ARC INDUSTRIAL COATINGS

CHESTERTON CUSTOMSEAL

Food and Beverage

Case Studies

CHESTERTON
Global Solutions, Local Service.

CONTENTS

INTRODUCTION 3

ARC INDUSTRIAL COATINGS

Enhancing Durability: Upgrading Corn Mill Transition Pipe Resistance 4
Food Manufacturing Plant Restores Floor With Chesterton Concrete Grout Coatings 5
Reducing and Eliminating Costly Combi Mixer Repairs With Food Grade Coatings 6
Revolutionary EG-1 Fast Cured (FC) Patch Kits: The Ultimate Solution For Safety And Forklift Damage 7
Shielding Your Food Manufacturing Transport Screws: Defeating Costly Abrasion and Corrosion Damage 8

ENGINEERED POLYMER SEALS

Chesterton Wear Rings Reduce Product Loss On Extrusion Machine 9
Chesterton 30K Rotary Seal For Turbo Cream Mixer 10
Enhancing Hydraulic Jack Reliability in Sugar Roller Mills: Addressing Leakage Issues and Maintenance Downtime 11
30KC Cartridge Multi Lip Seal On Chocolate Mixer 12

INDUSTRIAL LUBRICANTS AND MRO CHEMICALS

Baking Oven Chain Lubrication Reduces Down-Time 12
720 Chain, Cable, And Gear Lubricant (CCG) Delivers “Eggcellent” Lubrication Performance 14
Extending Chain Life In Canned Fruit Manufacturing Company 15
Eliminating Vibration In MVR Fan 16
Extending Bearing Life At Sugar Refinery 17
Increasing Equipment Reliability In A Cocoa Factory 18
Improved Bearing Reliability For Bakery Cooling Machine 19
Increasing Chain Life In Food Manufacturing Plant 20
Shrink Wrapper Chain Lubrication Improves Productivity 21

MECHANICAL SEALING

Agitators In Chocolate Processing Plan 22
Recirculation Pumps In Corn Processing 23

PACKING AND GASKETS

DualPac® 2211 Beats Out The Competition At Food Processing Plant 24
Steam Peeler Sealing 25

INTRODUCTION

Introducing a comprehensive booklet of innovation and excellence featuring compelling case studies from the front-lines of the Food & Beverage industry. The challenges in the sector are unique as the environments are harsh on equipment, and they must still be sterile and food safe. This balancing act creates unique pressures and issues within the industry, and these case studies explore these issues in detail. They also explore how Chesterton's products for the Food and Beverage industry have offered game-changing solutions. Each page will showcase an array of real-world applications while exploring cutting-edge solutions that include:

- **Industrial Food-Grade Lubricants**
- **Industrial Coatings to extend equipment life**
- **Packing to extend MTBF**
- **Engineered Polymer Seals that last longer than others**
- **Mechanical Seals for strength and longevity**

Each offers remarkable performance and proven effectiveness in tackling challenges within the sector.

Even with every precaution in the world, equipment operating in a food and beverage plant is exposed to harsh conditions, including abrasion and corrosion, causing wear and tear on every operational element.

Discover how Chesterton's innovative solutions can help change that with these real-life case studies that showcase the potential of each solution and can revolutionise how we protect and maintain Food & Beverage industry assets.

Discover more visiting chesterton.com and chestertoncustomseal.com.au

Enhancing Durability: Upgrading Corn Mill Transition Pipe Resistance

Challenge

Background

Severe abrasion from corn milling residues being blown at high velocity was causing damage to the internals of a "T" transition piece in a blow line, wearing through the cross section in as little as 12-15 months, leading to product loss and costly weld repairs.

Our client was looking to improve wear resistance to >15 months, along with the ability to make repairs in field.

Products featured in this case study:

- Chesterton ARC MX Food Grade (FG) - Abrasion Resistant Coating for Fine Particle Wear

Solution

Preparation

- Decontaminate surfaces to remove corn milling residues.
- Abrasive grit blast to SP10 cleanliness with 3-5 mil angular profile.

Application

- A Chesterton specialist trowel applied ARC MX FG between 6-9 mm (.25-.325").

Use Chesterton ARC MX FG to:

- Protect metal surfaces from extreme sliding-wear and abrasion caused by fine particles
- Restore worn equipment to near original condition
- Provide a longer lasting alternative to rubber linings and ceramic wear tiles

Results

Client Reported

Our client was pleased to report the two Chesterton ARC MX FG coated sections of the "T" transition piece have been in service since early 2020 with no sign of abrasive wear through to substrate.

Chesterton ARC 630 SXCF.

Worn corn mill "T" transition piece.

Chesterton ARC MX FG.

Food Manufacturing Plant Restores Floor With Chesterton Concrete Grout Coatings

Challenge

Background

A food plant customer faced a recurring issue: the floor area where foot and heavy forklift traffic occurred required frequent cleaning. However, the concrete spalled during power washing, creating a trip hazard. The goal was clear: repair the concrete floor swiftly with a material that would ensure a safe, level surface. The root cause of the problem was identified as heavy traffic and frequent pressure washing, leading to concrete spalling.

Goals

Repair concrete floor by applying a material that could be installed rapidly and would provide a safe level surface.

Products featured in this case study:

- Chesterton ARC EG-1 FC Rapid-Setting Epoxy Grout to Repair/ Patch Concrete Surfaces

Solution

Preparation

The damaged area was cleaned and all loose concrete was removed. The "key cuts" were made to ensure a tightly sealed surface to prevent feathering at the edges.

Application

Chesterton ARC EG-1 Grout Resurfacer was applied in a single application directly to the prepared concrete at a thickness ranging from about 1 cm - 5 cm (0.4"-2"). It was keyed into the existing floor providing a level surface with no trip hazard.

Results

Client Reported

After two months in service, the Chesterton ARC EG-1 is resisting the heavy forklift traffic and daily clean down procedures in this area. Client is very pleased with the inherent slip resistant surface that the Chesterton ARC EG-1 product provided.

Floor condition with concrete spalling.

Surface preparation before ARC EG-1 is applied.

Floor after Chesterton ARC EG-1 coating is installed.

