

LOCTITE®

Loctite® Solutions for Power Plants

Maintain, Repair, Rebuild and Protect



Henkel



Introduction

This guide has been designed to provide quick and easy assistance to the specialists who service power plants and look for reliability, longevity and cost reduction.

Power plant engineers know about the importance of equipment reliability and predictability. They must keep the machinery running 24 hours a day, 7 days a week without downtime. Henkel offers a wide range of Loctite®, Hysol® and Nordbak® products to help service engineers keep the downtime short and find the best solution for any specific maintenance or repair problem.

With the help of this guide, you can:

- Easily select the right products to help you service and maintain power plant assemblies
- Prevent wear proactively for new equipment
- Pinpoint the most suitable solution for servicing worn parts
- Determine the best product for your particular maintenance or repair problem

Our commitment to power plant operators and utility companies:

- Dedicated power plant maintenance program
- “Hands-on” product application advice and technical support
- On-site product and maintenance training
- MRO Solution Guide
- National distribution network

Loctite® maintenance solutions for key components in power plants:

Henkel helps to increase the efficiency of power plants all over the world by providing operators with in-depth advice on how to maintain, repair, rebuild and restore pumps, shafts and gearboxes – devices that play a crucial role in power plant assemblies.



Ask for a customised on site training!

See pages 14/15 for further information.



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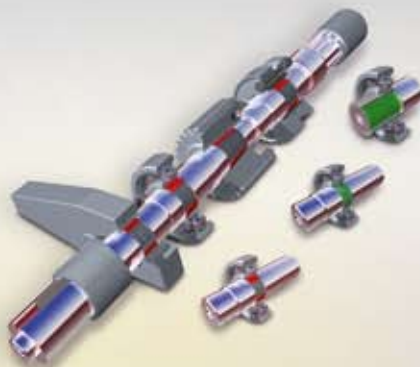
Most assemblies run in harsh environments and operating conditions which result in wear, erosion, corrosion, cavitation, mechanical damage and leaks.

Repair Guides are available for the following application areas providing specialist information, tips and tricks, case histories and selection tables to enable plant engineers to confidently choose the correct Loctite® product and obtain professional results. Please contact your local Henkel field sales engineer for a printed copy.

