be applied over clean metal that has been properly pre-treated.



Sound Deadening

What?

When operating, machinery generates vibration and noise, which negatively impacts on the working environment and accelerates machine fatigue.

Why?

Machinery reliability and endurance can be compromised if noise and vibration are not properly managed.

Where?

Machinery guards and structures, protection covers and casings, pumps, engines and motors, and any other sources of noise and vibration.

How?

Mats, sprayable coatings, filling resins and mastics can be applied in a broad range of situations to mitigate noise and vibration.



Polymer Composites

What?

Polymer composites are used to protect surfaces subjected to corrosion and wear.

Why?

Polymer composite products are sacrificial materials that protect the base surface from corrosion and wear. They can be re-applied after a certain period of time, prolonging base surface integrity.

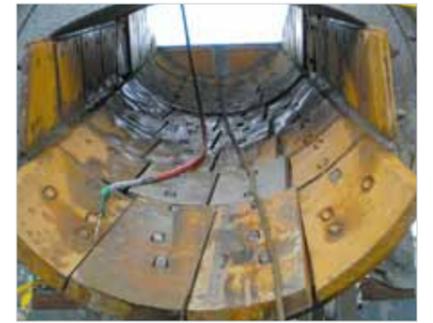
Where?

Fluid management components such as pumps and pipes, containers, and any machinery surface prone to wear and corrosion.

How?

LOCTITE polymer composites are trowelable, brushable or sprayable over pre-treated surfaces.

Product re-application on a regular basis guarantees the performance of machines as well as extending their service life.



Did you know?

Sound and vibration dampening systems have traditionally been used in the automotive sector to improve vehicle performance and comfort. Machinery manufacturers have just started to apply state-of-the-art sound deadening solutions in the latest generation of machines, with reduced part fatigue and a more sustainable working environment resulting.

Did you know?

Mining equipment is subjected to an especially harsh environment, and polymer composites contribute to keeping it working for longer periods of time.



3

Subcomponent Manufacturing



Guards and Structures

Machinery guards and structures are present in many industrial processing machines: Structures serve to hold machinery components, subsystems and guards in place, whereas guards help to reduce influences caused by the working environment during manufacturing processes.

- 1 Direct Glazing**
of inspection and safety windows with flexible adhesives and sealants such as LOCTITE SI 5616 or TEROSON MS 939
- 2 Structural Bonding**
of guard panel elements (e.g. stiffeners), structures (e.g. composite insertion) and enclosures (e.g. multimaterial casings) with structural adhesives such as LOCTITE UK 1366
- 3 Instant Bonding**
of metal, rubber and plastic pads, seals and tags with instant adhesives such as LOCTITE 435
- 4 Sound Deadening**
in guards and structures with coatings such as TEROSON WT 129
- 5 Flexible Bonding and Sealing**
of guard and structure joints with flexible sealants such as TEROSON MS 930
- 6 Functional Coating**
and corrosion protection of metal structures with sustainable chemicals such as BONDERITE
- 7 Threadlocking**
of assembly bolts, studs and nuts with anaerobics such as LOCTITE 243
- 8 Flange Coupling**
(sealing and reinforcement) in structures with anaerobics such as LOCTITE 5188

1 Safety/inspection windows and guard panels | 2 Telescopic guards | 3 Beds | 4 Gantries

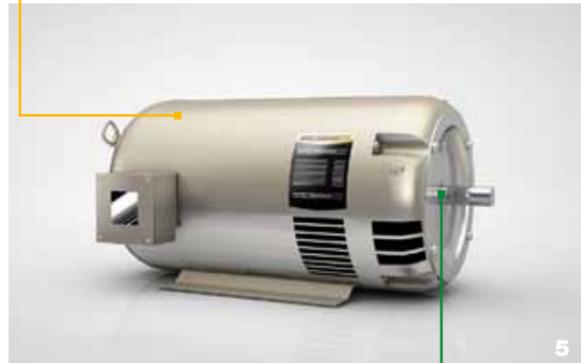


Motion Components

The use of motion components is common in many industrial processing machines as most operations require power and motion.