Reducing And Eliminating Costly Combi Mixer Repairs With Food Grade Coatings

Challenge

Background

Severe abrasion of the interior of the combi mixer required annual removal of the mixer to a maintenance shop where welding repairs were performed. The strong abrasion of the residues from corn milling residues used in animal feed processing caused a strong abrasion inside the mixer. The customer relied on the hands of Chesterton specialists to reduce or eliminate the requirements to repair the welding mixer and perform any future on-site repairs using an FDA compliant wear-resistant coating.

Products featured in this case study:

- Chesterton ARC MX Food Grade (FG) - Abrasion Resistant Coating for Fine Particle Wear
- Chesterton ARC S1PW - Brush-Roll-Spray Applied Moderate Chemical Resistant Coating - NSF 61 Certified. NSF 600 Compliant

Solution

Preparation

Decontaminate and abrasive grit blast to SP10 cleanliness with 3-5 mil angular profile.

Application

Chesterton ARC MX FG was trowel applied between 6-9mm (.25-.325) and then two alternating color coats of ARC S1PW were applied as a smoothing coat and a wear indicator coat to identify when the top 20-30 mils of coating have been removed.

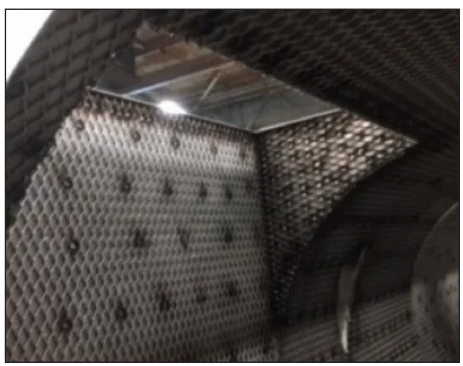
Results

Client Reported

After 90 days in service client inspected and noted minimal wear to Chesterton ARC S1PW coat and no sign of any wear to Chesterton ARC MX FG layer.

Client has initiated steps to add Chesterton ARC coatings to future combi mixer repairs to their worldwide operations.

Chesterton ARC S1PW - NSF 61 Certified.



Tack welding expanded metal mesh for increased structural integrity.

Chesterton ARC MX FG coated mixer internals.

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Revolutionary EG-1 Fast Cured (FC) Patch Kits: The Ultimate Solution For Safety And Forklift Damage

Challenge

Background

Damaged expansion joints within a snack foods manufacturer's warehouse posed significant safety hazards for forklift operations. The deteriorating joints led to load spills and inflicted damage on forklift wheels. The primary objectives were swiftly repairing concrete around the joints and seamlessly integrating flexible joint materials to ensure smooth transitions. Critical requirements included the ability to withstand the weight of forklifts. The root cause was identified as heavy loads and frequent movement at the expansion joints, resulting in concrete deterioration as forklifts traversed from one slab to another.

Products featured in this case study:

- Chesterton ARC EG-1 FC Patch Kits Rapid-Setting Epoxy Grout to Repair/ Patch Concrete Surfaces

Solution

Preparation

Key cuts were made 6" back on either side of the expansion joint. The loose concrete was removed by chipping hammers.

Application

Chesterton ARC EG-1 FC patch kits were utilized for ease of mixing for the contractor.

EG-1 FC patch kits were also used by the contractor to cut new expansion joints in just a few hours, which could not have been done with standard cure patch kits.

Results

Client Reported

Client was extremely happy with the results, and the project was completed within the time allocated for these repairs without a hitch.

Expansion joints are now safer to travel over as well as reducing damage to forklifts.

Customer has planned more time in the next 3 - 4 months to complete more Chesterton ARC EG-1 FC patch kits repairs.

Damaged expansion joint.

Damaged joint prepared for repairs with Chesterton ARC EG-1 FC patch kits.

Repairs allowed area to be back in service in <4 hours.

Shielding Your Food Manufacturing Transport Screws: Defeating Costly Abrasion And Corrosion Damage

Challenge

Background

Severe abrasion and corrosion to food manufacturing transport screws was resulting in scraping and replacing the screws every 2-3 months at a cost of 6,000 USD per screw, not including labour and lost production time.

The screws transport MgCl, NaCL and KCl salts which are highly corrosive and abrasive, as the plant maintains over 60 of these screws, it was resulting in an annual expense of over 2.1M USD.

Products featured in this case study:

- Chesterton ARC MX Food Grade (FG) - Abrasion Resistant Coating for Fine Particle Wear

Solution

Preparation

- Surfaces decontaminated to remove residual salts.
- Grit blasted to SP10 cleanliness with 3+ mil angular profile.

Application

- A Chesterton specialist trowel applied ARC MX FG to press side of flights as trial at 2-3mm thickness.

Chesterton ARC MX FG is a trowel applied 100% solids, zero VOC, ceramic-reinforced epoxy coating designed for protecting surfaces against dry and wet slurry abrasive flow. This two-part system complies to 21 CFR 175.300 and is suited for direct food contact.

Results

Client Reported

Our client reported the initial trial screw was in service for >18 months (6X uncoated life) with minimal wear noted on coated surfaces, resulting in a 30K USD saving on this screw to date.

Our client has since decided to coat both the press and following faces of flights as well as the drum on all 60 plant screws to extend the life and reduce maintenance costs.

Previous method ($ 6,000 USD x 6 / year x 60 screws) = $ 2,160,000 USD

ARC MX FG method (6K USD x .5 / year x 60 screws) = $ 180,000 USD

Anticipated savings when fully implemented = $ 1,980,000 USD

Chesterton ARC MX FG – Abrasion Resistant Coating for Fine Particle Wear.

Replacement screw.

Applying Chesterton ARC MX Food Grade (FG).

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Chesterton Wear Rings Reduce Product Loss On Extrusion Machine

Challenge

Background

A European cookie manufacturer needed to upgrade a cream extrusion machine used to make biscuits.

The current wear rings caused scoring of the internal cylinders roller, resulting in expensive repairs or replacement of the rollers. Each roller has 70 pistons.

The plant was losing product throughout as the failed seals introduced quality issues with the end product.