Gearbox Repairs



Shaft Repairs



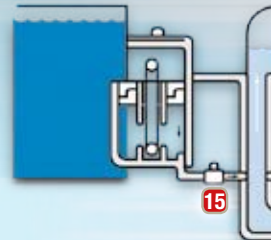
Pump Repairs



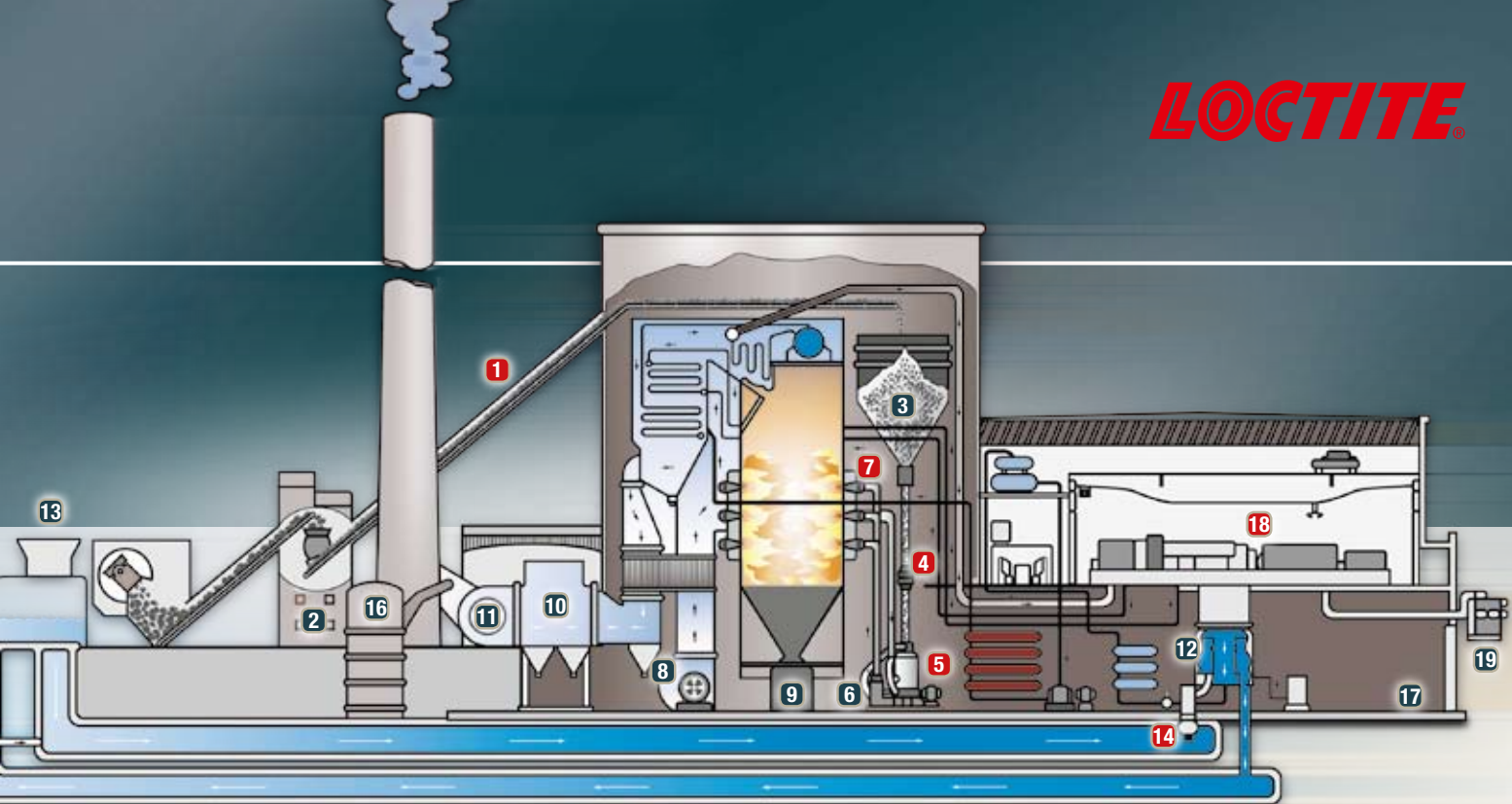
Coal fired power plants

Coal fired power plant equipment operates in very harsh environments. Machinery and components used in coal and ash handling, such as coal conveying systems or coal feeders, are exposed to extreme erosion and to some of the most abrasive materials found in a power plant.

This guide will help you to easily select the best products to help you service and maintain the facilities in your plant.



Equipment	Challenges	Loctite® Solution
1 Conveyor (Bucket / Belt)	Wear to chutes and transfer points	Nordbak® 7218 Wearing Compound, Nordbak® 7227 Brushable Ceramic – Grey
	Uneven wear to lag or idler pulleys	Hysol® 3478 Superior Metal, Nordbak® 7227 Brushable Ceramic – Grey
	Assembling press and slip fitted parts	Loctite® 641 Retainer
2 Crusher House	Abraded discharge chutes	Nordbak® 7218 Wearing Compound, Nordbak® 7228 Brushable Ceramic – White
3 Coal Bunker	Wear to cone and discharge areas	Nordbak® 7218 Wearing Compound, Nordbak® 7228 Brushable Ceramic – White
	Install ceramic tiles	Nordbak® 7256 Ceramic Tile Adhesive
4 Coal Feeder	Worn chutes and rings	Nordbak® 7218 Wearing Compound, Nordbak® 7228 Brushable Ceramic – White
5 Coal Pulveriser	Abraded pipe, walls, and cone	Nordbak® 7229 High Temperature Pneu-Wear, Nordbak® 7234 High Temperature Brushable Ceramic – Grey
	Wear to shafts and housings	Hysol® 3478 Superior Metal
	Install and repair ceramic tiles	Nordbak® 7256 Ceramic Tile Adhesive
	Assembling press and slip fitted parts	Loctite® 641 Retainer
	Sealing flanges	Loctite® 518 Flange Sealant, Loctite® 7200 Gasket Remover
	Preventing pipes and fittings from leaks	Loctite® 577 Thread Sealant
	Worn housing and blades	Nordbak® 7226 Pneu-Wear, Nordbak® 7228 Brushable Ceramic – White
6 Primary Air Fan	Install ceramic tiles	Nordbak® 7256 Ceramic Tile Adhesive
	Secure bolts on housing and blades	Loctite® 2701 Threadlocker
	Assembling press and slip fitted parts	Loctite® 640 Retainer
	Abraded surfaces	Nordbak® 7229 High Temperature Pneu-Wear, Nordbak® 7234 High Temperature Brushable Ceramic – Grey
7 Fuel Lines and Elbows	Install and repair ceramic tiles	Nordbak® 7256 Ceramic Tile Adhesive, Nordbak® 7229 High Temperature Pneu-Wear
	Sealing flanges	Loctite® 518 Flange Sealant
	Preventing pipes and fittings from leaks	Loctite® 577 Thread Sealant
	Worn shafts	Hysol® 3478 Superior Metal
8 Forced Draft Fan	Wear to housings and blades	Nordbak® 7226 Pneu-Wear, Nordbak® 7228 Brushable Ceramic – White
	Secure bolts on housing and blades	Loctite® 2701 Threadlocker
	Assembling press and slip fitted parts	Loctite® 641 Retainer
	Wear in ash hopper	Nordbak® 7229 High Temperature Pneu-Wear, Nordbak® 7234 High Temperature Brushable Ceramic – Grey
9 Ash Hopper	Sealing flanges	Loctite® 518 Flange Sealant
	Abraded collector and separator	Nordbak® 7229 High Temperature Pneu-Wear, Nordbak® 7234 High Temperature Brushable Ceramic – Grey
10 Fly Ash Collector	Assembling press and slip fitted parts	Loctite® 641 Retainer
	Sealing flanges	Loctite® 518 Flange Sealant



