

Whitepaper

How to keep a factory fit during periods of long inactivity

How to avoid extra delay and high start-up costs



Summary

During the current corona crisis, machines are idle more often and for longer periods, causing machines and machine parts to suffer. Moisture and dust may machine parts to rust or get jammed during start-up. Mechanical components may wear because of a lack of a protective lubricating film during start-up. Thorough cleaning and preservation may prevent wear.

When not in use, **chains** may be affected by environmental influences. This means the pins will get stuck in the bushings. Also with bearings of the chain, if they does not move for a longer period of time, the rolling bodies slowly break through the lubricating film. This can lead to damage when the machines are started up.

When not in use and with insufficient lubrication, **bearings** may corrode due to incoming moisture, with all its consequences when starting up. In food processing companies, where cleaning is done every day, water may remain in the bearings, which causes the emulsion of the bearing grease to drain quickly from the bearing at the start-up.

With **hydraulic systems**, moisture can enter the systems due to temperature differences, which can lead to rust formation and components can get stuck. Repairing and / or replacing those components is a time-consuming and costly business.

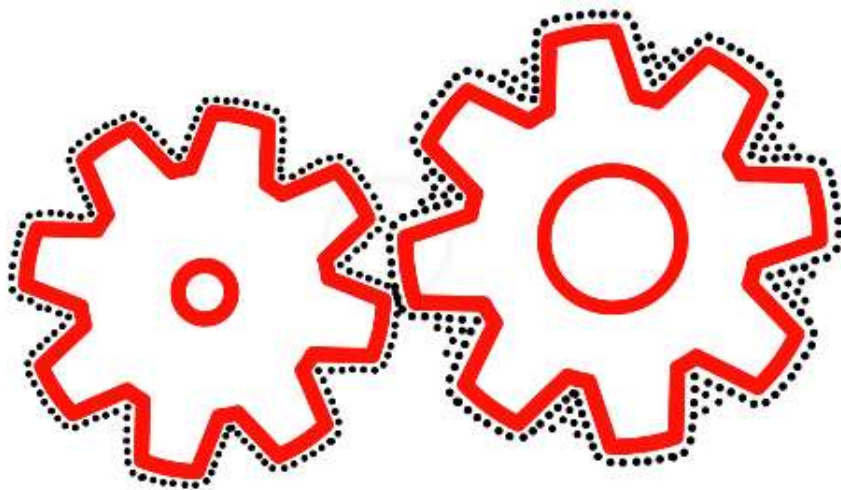
Pneumatic systems are generally already sensitive to condensation, which causes moisture to form in the pipes and causes the pneumatic components to rust, causing them to get stuck or cause stick-slip. That risk is even higher with longer downtimes. In addition, rust particles cause contamination further down the system, unacceptable in food processing and pharmaceutical companies. Replacing pneumatic parts is very time-consuming and leads to unwanted delays in your production.

With oil-lubricated **gearboxes** that stand still for a long time, rust can form and eventually lead to pitting. This results in considerable wear and shortening the lifespan. Even with open gears and sliding surfaces of a smaller size, rust and corrosion are the greatest danger during a long downtime.

Apart from the mechanical moving components, the exterior of your machine is also worth preserving.

Downtime also has its advantages for maintenance teams. Now there is finally time for preventive maintenance. This makes it easier to disassemble machine chains and to clean, lubricate and preserve them in immersion baths. Take the time to properly clean, lubricate and preserve steel cables.

Interflon's unique **MicPol® lubrication technology** ensures that a solid, water and dust-repellent lubrication film and preservation layer remains on moving but also non-moving surfaces. It protects your machines and machine parts against corrosion and provides them with the first lubrication at start-up (emergency running properties of MicPol®) so that machines do not get stuck, move with stick-slip and accelerate wear.



MicPol® technology for the lowest possible friction and optimal protection.

Problem description

What can happen to your machines during a long standstill? How can you prevent problems so that start-up does not come with additional costs?

Machine parts will suffer during a long standstill if you do not take the right precautions. Moisture and dust are just two of the factors that cause machine parts to rust or cause excessive wear at start-up.

Gravity will also cause oil to flow to the lowest point in, for example, a gearbox or hydraulic system. In addition, the oil film on higher parts will become thinner and the moisture present can affect machine parts. As a result, there will be no protective lubricating film upon start-up, resulting in immediate damage.

In food-processing companies, cleaning is usually a daily practice. Next, critical lubrication points are checked and new lubricant is applied. If this is not done because a product line is stopped, start-up will be far from smooth.

When machines are idle, condensation will occur. This causes rust and affects the lubricants.

Dust is everywhere and is highly abrasive. Some dust particles are harder than the material with which the machine parts are made. In case of insufficient preservation (for example of open bearings), accelerated wear will occur after start-up. This may be prevented by thorough cleaning and preservation.

Solutions

Below are some examples of applications and solutions.