Products featured in this case study:

- Chesterton P22KN Rod and Piston Seal Single-Acting, U-Cup for Hydraulic/ Pneumatic Presses
- Chesterton 19K Split Wear Rings High-Performance, Replaceable Cylinder Guides

Solution

Preparation

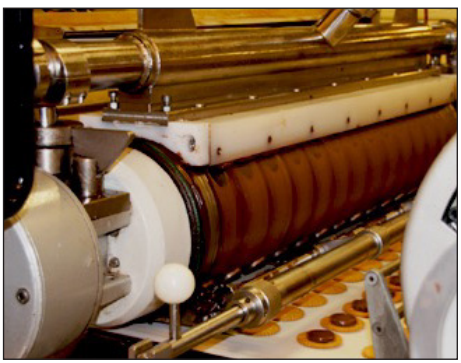
The plant switched to the following Chesterton sealing solutions:

- P22KN Rod and Piston Seal using the AWC800 material. The seal design offers a positive-rake lip profile for optimal radial sealing load with minimal frictional resistance.
- 19K Split Wear Rings using AWC600 material. These bearings reduce radial movement to help extend seal life.

Results

Client Reported

The customer has been using this solution since 2010. The Mean Time Between Repair (MTBR) is 3X the previous solution. There are far fewer related product loss issues, downtime issues, or repairs.



Cream extrusion roller equipment.

Pistons with P22KN Rod and Piston Seal with 19K Split Wear Rings.

Chesterton P22KN with 19K extends the life of each piston.

Chesterton 30K Rotary Seal For Turbo Cream Mixer

Challenge

Background

A biscuit manufacturer was experiencing sealing issues with its turbo cream mixer due to premature seal wear from crystallizing sugar.

- Competing seals are only lasting one to three months which was not acceptable to the customer.
- Metal rings (in and out rings and bearings had to be replaced prematurely due to failure.
- The replacement of the working heads constituted three to four hours with two technicians.

Products featured in this case study:

- Chesterton 30K Rotary Seal Increases Wear and Abrasion Resistance

Solution

Preparation

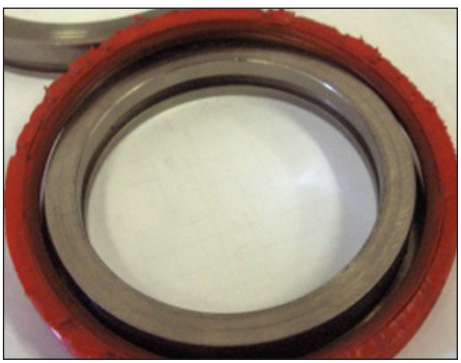
Chesterton specialists recommended switching to the 30K Rotary Seal using AWC300 material. The benefits with the 30K Seal are:

- Lower friction with PTFE material. (Lower friction means lower temperature at the sealing surface.)
- The flexible lip seal on the 30K effectively protects sugar crystallization from getting under the seal lip.

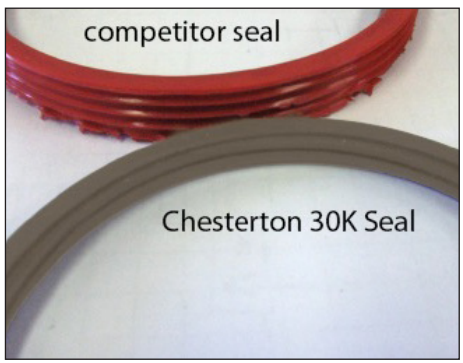
Results

Client Reported

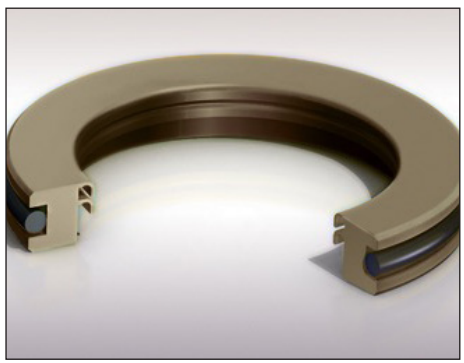
The solution offered to the customer has been running without any issues for two years. The customer witnessed significant cost savings as the new sealing solution meant reduced maintenance related shutdowns and cost savings from not have to replace components (such as metal rings and bearings).



Failed competitor seal.



Failed competitor seal (top image) compared to Chesterton 30K (bottom seal).



Chesterton 30K Rotary Seal.

Enhancing Hydraulic Jack Reliability in Sugar Roller Mills: Addressing Leakage Issues and Maintenance Downtime

Challenge

Background

In 2007, frequent leakages in the hydraulic jacks of the last roller of a tandem B mill caused repeated production shutdowns during each half-year milling season. With each 24-hour shutdown incurring significant maintenance costs and impacting the mill's 200-ton-per-hour activity, urgent measures are needed. The goal is to replace the shrinking urethane seals with more durable materials and introduce bearing bands to reduce wear, extending jack performance and minimizing downtime.

Products featured in this case study:

- Chesterton AWC800 22K Piston Seal, combined with Chesterton 18K GFN bearing bands.

Solution

Preparation

Chesterton specialists presented the perfect solution, replacing the defective seal with Chesterton AWC800 22K Piston Seal, combined with Chesterton 18K GFN bearing bands.

Chesterton AWC800 is a diamine-cured thermoset polyurethane.

The innovative Chesterton sealing material is shrink-resistant, abrasion-resistant, wear-resistant, extrusion-resistant, non-absorbent, and operates with low-friction thanks to its molybdenum disulfide lubrication properties.

The Chesterton 18K GFN bearing bands/MWR Coil TB, prevents side loading and metal-to- metal abrasion on the adjacent metal surfaces on the remaining length of the ram.

The offered Chesterton solution prevents frequent leakages and extends the service lifetime.

Results

Client Reported

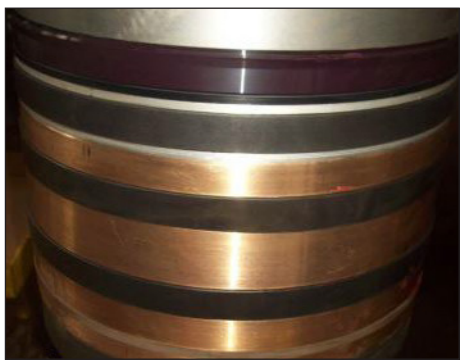
Upon introduction of the AWC800 thermoset polymer seal in place of the local urethane seal, shrinking has now been totally prevented. Metal-to-metal wear between the ram and barrel is also restricted due to the introduction of wear bands.

Instead of shutting down 3 times per milling season, the cylinder lasts for 5 seasons without leaking.