Equipment	Challenges	Loctite® Solution
11 Induced Draft Fan	Abraded housing and blades	Nordbak® 7229 High Temperature Pneu-Wear, Nordbak® 7234 High Temperature Brushable Ceramic – Grey
	Worn shaft and bearing housing	Hysol® 3478 Superior Metal
	Secure bolts on housing and blades	Loctite® 2701 Threadlocker
	Assembling press and slip fitted parts	Loctite® 641 Retainer
12 Condenser	Pitted or corroded water box	Hysol® 3478 Superior Metal, Nordbak® 7227 Brushable Ceramic – Grey
	Corroded tube sheet	Hysol® 3478 Superior Metal, Nordbak® 7227 Brushable Ceramic – Grey
	Sealing flanges	Loctite® 518 Flange Sealant
	Preventing pipes and fittings from leaks	Loctite® 577 Thread Sealant
13 Cooling Towers	Corrosion or cavitation	Hysol® 3478 Superior Metal, Nordbak® 7227 Brushable Ceramic – Grey
	Wear to fan blades	Hysol® 3478 Superior Metal, Nordbak® 7227 Brushable Ceramic – Grey
	Assembling press and slip fitted parts	Loctite® 641 Retainer
	Sealing flanges	Loctite® 518 Flange Sealant
14 Cooling Water Pump	Preventing pipes and fittings from leaks	Loctite® 577 Thread Sealant
	Cavitation in castings	Hysol® 3478 Superior Metal, Nordbak® 7227 Brushable Ceramic – Grey
	Erosion to impeller	Hysol® 3478 Superior Metal, Nordbak® 7227 Brushable Ceramic – Grey
	Sealing flanges	Loctite® 518 Flange Sealant
15 Water Service Pumps	Preventing pipes and fittings from leaks	Loctite® 577 Thread Sealant
	Reseat bearing housings	Hysol® 3478 Superior Metal
16 Scrubber System	Preventing pipes and fittings from leaks	Loctite® 577 Thread Sealant
	Damage due to impingement	Nordbak® 7226 Pneu-Wear, Nordbak® 7227 Brushable Ceramic – Grey
	Wear to lining	Nordbak® 7226 Pneu-Wear, Nordbak® 7227 Brushable Ceramic – Grey
17 Floors, Decks, Roofs	Thickener tank rake and cone	Nordbak® 7226 Pneu-Wear, Nordbak® 7227 Brushable Ceramic – Grey
	Spalled or broken concrete	Loctite® 7257 Magna Crete, Loctite® 7204 High performance quartz
18 Turbine Deck	Reassemble unit	Loctite® 5910 Quick Gasket, Loctite® 7200 Gasket Remover
	Assembling press and slip fitted parts	Loctite® 641 Retainer
19 Transformers	Sealing flanges	Loctite® 518 Flange Sealant
	Preventing pipes and fittings from leaks	Loctite® 577 Thread Sealant

Coal fired power plants

1 Coal Handling

Coal handling equipment like bucket loader or bucket wheel excavator or coal shuffles

Challenge:

All the equipment in the coal handling, like bucket loaders and shuffles are stressed under strong abrasion and corrosion.



► Loctite® Solution:

After surface preparation by abrasive blast cleaning, two coats of Loctite® Nordbak® 7227 Brushable Ceramic Grey were applied to create a non-slip, wear and corrosion resistant surface. The high gloss finish reduces sticking of coal particles to the shuffle inner surface.

4 Feedline

Challenge:

Feed line of pulverised coal. Severe abrasion from the fine coal particles, especially on elbows.



► Loctite® Solution:

Loctite® Nordbak® 7229 was used to coat inner part of the elbow. The product is designed to rebuild, repair and protect equipment exposed to extreme abrasive wear from fine particles of pulverized coal up to 230 °C.

5 Boiler Room Pulveriser

Grinding roll

Challenge:

Grinding roll of pulveriser suffers through heavy vibration and high loads when it grinds the coal into a fine powder.



► Loctite® Solution:

Threadlocking of fasteners or fittings on grinding roll to ensure that this part of equipment works without interruption and costly down time.

Challenge:

The arm of the grinding roll was worn out by coal particles.



► Loctite® Solution:

Loctite® Nordbak® 7230 High Temperature Wearing Compound is used to rebuild, repair and protect against sliding abrasion at temperatures up to 232 °C.

Wear and corrosion protection plays an important role in coal fired power plants. There are two additional reinforced Polymer Composites from the Henkel portfolio which are particularly useful in a power plant environment:

Loctite® Solution	Product Description:
Loctite® Nordbak® 7255 Sprayable Ceramic	Ultra smooth, ceramic reinforced epoxy, sprayable. Abrasion & chemical resistant
Loctite® Nordbak® 7256 Ceramic Tile Adhesive	High strength epoxy for installing ceramic tiles

Boiler Room & Pollution Control

Water purification for the boiler circuit

Challenge:

Corrosion caused by acids or alkalines stored in tanks of water purification units.



▶ Loctite® Solution:

Loctite® Nordbak® 7255 Sprayable Ceramic is applied onto the inner surface of the tank to protect against chemical attack. This has extended the service life of the tank.

Water Circulation

Water condenser box

Challenge:

Water condenser pipes are attacked by bi-metallic corrosion on the weld lines to the back plate. This corrosion caused leakage.



▶ Loctite® Solution:

Loctite® Nordbak® 7221 Chemical Resistant Coating was applied to the inner parts of the water condenser, providing a chemically and corrosion resistant coating.

18 Power Generation & Transmission

Challenge:

Leakage from the casting of turbine – generator block



▶ Loctite® Solution:

Loctite® Hysol® 3478 Superior Metal was used to repair the cracks from which oil was leaking. This product is a ferro silicon filled repair putty resistant to corrosion, with superior adhesion to the cast surface.

Challenge:

Turbine – generator block is exposed to vibrations which cause loosening of bolts and fasteners.



▶ Loctite® Solution:

Loctite® Threadlocker securely locks any threaded fastener or fitting against vibration loosening and shock loads.