Chains

When they are not in use, chains will rust and get stuck. There is an additional problem with oven chains: chain lubricants partially evaporate and oxidise at high temperatures, increasing the viscosity. After cooling, the viscosity of a lubricant oil can be so high that the start-up moment is too high for the drive. This results in thermal failure of the drive or, worse still, damage to electric motors and/or frequency control.

Solution

Lubricate the chain with the right lubricant, for instance Interflon Lube TF, Interflon Lube EP or Interflon Food Lube. The type of lubricant depends on your sector and application. For oven chains, lubricate with ample heat-resistant chain oil such as Interflon Lube HT before the shutdown in order to remove oxidised oil and restore the oil in the chain to its original condition. Interflon chain lubricants also have a cleansing action.



Oven chains can be lubricated with a heat-resistant chain oil, such as Interflon Lube HT

The outside of a chain is one thing, but how can you be sure that the inside of your chain is properly lubricated? Our MicPol® technology provides excellent lubrication of your chain. Due to the capillary action, the lubricant gets everywhere. It lubricates and preserves where necessary.

Bearings

When not in use and with insufficient lubrication, bearings may corrode due to incoming moisture. Large bearings can sink through the lubricating film due to their weight and cause metal-on-metal contact and possible contact corrosion. For special applications, the consequences can be far greater, for instance with high temperatures, or in acid, salt or wet environments.

Solution

Lubricate with the lubricant that you are already using. Fill the lubrication unit and check any automatic systems. Lubricate until a full grease collar is formed on the outside of the bearing.

Did you know that as little as 0.05% water in a lubricant reduces the life of a bearing by more than half? All the more reason to protect your machines.

Interflon Food Grease HD2 and Interflon Grease HD2 are ideal for internal components such as bearings. Even when absorbing 20% by volume of water, this lubricant retains its full lubrication capacity and protection against corrosion.

Hydraulic systems

Moisture can enter systems, particularly due to temperature differences. When machines are idle, moisture can cause rust and components can get stuck. This makes start-up after a long standstill very expensive because components have to be replaced. Sliding surfaces (cylinder rods, etc.) are another concern. They are prone to rust. A final issue are the seals. Seals are wound tight around moving parts. They must remain flexible during standstill.

Solution

Mount breathers on the vent and supply oil with Interflon Finnoly Additive N251-H or an Interflon Lube H series. Then run the installation. If necessary, take a sample that you can use as a reference for later analysis. Interflon Finnoly N251-H in the oil also prevents the moving parts from getting stuck because it penetrates the sealing material. Moreover, preserve sliding surfaces with Interflon Lube TF or Interflon Food Lube.



Interflon Finnoly Additive N251-H for the lowest possible internal friction of moving parts in your hydraulic systems

Pneumatics

Because air is compressed, moisture will enter the system. Many companies counter this by installing dehumidifiers that filter out most of the moisture. But there will always be a little moisture, especially in long pipes and in companies with temperature differences (food, cooling for ovens). When machines are not in use, this can lead to rust formation, causing valves to jam or bits of rust to be carried along - with all the associated consequences. Another concern are moving parts, such as piston rods. These can start to rust when not in use. Seals are also prone to stick-slip during long periods of downtime.

Solution

If automated systems are fitted, fill them with a - Food Grade or other - pneumatic oil (Interflon Lube PN32 or Interflon Food Lube PN32.) This creates a protective layer in the system. Compare this to a wax layer, where moisture stands no chance and is blown out. Interflon Lube PN32 and Interflon Food Lube PN32 contain anti-corrosion additives and the MicPol® technology that keeps slip on seals flexible.

If no automatic systems are installed, a penetrating MicPol® oil such as Interflon Fin Super, Interflon Lube TF or Interflon Food Lube is the right solution. Simply "spray" into the air inlet and the pneumatic parts are protected.



Gearboxes

As with hydraulics, gear units will be prone to temperature differences, causing the oil to heat up. Often air can enter the system due to ventilation, which causes rust on the gears - especially when stationary. The oil will be at the bottom of the housing, with the majority of the gears protruding above it. Rust can turn into pitting and cause considerable wear over time.

Solution

If possible, replace the oil by liquid grease. This stays on the teeth for optimal protection against moisture while in operation. Mount breathers on the vent against moisture and dust. If this is not possible, then opt for an oil from the Interflon Food Lube G or Interflon Food Lube H series. Both oils offer sufficient protection against corrosion. Even during long periods of downtime. An additional advantage of both solutions is that the MicPol® technology ensures limp-home lubrication. This prevents wear when starting up machines after a long standstill. This limp-home lubrication can also be realised by adding Interflon Finnoly T251 or Interflon Finnoly N251-H.