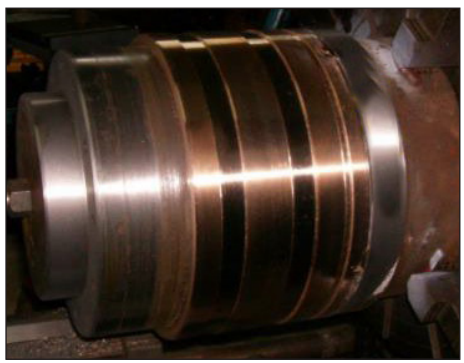
Total savings: $ 400,000 USD

Given the remarkable improvement and cost-saving using Chesterton thermoset polyurethane seals installed, the customer decided to hand over the complete set of roller mills for future upgrades and ongoing repair.

Shrunk piston seal and severely scratched/worn-out bronze surface of ram



Chesterton AWC 800 22K Piston Seal and 18K GNF/MWR Coil TB Bearing Bands on the Jack Ram



Repair of Hydraulic Jack Ram

30KC Cartridge Multi Lip Seal On Chocolate Mixer

Challenge

Background

A customer in the food and beverage industry had issues sealing a mixer in an application which mixed chocolate with other additives such as nuts and caramel. The bottom shaft rotated at speeds up to 1500 rpm. The original seals were failing nearly every five days, causing the mixture to leak and resulting in product loss. This situation also required ongoing maintenance issues.

Products featured in this case study:

- Chesterton 30KC Cartridge Multi Lip Seal For Dynamic Rotary Seal Applications

Solution

Preparation

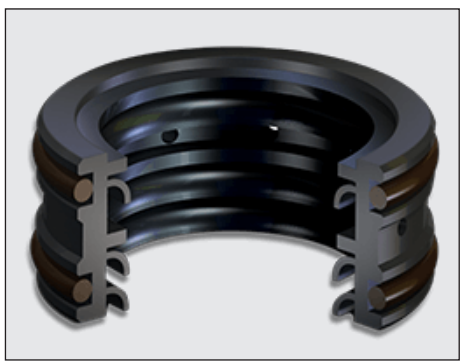
A Chesterton® 30KC Cartridge Multi Lip Seal was used to run against the shaft. The seal was made of carbon/graphite filled PTFE for excellent wear performance. The cartridge was installed in a stainless steel can to provide positive radial and axial retention. Flush ports were provided in both the seal and can to allow effective cleaning and periodic infusion with a FDA compliant lubricant.

Results

Client Reported

The 30KC performance was verified through functional trial in the customer's mixer. After 12 months of problem-free performance, the customer switched to this solution. The Chesterton 30KC Cartridge Multi Lip Seal provided successful sealing for another two years before maintenance was required.

The mixer's hydraulic power unit.



Chesterton 30KC Cartridge Multi Lip Seal.

The chocolate mixer sealing issues were resolved.

Baking Oven Chain Lubrication Reduces Down-Time

Challenge

Background

A food plant was lubricating chains and sprockets in a baking oven using a competitor's high viscosity product. The customer was not satisfied with the performance of the competitor's product and felt that it did not have good load-bearing capabilities. The oil was not penetrating the chain links well, and the high operating temperature of 180˚C (356˚F) caused the oil to evaporate and carbonize, leading to a waxy build-up.

This resulted in chain slippage and misalignment causing the trays to jam inside the oven, leading to unplanned downtime and damaged trays.

Products featured in this case study:

- Chesterton 650 AML Lubricant High-Performing, Readily Biodegradable Lubricant

Solution

Preparation

The Chesterton specialist diagnosed the problem of high viscosity and inadequate heat resistance capabilities of the existing oil and recommended Chesterton 650 Advanced Machinery Lubricant (AML), a low-viscosity ISO 22 grade and high-temperature chain oil that operates up to 211˚C (412˚F).

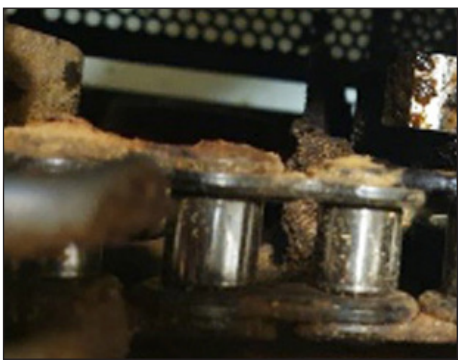
Chesterton 650 AML Application penetrates extremely well inside the micro spacings of the chains and can carry high loads. It avoids build up due to high detergency and higher operating temperature limits.

Results

Client Reported

After applying Chesterton 650 AML, the customer's baking oven chain operation improved dramatically. The wear significantly reduced due to the high penetration and load carrying capabilities. Chesterton 650 AML heat resistance capabilities and inherent detergency reduced the build-up on the chains, which in turn reduced slippage and misalignment.

- Oil usage reduction of 25%
- Direct cost reduction of 15%
- Part replacement cost 100% savings
- Labor cost 100% saving for both breakdowns and cleaning



Waxy build-up on baking oven chain.

Chesterton 630 AML Lubricant.

Cleaned and lubricated chain.

720 Chain, Cable, And Gear Lubricant (CCG) Delivers “Eggcellent” Lubrication Performance

Challenge

Background

In an egg processing facility 14,000 raw eggs are conveyed through steam cookers per hour using chain drives and open gear drives. The facility was having an issue with load-on gears that squeezed out conventional food-grade grease. Residual heat caused oil separation, resulting in dripping and contamination.

The facility wanted to reduce the dripping and contain the contamination that resulted in many rejected runs.

Products featured in this case study:

- Chesterton 720 CCG
  Extreme Pressure, Water, and Corrosion Resistant

Solution

Preparation

The gear drive was cleaned using Chesterton 292 Precision Degreasing Solvent (PDS) followed by 723 FG Sprasolvo™ Oil. Chesterton 720 Chain, Cable, Gear Lubricant (CCG) (diluent version) was sprayed onto the gears using a trigger sprayer and allowed to coat the gears uniformly.

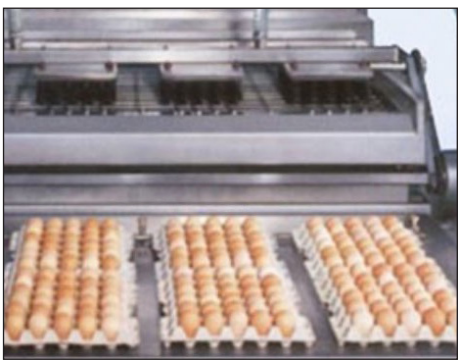
Chesterton 720 CCG is designed with a calcium sulfonate complex thickener technology and polymer modified synthetic oil. As a result, this lubricant holds up under extreme pressure.