14 15 Main water supply pump

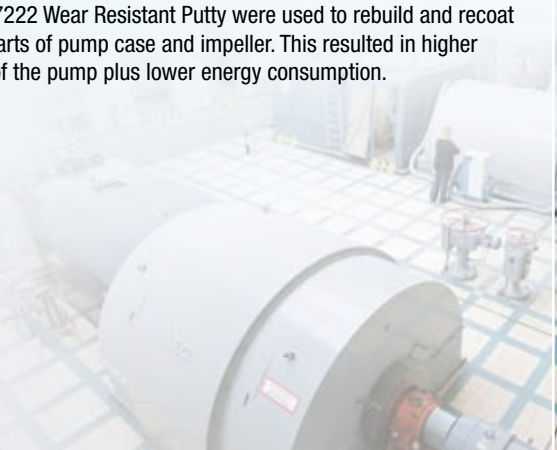
Challenge:

After years of work the large water supply pump become worn, resulting in decreased pump efficiency etc.



▶ Loctite® Solution:

Loctite® Nordbak® 7227 Brushable Ceramic Grey and Loctite® Nordbak® 7222 Wear Resistant Putty were used to rebuild and recoat the inner parts of pump case and impeller. This resulted in higher efficiency of the pump plus lower energy consumption.



Gas fired power plants

Gas fired power plants are either single-cycle plants fuelled entirely by natural gas, or combine the gas turbine cycle with a coal fired unit. In most cases, gas fired power plants operate in a combined cycle process using a gas and a steam turbine to generate electricity.

Therefore, many applications are similar to those in coal fired plants, e.g. on the cooling cycle, cooling pumps or steam turbine. Applications on the gas turbine, the gas pipes, the intake air or the flue gas duct etc. require different maintenance and service solutions. Henkel offers products tailored specifically to these needs.

1 Feed water tank

Challenge:

Corrosion protection of feed water tanks and repair of corroded tank inside surface. Corrosion protection of the external surface of industrial water pipes.



▶ Loctite® Solution:

After surface preparation by abrasive blast cleaning, coat the entire inside surface with Loctite® 7255 Sprayable Ceramic to achieve a uniform corrosion protection coating on the inner tank surface. Coat the external surface of water pipes with Loctite® 7255 Sprayable or Loctite® Nordbak® 7227 / 7228 Brushable Ceramic.

Heavy machinery / shaft & assemblies

Challenge:

Prevent loosening and corrosion of the bearing block fastener to ensure reliability of components mounted onto the base plate.



▶ Loctite® Solution:

Apply Loctite® 2701 High Strength Threadlocker onto the bearing block fastener and secure the assembly.

2 3 Feedwater & cooling pump

Challenge:

Prevent gasket failure at the pump housing and mounted components of the centrifugal pump.



▶ Loctite® Solution:

Seal all pump housing flanges with Loctite® 518 Flange Sealant in order to avoid any leakage. Please consult also the comprehensive manual describing the complete range of solutions Henkel offers for the repair and maintenance of pumps.

Base plates & foundation

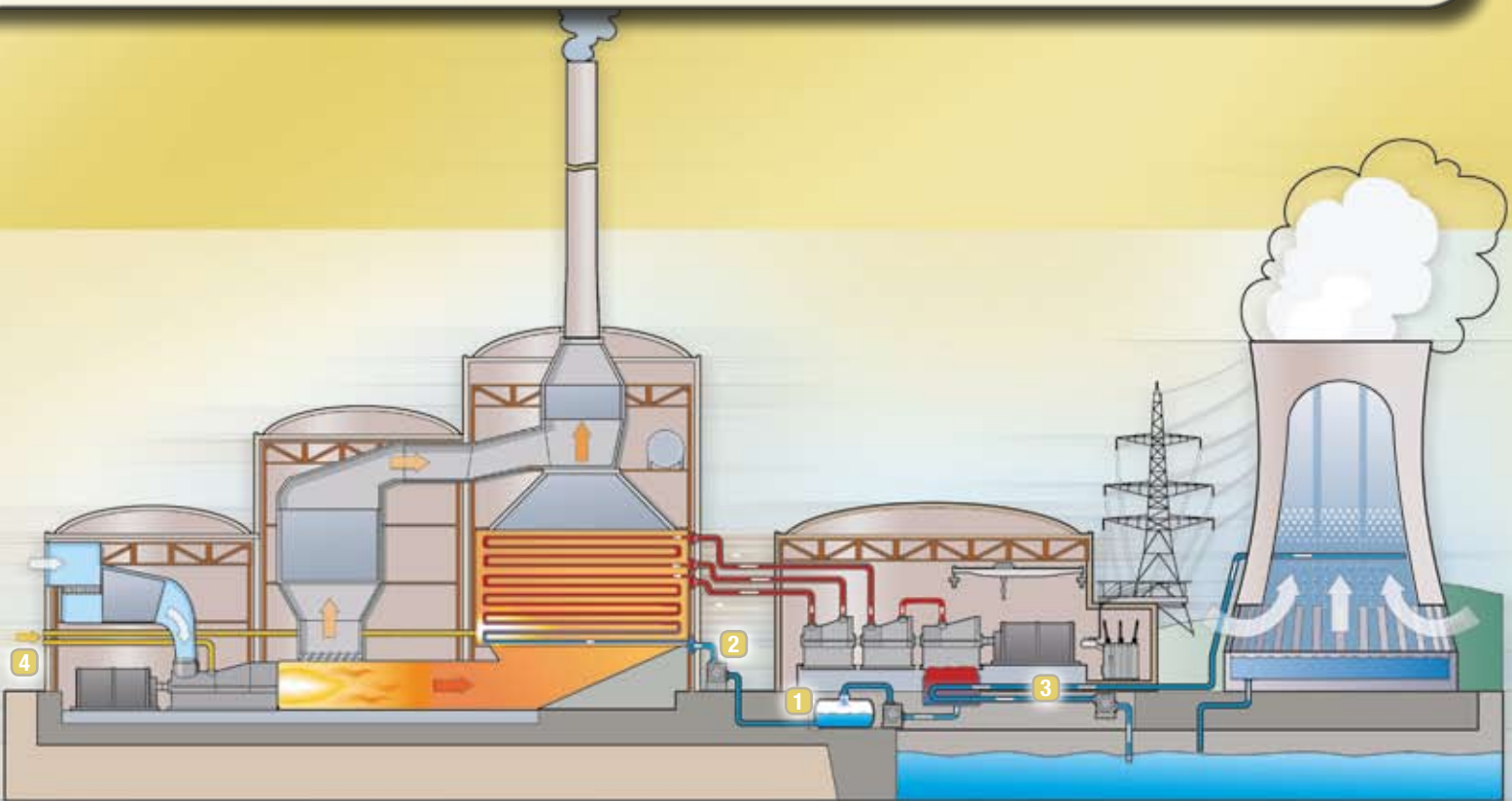
Challenge:

Repair of cracks, spalling and chipping of bedplates of machines like pumps, gearboxes and aggregate. Chemically resistant coating on concrete bedplate to avoid leakage of foundation.



▶ Loctite® Solution:

Repair any cracks or other damage to small areas of the bedplate with Loctite® 7257 Magna Crete. For damages to large areas of the bedplate or if you need a smooth concrete layer resistant to chemicals, use Loctite® 7204 High Performance Quartz.



4 Natural gas pipes, fittings & pressure reducing stations

Challenge:

Prevent leaks from threaded fittings of the gas pipes and pressure reducing station.



▶ Loctite® Solution:

Seal all threaded fittings with Loctite® 577 Thread Sealant. The product carries gas DVGW approval (NG-5146AR0621) and is tested acc. to EN 751-1. Use for max. 3" thread size. If applied below 5 °C, Loctite® 577 cures only in combination with Loctite® 7649 Activator. Recommended for pressure up to 7 bar.

Challenge:

Detect leaks from gas handling systems.



▶ Loctite® Solution:

Use Loctite® 7100 Detector, it is an easy to use aerosol that allows detection of suspected leaks in all pressurized gas systems, compressed air, helium, nitrogen etc. as well as in iron, copper and plastic piping.

Challenge:

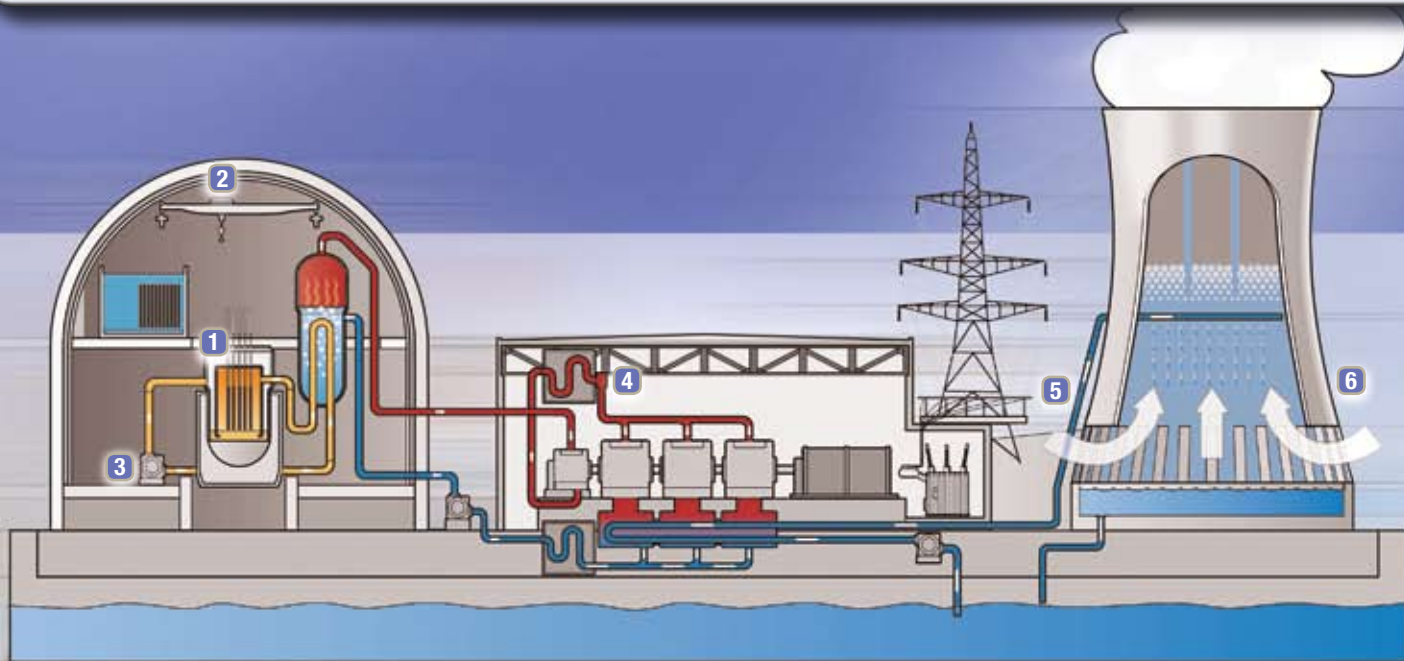
To free rusted, corroded and seized parts.