Open gears and sliding surfaces

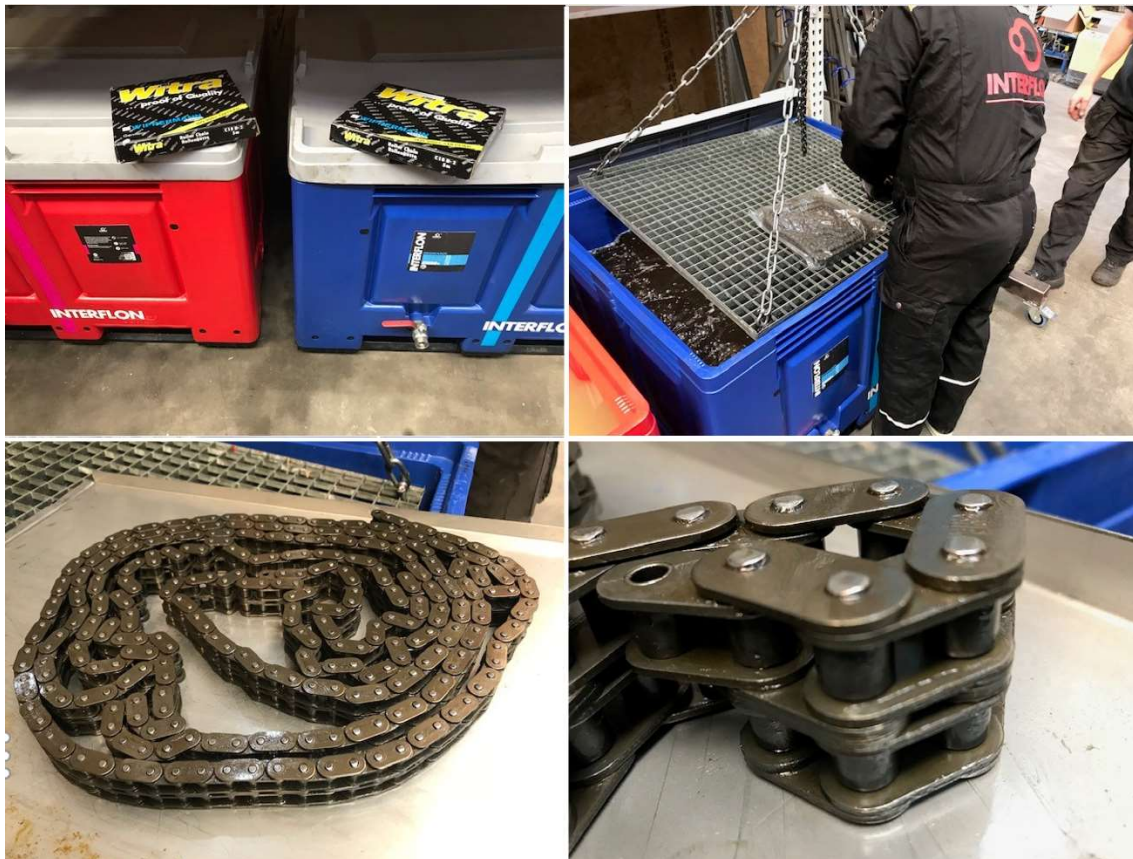
Corrosion is the main enemy of machines.

Solution

Preserve sliding surfaces and gears with Interflon Lube TF or Interflon Food Lube. Visual inspection is always possible due to the transparent lubricating film. Lubricate large open gears with Interflon Grease OG or Interflon Grease LS2 because of the high pressures that are released.

Other tips

- During downtime, it is easier to remove machine chains and cleaning them in immersion baths, followed by lubrication and preservation (Interflon Chain Take Care project).
- Take your time to properly clean, lubricate and preserve steel cables. Interflon Lube EPR with a high degree of biodegradability is highly suitable for this.



Practical case in which the preservative has been removed and the chain has been provided with the correct lubricant.

- In 70% of cases, corrosion is the reason why machines can no longer be used. (E. Rabinowicz, *Friction and Wear of Materials*, 1995). In addition to internal components, the outside of machines must also be preserved (after cleaning). A proven solution for stainless steel machines, Interflon Film WB is one of the products we offer to preserve your valuable machines.

About Interflon

Interflon manufactures high performance lubricants with MicPol®, cleaners and hardware. MicPol®, our unique lubricant technology, offers the lowest possible friction, repels water and particles and has excellent penetrating properties. We offer you lubricants with exceptionally good performance for industrial and food processing equipment maintenance purposes. Our lubricants last up to ten times longer than regular lubricants and are known to extend the life of the chain and bearings many times over.

With expertise in a wide range of industries in over 50 countries and 40 years of experience as a lubrication partner, Interflon offers you integrated solutions. Our Technical Advisors, application engineers and lubrication consultants utilise over 2,400 of the best lubrication methods and help you move forward in a constantly evolving world, complemented by training programmes, consultancy, software and hardware equipment. Interflon helps companies to reduce their maintenance and energy costs, at the same time reducing down-time. We employ 400 skilled Technical Advisors worldwide to assist our customers on-site in optimising their processes and implementing the selected Interflon lubricants converting them into real cost saving solutions. Combined with our MicPol® technology, our solutions enable your business to achieve your goals and the highest possible standards of safety, efficiency and emissions.

Contact us if you want to know how to keep your factory fit during a long standstill. We will be pleased to advise you on how to save costs and improve performance and put you in touch with one of our Technical Advisors.

www.interflon.com