Results

Client Reported

The Chesterton 720 CCG Lubricant easily flowed onto the gears and remained as a slightly tacky fluid gel that did not fling off or drip during operation under extreme pressure and temperature.

Use of Chesterton 720 CCG significantly reduced rejected runs and improved the plant’s efficiency in meeting its targets.



Steam cookers require lubrication that can hold up under pressure and heat.

Chesterton 720 CCG-diluted was sprayed with a trigger sprayer.

The Chesterton solution eliminated the contamination vto help the plant meet its goals.

Extending Chain Life In Canned Fruit Manufacturing Company

Challenge

Background

A canned fruit manufacturing company possesses 15 pineapple peeling machines. Motor drive chains have been experiencing a corrosion issue due to being constantly operated in wet, acidic conditions.

The present lubricant cannot withstand water washout. Consequently, the company is compelled to replace the chains with new chains every five months which equates to 30-40 Chains per year.

The plant could have set up a preventative maintenance program to clean and lubricate the existing chain before failure however, the costs of labour and downtime were deemed too high.

Products featured in this case study:

- Chesterton 601 Chain Drive Pin & Bushing Lubricant - Extends Chain and Wire Rope Life; Reduces Energy Use

Solution

Preparation

It was suggested that providing a water-resistant barrier and proper chain lubrication would increase the life of the chain and hence reduce machine downtime.

Chesterton 601 Chain Drive Pin & Bushing Lubricant together with the Chesterton 715G Spraflex Gold was recommended as a trial. Due to the acidic moist environment, re-lubrication is conducted weekly.

Lubricant cost (601CDPBL+715G) =

$ 650 USD / year

Results

Client Reported

After using Chesterton 601 Chain drive pin & bushing lubricant with 715G Spraflex Gold the client reported:

- Elimination of corrosion
- Increased chain life by 2 years

Motor drive chains cost =

$ 2,950 USD / year

Labor cost = $ 140 USD / year

601/715 = $ 650.00 USD / year

Total savings = $ 3,090 USD – $ 650 USD = $ 2,440 USD / year

Processing machine.

Motor drive chain after using Chesterton 601CDPBL+ 715G Spraflex Gold.

Increased chain life by 2 years.

Eliminating Vibration In MVR Fan

Challenge

Background

The electric motor on a MVR Fan was on a preventative maintenance plan due to a high vibration problem. This meant the electric motor was sent for an overhaul every 6 months. The fan required a high temperature application of grease, which made manual greasing a hazardous task, hence the bearings were constantly under lubricated.

Audit cost per year = $ 7,700 USD (Bearing cost, labor cost and freight cost included.)

Products featured in this case study:

- Chesterton 629 High Temperature White Grease (HTWG) - Non-Melting, H1 Food-Grade Grease Fortified with PTFE

Solution

Preparation

Previously the plant had a good experience using the Chesterton 629 High Temperature White Grease (HTWG) in other areas of the plant.

Due to the 629 HYWG application being compatible with the existing grease and high temperature tolerant, they decided to install 2 Chesterton Lubri-cup EM with 629 HTWG Service Pack 250cc (set time to 6 months). The 629 HTWG also uses Chesterton QBT which means that bearing vibration would also improve.

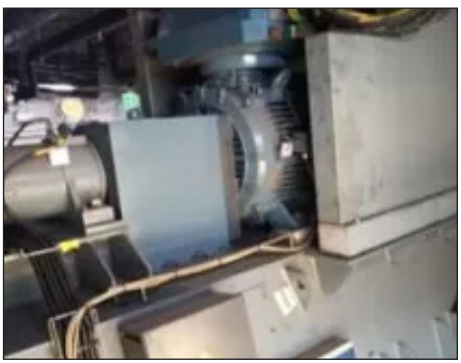
Total cost = $ 1,000 USD

Results

Client Reported

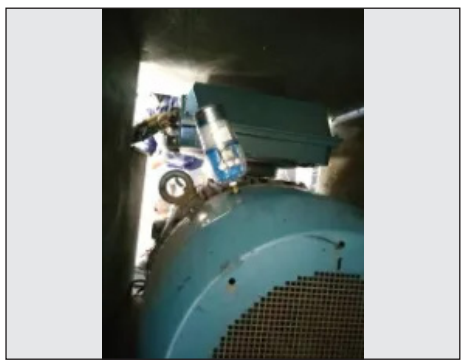
After using the Chesterton Lubri-cup EM with 629 HTWG Service Pack 250cc, the bearing vibration greatly reduced and the motor was removed from the preventative maintenance schedule. Worker safety also increased due to no longer needing to manually lubricate the motor.

Total savings = $ 7,700 – $ 1,000 = $ 6,700 USD / year



Equipment : ABB Motor for MVR Fan Bearing: 6310M/C3, 6316MC3VL0241, Speed : 2981 rpm.

2 Sets of Lubri-cup EM with 629 HTWG have installed.



Motor for MVR Fan has increased reliability.

Extending Bearing Life At Sugar Refinery

Challenge

Background

A screw feeder (double-humped, with an intermediate bearing) is utilized to send raw sugar in the sugar washing process at a sugar refinery. Historically, grease-up was manually conducted, resulting in frequent oversight and inadequate lubrication, necessitating bearing replacements every six months to a year at most. The root cause of this issue stems from the reliance on manual lubrication, leading to recurrent problems due to forgetfulness or insufficient application. Moreover, the quality of the grease used often failed to withstand the moist atmosphere, exacerbating the situation further.

Products featured in this case study:

- Chesterton Lubri-Cup™ EM Series Electro-Mechanical Automatic Grease Dispensers; Dispenses Grease Accurately at Timed Intervals

Solution

Preparation

The Chesterton Lubri-Cup™ Automatic Grease Dispenser EM and Chesterton 630 SXCF service pack were selected to provide reliable greasing with high performance and food grade specification. One Lubri -Cup was used for each of the bearings which included the center bearing which was fed through a tube (3 sets in total). The grease from the center bearing is removed in the subsequent cleaning processes, so it is not considered a problem. Lubrication timing is set at 12 months.