▶ Loctite® Solution:

Use Loctite® Freeze and Release on components and threaded assemblies which are rusted, corrode or seized. Loctite® Freeze and Release is a special mineral oil formulation. The shockfreezing effect will cool parts instantly down to -43 °C and cause micro cracks in the layer of rust. This allows the lubricating ingredients to wick directly into the rust by capillary action. Released parts remain lubricated and protected from corrosion.



Nuclear power plants



A nuclear power plant is divided into three main areas: the nuclear area, the electricity generation unit and the cooling system. Loctite® products offer efficient solutions for maintenance and repair in each of these three areas, e.g. turbine maintenance, water circulation system sealing, protection of parts against abrasion, etc.

1 Reactor vessel

Challenge:

Protect top vessel gland studs against seizure to allow easy dismantling for maintenance or for replacement of fuel elements.

► Loctite® Solution:

Use Loctite® 8013 Anti-Seize with high thermal resistance and low level of halogen (PMUC approved) to prevent seizing and galling during assembly and operation.

2 Containment spray system

Challenge:

Seal and fix spraying system of containment safety circuit to achieve resistance to chemical acid attack (boric acid).

► Loctite® Solution:

Use Loctite® 5772 Pipe Sealant to seal threaded parts. This product has high chemical resistance with a low level of halogen and sulphur (PMUC approved).



3 Pump motor

Challenges:

1. Prevent loosening of frame adapter mounting bolts.
2. Avoid bearing spin in this area. Secure bearing retainer to prevent fretting and corrosion.

► Loctite® Solutions:

1. Use Loctite® 2432 Threadlocker to securely lock bolts and avoid loss of clamp load.
2. Use Loctite® 6482 Retainer to assemble cylindrical parts in nuclear areas; the high temperature retaining compound has a low level of halogen and sulphur (PMUC approved).



Applications in non-nuclear areas:

Standard Loctite® products can be used for maintenance of all equipment and facilities in non-nuclear areas.

4 Steam pipe gaskets

Challenge:

Avoid gasket rupture in steam pipe system under temperature variations.



▶ Loctite® Solution:

Loctite® 8013 Anti-Seize: thanks to its high temperature resistance and chemical resistance, this Anti-Seize product allows gasket movement at all temperatures.

5 External pipes

Challenge:

Protect cooling circuit pipes against corrosion.



▶ Loctite® Solution:

Use Loctite® Nordbak® 7227 Brushable Ceramic to create a protective coating that combines chemical and mechanical resistance with good adhesion.

6 Buildings

Challenge:

Fast and reliable repair of concrete.

▶ Loctite® Solution:

Use Loctite® 7257 Magna Crete to allow application all year round, even at temperatures as low as -25 °C. Repaired areas can be back in use after only 45 min.



Loctite® products for nuclear areas:

To prevent chemical attack of metal components, Henkel has developed a specific range of Loctite® products which all have the following characteristics in common:

- Metal free
- Halogen content < 200 ppm
- Sulphur content < 200 ppm

The products with PMUC* approval are very versatile, high purity grades.

*PMUC is the approval from EDF (Electricité de France) for products and materials suitable for use in nuclear power stations.

Loctite® grade	Applications
2432 Threadlocker	Medium strength threadlocking, disassembly with standard tools
4952 Instant Adhesive	Instant adhesive, bonding small parts
5362 RTV Silicone	Flexible sealing, temperature resistant up to 250 °C
5772 Pipe Sealant	Pipe thread sealing up to 3", gel
6482 Retainer	High strength, high temperature, cylindrical assemblies
8013 Anti-Seize	High purity, high temperature resistance, protection of threaded parts

Hydroelectric power plants

Hydroelectric power plants are classified into three types: Run-of-river, storage, and pump reservoir facilities.

The biggest challenge in hydroelectric power plants is the corrosion and wear protection of equipment made of metal, but repair of the concrete infrastructure plays an important role. Henkel offers a wide range of service solutions covering the infrastructure of the plant, the turbine service, engine house, generator and valves.

Valves, Pipes & Turbine Inlets

Inlet for Pelton turbine

Challenge:

Seal the flanges of the turbine inlet and attached components.



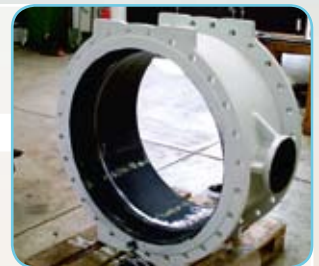
► Loctite® Solution:

Use Loctite® 518 Flange Sealant to achieve reliable sealing of the flange and avoid corrosion.

1 Valves and Butterfly

Challenge:

Rebuilding of a valve or butterfly after corrosion and/or abrasion.



► Loctite® Solution:

Rebuild and coat the valve and butterfly with Loctite® Nordbak® 7227/7228 Brushable Ceramic Grey/White.

Ball valve in pump reservoir hydroelectric power plant

Challenge:

Rebuild and protect the entire outer and inner surface of the ball valve and build up abrasion and corrosion protection on large surfaces.