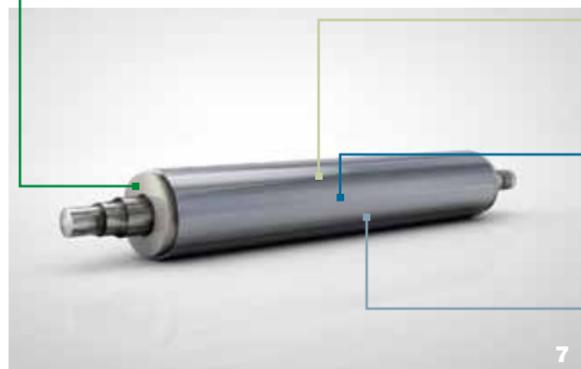
Structural Bonding

of components like magnets with structural adhesives such as LOCTITE AA 3342



Retaining

of cylindrical joints (e.g. bearings, gears and rollers on shafts) with anaerobics such as LOCTITE 638



Functional Coating

of surfaces subjected to corrosion with sustainable chemicals such as BONDERITE

Instant Bonding

of different elements like sanding paper, rubber holders or plastic pads with instant adhesives such as LOCTITE 435

Polymer Composites

as sacrificial coatings to protect surfaces against wear and corrosion, such as LOCTITE PC 7255

5 Motors and drives | 6 Shafts, gears and bearings | 7 Rollers

Fluid Management

Different machines may use different fluids for a variety of purposes, including lubricants, cutting fluids, hydraulic fluids or air for which the appropriate subcomponents are required.

Flange Coupling

of pipes and connections subjected to stress, with anaerobics such as LOCTITE 5188



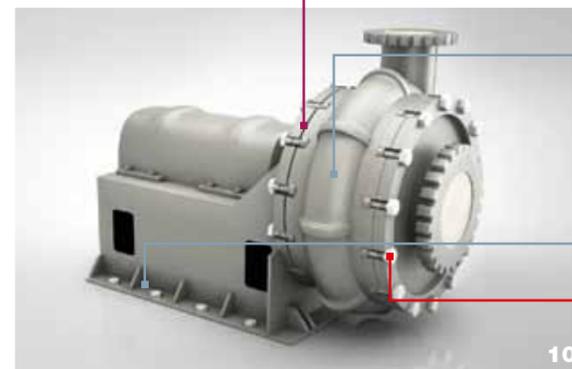
Thread Sealing

of threaded connections with sealants such as LOCTITE 577



Gasketing

of flanged joints with anaerobics and silicones such as LOCTITE 5188



Polymer Composites

as sacrificial coatings to protect pump housings and impellers, such as LOCTITE PC 7255

Polymer Composites

as installation materials to fix and secure machinery to the floor, such as LOCTITE PC 7202

Threadlocking

of mounting and assembly bolts, studs and nuts with anaerobics such as LOCTITE 243

8 Flange couplings | 9 Pipe fittings | 10 Pumps



Replaceable Tools

When working with different industrial processing machines, various replaceable tools may be used, depending on the machining operation.

Functional Coating

to protect metal surfaces from corrosion, with sustainable chemicals such as BONDERITE



Structural Bonding

of tool parts (e.g. stone grinding wheels or sanding paper) with structural adhesives such as LOCTITE EA 3423



11 Cutting tools (holders and inserts) | 12 Grinding wheels

Machinery Installation and Maintenance

Years of experience in manufacturing and maintenance have enabled us to build up profound knowledge about the typical installation and maintenance tasks encountered in the industrial processing machinery industry.

Our Values

- Competent teams to provide you with the latest tools and products for installing and maintaining your machinery.
- Extensive portfolio of maintenance solutions, including all the technologies mentioned above.

Your Benefits

- You can increase reliability and avoid downtime of your machinery through regular maintenance.
- You can improve safety at work by increasing the reliability of your machinery and by using non-hazardous products.
- You can save time by using innovative technologies to increase the service life of your machinery and extend your service intervals.
- You can reduce costs by repairing worn or damaged parts instead of replacing them.



LOCTITE®
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TECHNOMELT®
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AQUENCE®

Henkel Ltd

Wood Lane End, Hemel Hempstead,
Hertfordshire, HP2 4RQ

Tel.: (+44) 01442 278000

Fax: (+44) 01442 278071

www.loctite.co.uk

www.henkel.co.uk