Results

Client Reported

The equipment is operating smoothly with no problems, and 1 year has passed. The service pack has been replaced and will continue to be used. The grease pack is well received because the remaining grease level can be seen from the outside and the display shows how many shots have been applied.

ROI

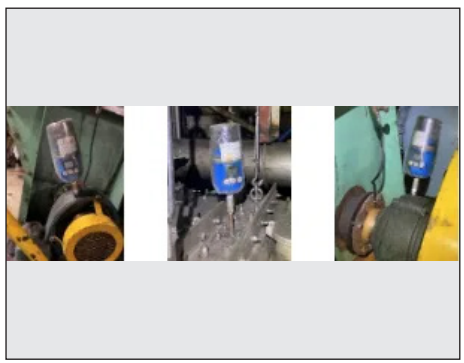
Conventional method

- Unscheduled lubrication by manpower
- Outsourcing cost

(bearing replacement, shaft maintenance, etc.) $ 3,000 USD - / times

Forgotten or insufficient lubrication.

Chesterton 630 SXCF.



Chesterton Lubri-Cup™ Automatic Grease Dispenser EM.

Increasing Equipment Reliability In A Cocoa Factory

Challenge

Background

A five-roller mill ensures the distribution of particles in the soft solid flow of cocoa mass. Insufficient grease on the roller bearings has caused bearing failure. The equipment is an important step in the production of cocoa and could not be stopped for maintenance so was left to run. Excessive wear led to the replacement of the bearing, and the original grease used could not reduce the equipment vibration causing even more damage.

Products featured in this case study:

- Chesterton Lubri-Cup™ EM Series Electro-Mechanical Automatic Grease Dispensers; Dispenses Grease Accurately at Timed Intervals

Solution

Preparation

The maintenance manager requested an inspection of the plant with the report highlighting the need for a procedure to improve maintenance and avoid issues previously encountered. Lubri-Cup™ Automatic Grease Dispenser EM Series with the Chesterton Application 615 HTG#2 was installed on 4 units of the Five Roll Mill Equipment at the correct dispense rate for 12 months (2 cycles at 0.7cc/day). The Chesterton 615 HTG#2 grease with built in QBT was able to ensure that the equipment vibration was not affecting the bearing performance.

- Excellent corrosion protection
- Best-in-class water and chemical washout resistance
- QBT™ Quiet Bearing Technology
- Automatic grease dispensing

Results

Client Reported

The Chesterton Lubri-Cup™ EM with the Chesterton 615 HTG#2 improved five-roll mill equipment production. The downtime was reduced and contributed to good savings.

Total Savings for 1 Five Roll Mill Equipment : First Year

$ 43,376 USD (Manual Greasing)

- $ 1,382 USD (Lubri-cup EM with 615 HTG#2)

= $ 41,994 USD

Total Savings for 1 Five Roll Mill Equipment: Following Year

$ 43,376 USD (Manual Greasing)

– $ 364 USD (Service Pack Replacement)

= $ 43,012 USD

Bearing failure due to insufficient amount of grease on Five Roll Mill equipment.

Chesterton Lubri-Cup™ EM Series.

Chesterton Lubri-Cup™ EM improves production, extends bearing life and saves costs.

Improved Bearing Reliability For Bakery Cooling Machine

Challenge

Background

A large bakery uses a spiral cooling machine which has 28 lubrication points. The operating temperature is 25°C and rotates at 100 rpm.

Preventive maintenance is difficult to perform due to the limited access area being unsafe. Therefore, often bearings would not be lubricated for many weeks, causing unscheduled production downtime and increased maintenance costs.

Products featured in this case study:

- Chesterton 630 SXCF Extreme-Pressure, Corrosion-Resistant Grease
- Chesterton Lubri-Cup EM 250cc - Electro-Mechanical Automatic Grease Dispenser

Solution

Preparation

Our customer decided to install Chesterton Lubri-Cup™ Automatic Grease Dispenser EM 250cc and Chesterton 630 SXCF grease with remote installation kit in 4 key lubrication points.

Chesterton Lubri-Cup EM 250cc

- Excellent corrosion protection
- High load carrying ability
- Best-in-class water and chemical washout resistance
- QBT™ Quiet Bearing Technology
- Automatic grease dispensing
- Reduced lubricant consumption

Results

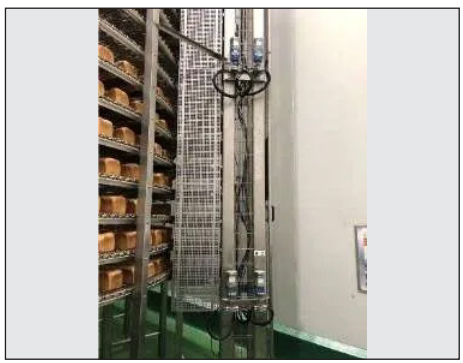
Client Reported

After 2 years, the client reported an approximate saving of **$ 2,000 USD** per year just in maintenance costs without any bearing failures.

Chesterton 630 SXCF

- NSF Registered H1
- Superior water washout resistance
- Exceptional shear resistance
- Anti-oxidants prevent hardening or crystallization
- QBT™ Quiet Bearing Technology

Chesterton 630 SXCF.



After installing Chesterton Lubri-Cup EM with 630 SXCF grease.

After installing Chesterton Lubri-Cup EM with 630 SXCF grease.

Increasing Chain Life In Food Manufacturing Plant

Challenge

Background

A canned coffee producer has encountered a problem with their transport chain. The chain life was only a year instead of more than 3 years because their chain lacked lubrication and ran under harsh conditions (water and alkaline cleaner).

They also experienced shutdowns due to the chain breaking at least 10 times a month, which takes at least 1 hour to fix.

Chain Cost for 300 meters was more than $ 113,00.00 / year (300 meters) with a production loss of over $ 62,400.

Labor cost = $ 400 USD / year

Total cost = $ 175,800 USD / year

Products featured in this case study:

- Chesterton 660 Silicone Lubricant Low Viscosity, Penetrates Fine Tolerances; NSF H1

Solution

Preparation

Due to the requirement for sanitary operation in a very dusty environment, Chesterton 660 Silicone Lubricant was chosen to be used. 660 Silicone Lubricant provides a virtually tack free lubricating film ensuring that dust does not stick to the surface and hence protects the bearings. 660 is applied every 3 months.