► Loctite® Solution:

Fill the gaps, pin holes and surface defects with Loctite® Nordbak® 7222 Wear Resistant Putty. Afterwards coat the entire surface (inside and outside) of areas subjected to abrasion and corrosion with Loctite® 7255 Sprayable Ceramic, using an airless spray system.

2 Threaded fittings and pipes of hydraulic systems

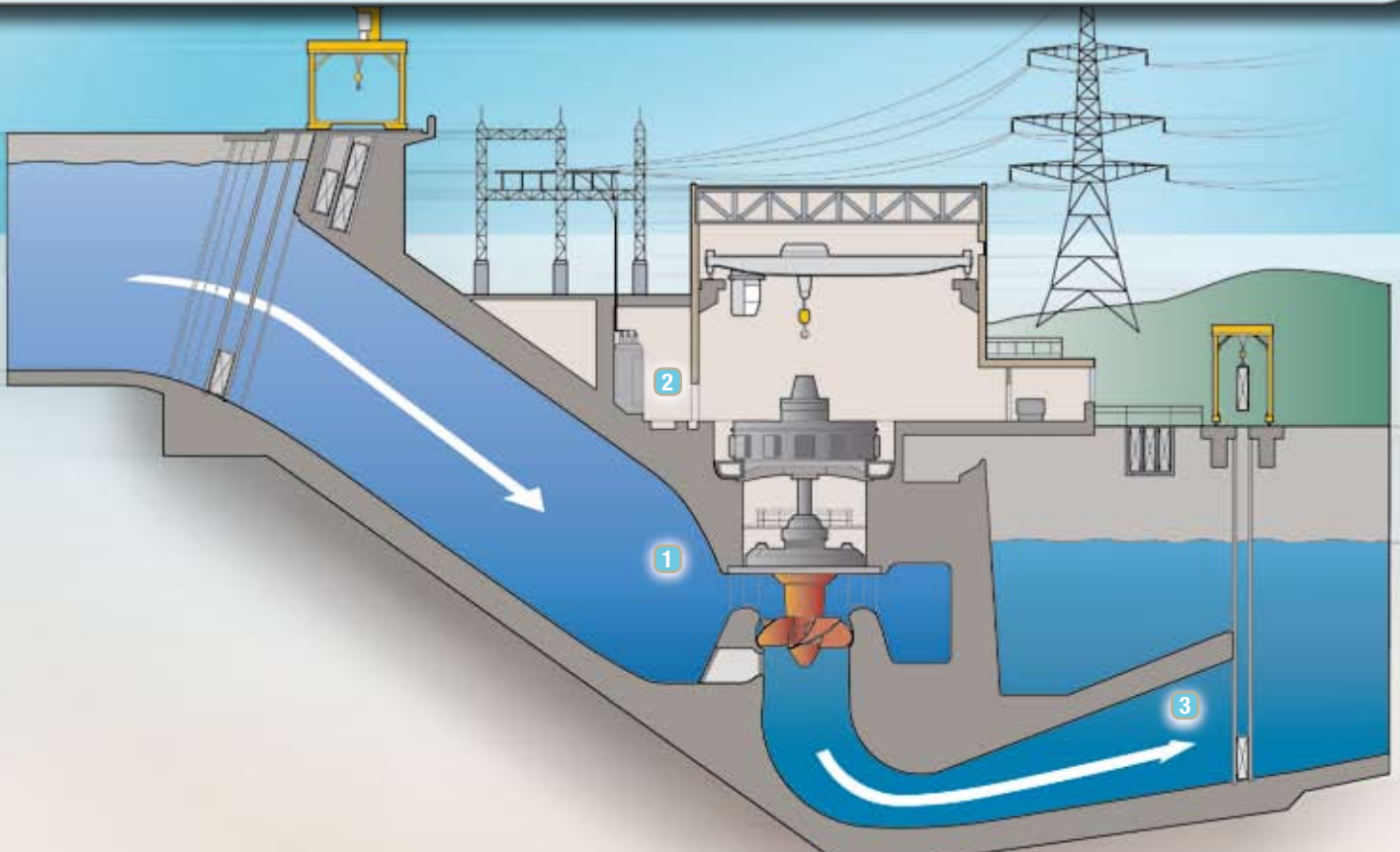
Challenge:

Prevent leakage on all threaded fittings and pipes, especially on hydraulic systems.



► Loctite® Solution:

Seal coarse threaded assemblies with Loctite® 577 Thread Sealant. For hydraulic oil pipes and fine threaded fittings use Loctite® 542 Thread Sealant. Thread sealants prevent fittings from loosening, yet allow easy disassembly with normal hand tools.



Turbine Service & Overhaul

Franzis turbine impeller

Challenge:

Abrasion and corrosion protection of a Franzis turbine impeller.



▶ Loctite® Solution:

Repair badly worn areas on impeller, e.g. holes, with Loctite® Nordbak® 7222 Wear Resistant Putty. Apply two coats of Loctite® Nordbak® 7227 / 7228 Brushable Ceramic Grey/White onto the entire surface of the impeller.

3 Power Plant Infrastructure

Headwater tunnel – pressure tunnel – run off tunnel

Challenge:

Repair tunnels of hydroelectric power plants and build spell abrasion resistant layer on concrete.



▶ Loctite® Solution:

Repair and rebuild cracks, chipping and spalling of concrete areas with Loctite® 7257 Magna Crete. Repair and seal large concrete surfaces and provide chemically resistant coat with Loctite® 7204 High Performance Quartz.

Loctite® products for concrete repair:

Concrete structures used in hydroelectric power plants are constantly exposed to harsh environmental conditions and require efficient maintenance and repair. Henkel offers two Loctite® products specifically designed for making reliable, long lasting repairs even at temperatures below zero and for service under conditions of high abrasion.

Loctite® Solution

Loctite® Nordbak® 7204 High Performance Quartz

Loctite® Nordbak® 7257 Magna Crete

Product Description:

Concrete coating for repairs resistant to abrasion and chemical attack

Concrete repair, ultra fast, cures at temperatures as low as -25 °C

Loctite® product range

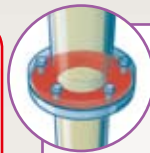
Making the Right Choice

Details on Henkel's general range of Loctite® products can be found in the latest Solution Guide, designed to make your selection quick, easy and right the first time. The Solution Guide will help you to pin-point the best solutions for the most common problems:



Threadlocking

- Prevent loosening, corroding and seizing of nuts, bolts, studs and other threaded parts



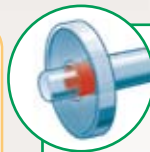
Gasketing

- Seal and mate flanges to prevent leaks, prevent bolts from loosening as gaskets relax, and stop movement between flanges



Pipe & Thread Sealing

- Prevent leaks from hydraulic, air, coolant, oil or other threaded fittings
- Replace all tapes and hemp & paste – do not creep, shrink or block systems



Retaining

- Solve common problems of loose bearings on shafts, worn housings and fretting corrosion
- Unitise keyed or splined assemblies to make them stronger and prevent backlash



Instant Bonding & Joining Structural Parts

- Instant adhesives for rapidly joining different materials or bonding parts temporarily during positioning or repair
- Structural adhesives for making strong, durable, tough and resilient bonds to a wide variety of materials



Flexible Sealing & Bonding

- Achieve permanently flexible, impact and vibration-resistant assemblies of different materials
- Join parts that have large gaps or are subject to high temperatures



Metal Rebuilding & Wear Resistance

- Rebuild, restore, repair metal parts and assemblies
- Prevent erosion, sliding abrasion, wear and corrosion
- Protect against cavitation and chemical attack



Lubrication & Anti Seize

- Combat wear and seizing caused by friction
- Resist high temperatures and tough operating conditions

Effective cleaning is important

Successful adhesive bonding always starts with surface preparation. To achieve a strong and permanent bond, it is important to remove all contaminants so as to provide a clean and dry surface before applying the adhesive. Henkel offers the right cleaner for your application.



Cleaning Parts and Hands

- Clean parts prior to using adhesives / sealants
- Remove cured residues of adhesives / sealants, old gaskets, etc.
- Clean hands gently and effectively – with or without water

Loctite® Maintenance Workshop

The Maintenance Workshop is a practical hands-on training program on the use of Loctite® products in Maintenance, Repair and Overhaul environments. Learn to cut maintenance time and costs while increasing the reliability of your equipment.

Benefits

This program will provide your workforce with the knowledge and tools to:

- Improve Safety and Reliability
- Reduce Down Time
- Reduce Fluid Consumption
- Reduce Energy Costs
- Save Time

Hands-on Maintenance Workshops help to drive costs down

- Suitable for staff at all levels in the organisation
- All training materials will be supplied

Key Maintenance Workshop features:

- Plant pre-survey to identify maintenance needs
- Tailor made hands-on training to fit your specific needs
- Conducted on site
- Review of common causes of failure and prevention
- In-plant follow up and support

Did you ever wonder how much compressed air or oil leaks steal from your bottom line? Our Calculators reveal the truth behind the numbers:

Air Leak Cost Calculator

Diameter of opening (mm)	Air loss (l/min)	Energy loss (kW)	Additional energy costs* (€/year)
1	72	0,3	240
3	666	3,1	2480
5	1854	8,3	6640

Line pressure at 6 bar.

*based on 8000 operating hours /year and energy costs of 0,10 €/kWh

Oil Leak Cost Calculator

Leakage rate	Loss per day (litre)	Loss per year (litre)	Annual costs* (€/year)
1 drop in 10 s	0,56	204	307
1 drop in 5 s	1,12	409	614
1 drop per s	5,62	2049	3074

*price for hydraulic fluid: 1,50 €/l

Source: Bavarian Environmental Protection Agency, guideline "Druckluft im Handwerk"



Henkel – The Solution Provider

Henkel offers much more than outstanding products, it provides solutions to many of the biggest challenges – and to the problems that you face in ensuring reliability, safety and durability. People in 125 countries around the world trust in brands and technologies from Henkel. Strong brands with proven and trusted names are incorporated into this common platform and have long been the key to Henkel's success.

Meets all Needs

At Henkel, we understand power plant maintenance – and the problems that you face in ensuring reliability, safety and durability. We see our duty as being an active partner in providing products that are going to help in the cost-efficient, trouble-free and effective maintenance and repair of power plant facilities and equipment.

**We're here to ensure that you receive all the help and support you need.
Just get in contact with us!**

For more information on the complete range of Loctite®, Hysol® and Nordbak® products from the Henkel portfolio, please visit **www.loctite.com**, where you can download catalogues, data sheets, technical papers and application examples.



The data contained herein are intended as reference only. Please contact your local Henkel Technical Support Group for assistance and recommendation on specifications for these products.

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