Chesterton 660 cost = $ 1,390 USD / year

Labour cost = $ 400 USD / year

Total cost = $ 1,490 USD / year

Results

Client Reported

After using Chesterton 660 Silicone Lubricant the customer reported:

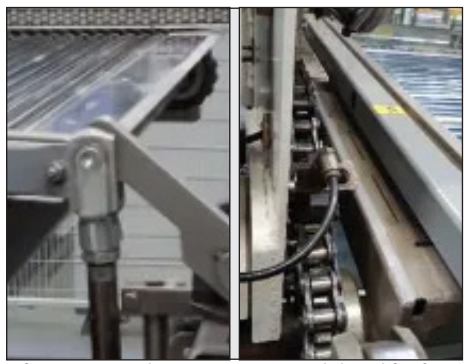
- Increased chain life from 1 to 4 years
- No breakdown

Savings = $ 174,310 USD / Year

Total Savings over Life of the Chain = $ 697,240 USD

Chain before using Chesterton 660.

Chain after using Chesterton 660 Silicone Lubricant.



After using 660, there was an increased chain life of more than 300%.

Shrink Wrapper Chain Lubrication Improves Productivity

Challenge

Background

A bottling plant wasn't using lubrication on the chains of a high-temperature shrink wrapper because the excessive heat, which goes up to 175˚C (347˚F), was causing low temperature oil to carbonize on the chains and the cost of high temperature oil was too expensive. As a result, the chains were squeaky and would get jammed in the shrink tunnel.

This resulted in the customer having to reject many lots that were exposed to high heat for extended time, compromising plant productivity.

Products featured in this case study:

- Chesterton 650 AML
  High-Performing, Readily Biodegradable Lubricant

Solution

Preparation

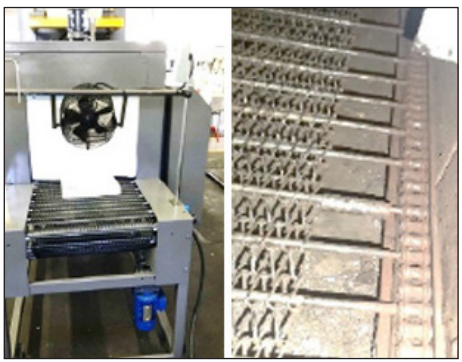
The Chesterton specialist diagnosed the problem and recommended Chesterton 650 Advanced Machinery Lubricant (AML), a higher temperature chain oil that operates up to 211˚C (412˚F) and reduces friction to improve power consumption.

Chesterton 650 AML is a biodegradable, NSF H1 certified, high performing lubricating oil, which is made from plant and synthetic based esters. It has extremely high load bearing capabilities and detergency to keep chains clean.

Results

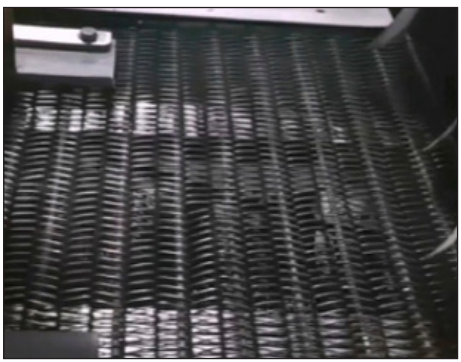
Client Reported

The solution offered to the customer has been running without any issues for two years. The customer witnessed significant cost savings as the new sealing solution meant reduced maintenance related shutdowns and cost savings from not have to replace components (such as metal rings and bearings).



Shrink wrapper in bottling plant.

Chesterton 650 AML is sprayed on the chains in the high-temperature tunnel inside the shrink wrapper.



Well lubricated and squeak-free tunnel chains.

Agitators In Chocolate Processing Plant

Challenge

Background

Raw chocolate is a viscous, abrasive compound that can be difficult to seal. Chocolate is a food product and the sealing methods and operating parameters must conform to regulations and good practices.

A U.S chocolate factory wanted to seal all their tank agitators with mechanical seals to eliminate chocolate leakage and associated sleeve wear caused from sealing with compression packing.

Split seals were recommended to eliminate the need to dismantle the agitators as well as for installation simplicity. Reducing or eliminating chocolate leakage would save valuable product and reduce the clean up and special disposal requirements for this operation.

Products featured in this case study:

- Chesterton 442C Cartridge Split Seal Simple, Fast Installation and Greater Sealing Reliability

Solution

Preparation

The chocolate processing plant installed four 4.500 inch SC/SC EP Chesterton 442C Split Seals in one section of the facility.

The Chesterton Application 442C Cartridge Split Mechanical Seals were very simple to install and reliable at start up.

After installation, the tanks were filled with raw chocolate and agitators were operated.

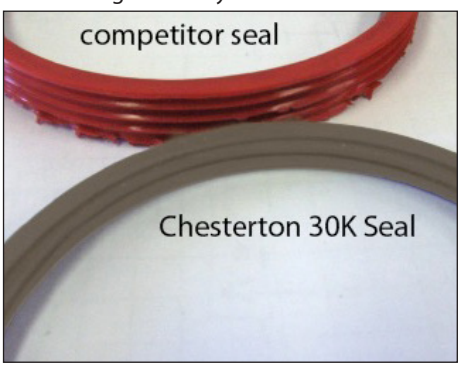
All agitators operated totally leak free.

Results

Client Reported

The Chesterton 442C Split Seals have been in operation for several months

- The seals have operated leak free during this time frame, eliminating the clean up and disposal issues
- The customer was very pleased with the ease of installation and the performance of the Chesterton 442C Cartridge Split Mechanical Seal



Agitator fitted with a Chesterton 442C Cartridge Split Seal.

Chesterton 442C Cartridge Split Mechanical Seal.

Chocolate tanks sealed with Chesterton 442C Split Seals.

Recirculation Pumps In Corn Processing

Challenge

Background

This corn processing facility was only obtaining 2 weeks to 4 months of operating life out of their current mechanical seals due to the physical properties of corn syrup and the process location.

The plant processes 25% solids corn syrup, which is a viscous and sticky material at ambient temperatures and has a tendency to crystallize solids out of solution. To compound the problem, the pumps are located outside in sub-zero temperatures that will additionally thicken the corn syrup.

When the pumps are not operated, corn syrup will crystallize and potentially stick or adhere the faces together causing seal failure at start up.

Products featured in this case study:

- Chesterton 170 Slurry Single Cartridge Seal - Designed to Extend the Life of Slurry Pumps

Solution

Preparation

The innovative Chesterton 170 Slurry Cartridge Single Seal was installed in one of the recirculation pumps to determine if it would improve the plant's seal reliability and MTBF.

The unique design of the Chesterton 170 Slurry Seal incorporates a high-strength drive system to give the seal higher torque capabilities. This is important in sealing high viscosity and sticky fluids such as corn syrup. The innovative pressure plate system also keeps the springs entirely outside the seal.

Results

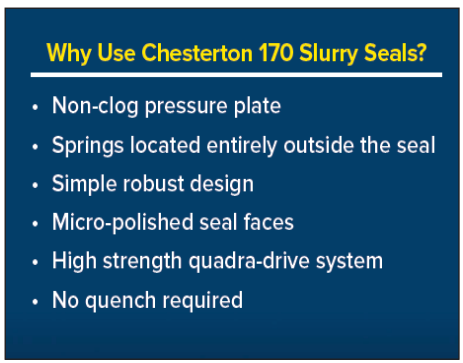
Client Reported

The initial Chesterton 170 Slurry Seal has been in operation for over 3 years and still running. Previously, the best MTBF was 4 months!

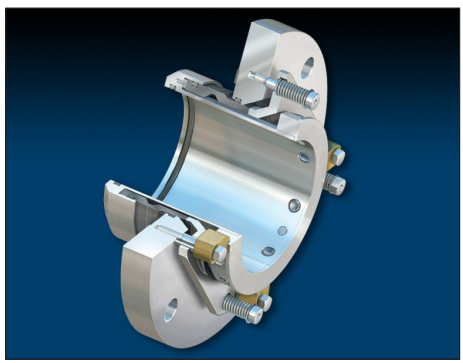
The Chesterton 170 Slurry Seals are also running without a flush eliminating any dilution of the corn syrup.

To date, 30 pumps at this site have been converted to the Chesterton 170 Slurry Seal. Every pump that comes out for repair gets fitted with a new Chesterton 170 Seal, which is now the default recommendation in the plant.

Chesterton 170 Slurry Cartridge Single Seal.



Discover the Advantages of Chesterton 170 Slurry Seals.



Chesterton 170 Slurry Cartridge Single Seal.

DualPac® 2211 Beats Out The Competition At Food Processing Plant

Challenge

Background

In an effort to achieve more reliable sealing of a potato steam peeler, this food plant tried installing multiple types of packing in the hopes of finding one that would last. With their best contender only lasting two months before failure, Chesterton recommended the Chesterton DualPac® 2211 Packing Technology, and the MTBF increased astronomically!

Products featured in this case study:

- Chesterton DualPac 2211 Innovative Packing Technology for Longer Life in Severe Slurry Applications

Solution

Preparation

A food plant tried multiple types of packing (PTFE, graphite, reinforced corners, etc.) To achieve more reliable sealing of potato steam peeler. The best MTBF they were able to achieve with other packing was two months before catastrophic failure when the packings needed to be completely replaced. The customer's goal was to increase MTBF and reduce maintenance costs.

Operating conditions: Frequent, rapid pressurization 0 – 19 bar (0 – 80 psi) and rapid decompression 19 – 0 bar (280 – 0 psi). Bi-directional equipment.

Temperature: 212°C (415°F) Speed:

18 rpm

Results

Client Reported

The plant switched to Chesterton DualPac 2211 packing.

DualPac 2211 packing performed the best of any packing they had ever tried in this equipment. The peeler has been running for 21 months to date without a repack and without any significant leakage.

Chesterton DualPac 2211.

A food plant wanted to achieve an increased MTBF.

The fully operational food plant.

Steam Peeler Sealing

Challenge

Background

A vegetable processing plant had leakage issues with their steam peelers. The packing set had to be changed monthly and the worn shaft was replaced on a regular basis. Steam peelers have a rotating shaft sealed with a stuffing box.

There is a lot of wear on the packing set from dirt on the vegetables. The customer was using an abrasion-resistant packing that was wearing the shaft. The high pressure steam leakage caused bearing issues.

Products featured in this case study:

- Chesterton 1730 Synthetic Packing Thermoset Fiber for Plant-Wide Use in Pumps and Rotating Equipment
- Chesterton Rotary Live Loading Extends Time Between Packing Adjustments

Solution

Preparation

A 3-ring Chesterton 1730™ Synthetic Packing set was selected as it is very resistant to abrasion but will not damage the shaft.

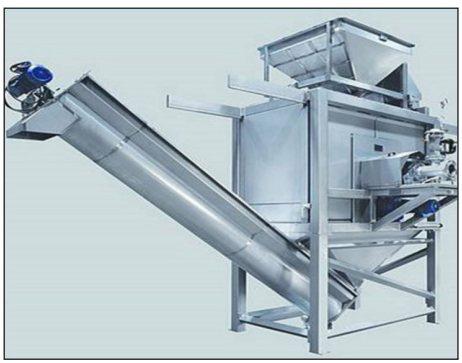
The spring-loaded Chesterton 5150 Rotary Live Loading system helps prevent particles from entering the stuffing box and maintains a constant sealing force.

Results

Client Reported

The Chesterton system has eliminated

- Leakage, shaft wear, and bearing problems
- The solution has been running for 9 years without problems
- The customer replaces the 3-ring Chesterton 1730 packing set yearly as part of their preventative maintenance program



Steam peelers remove the skin from fruits and vegetables by exposing them to high pressure and high temperature steam.

Chesterton 1730 and 5150 Rotary Live Loading.

Chesterton's 5150 Rotary Live Loading system avoids leakage by automatically maintaining the correct sealing force on the packing set.

Global Solutions, Local Service

Since its founding in 1884, the A.W. Chesterton Company has successfully met the critical needs of its diverse customer base. Today, as always, customers count on Chesterton solutions to increase equipment reliability, optimize energy consumption, and provide local technical support and service wherever they are in the world. Chesterton's global capabilities include:

- Servicing plants in over 113 countries
- Global manufacturing operations
- More than 500 Service Centers and Sales Offices worldwide
- Over 1200 trained local Service Specialists and Technicians

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