

# GEOTHERMAL POWER

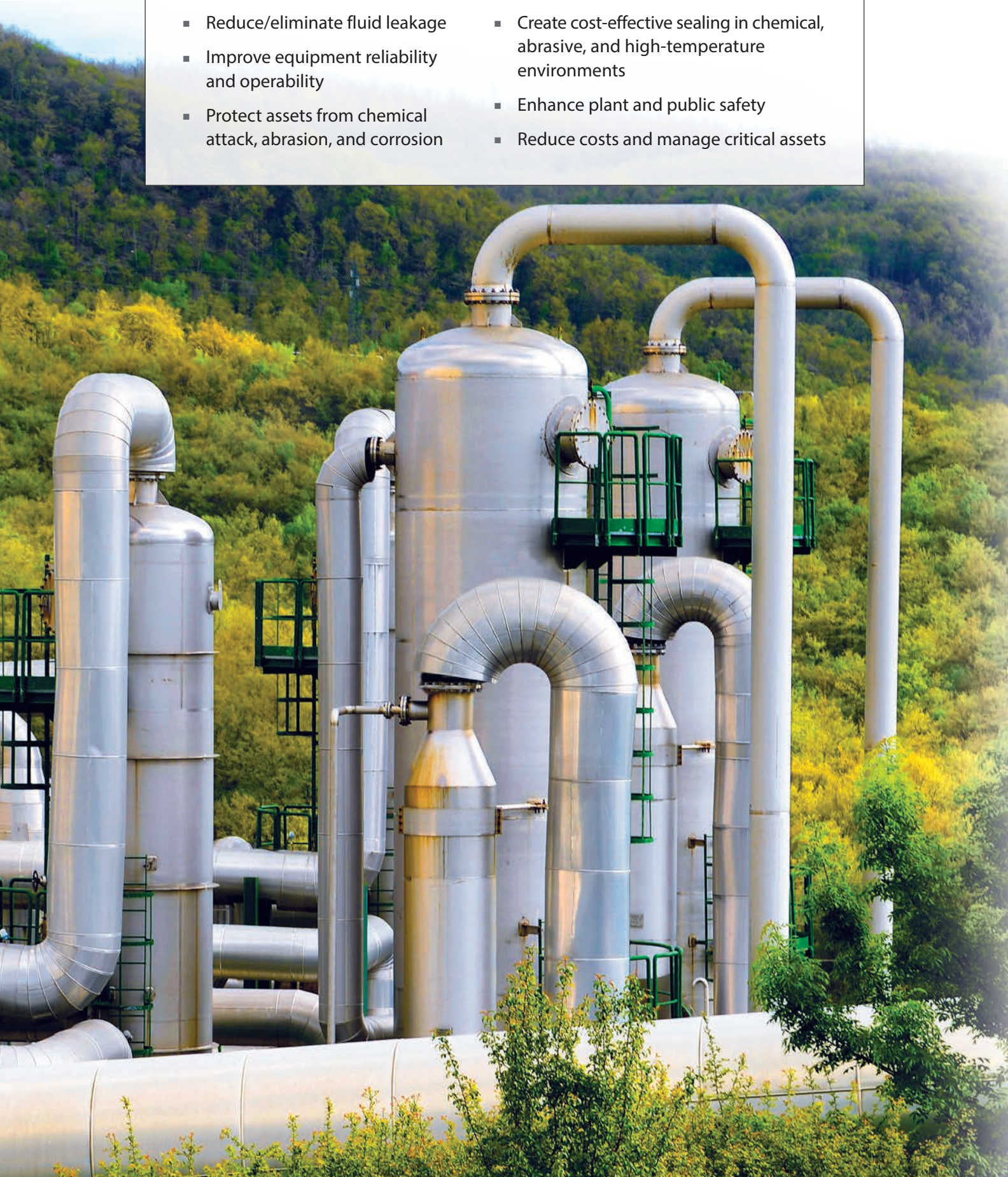
INDUSTRY SOLUTIONS





## Chesterton® Solutions and Services Help Geothermal Plants:

- Reduce/eliminate fluid leakage
- Improve equipment reliability and operability
- Protect assets from chemical attack, abrasion, and corrosion
- Create cost-effective sealing in chemical, abrasive, and high-temperature environments
- Enhance plant and public safety
- Reduce costs and manage critical assets





# Geothermal Solutions

## To Improve Plant Performance

*Chesterton provides fluid sealing solutions and asset preservation that help geothermal plants improve reliability, lower operating costs, and increase safety. Our products and services will help you achieve reliable and cost-effective sealing in high-speed, high-temperature, and high-pressure environments. Our solutions extend the life of equipment exposed to harsh conditions and improve overall plant performance.*

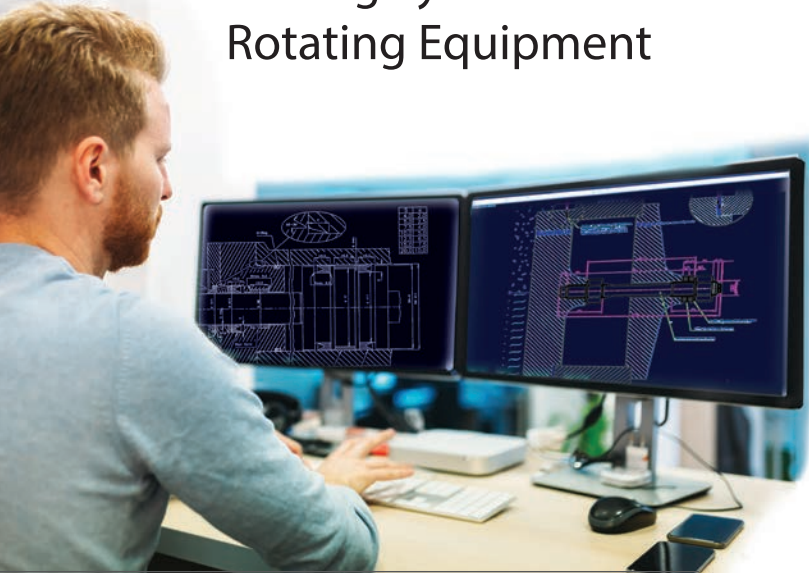


### **Sealing and Asset Preservation:**

- Mechanical seals for turbines, pumps, and other pieces of rotating equipment
- Packing for pumps and valves
- Sealing technologies for flanges and heat exchangers
- Protective coatings to rebuild, protect, and enhance metal and concrete plant infrastructure and equipment
- Industrial lubricants and MRO products for critical applications across the plant
- Engineered polymer seals for static, reciprocating, and rotary applications
- Services and programs tailored to your plant's particular needs
- Training programs that enhance employee knowledge and skills

# Equipment Sealing Solutions

## Sealing Systems for Turbines, Pumps, and other Rotating Equipment



### Mechanical Seals

Chesterton's portfolio of mechanical seals provides reliable solutions, including custom engineering/clean sheet design solutions, for the most demanding pump applications found within the geothermal plant including:

- Main turbine shaft seals
- Feed pumps
- Condensate/cooling tower pumps
- Down hole/injection well pumps

### Cartridge Seals

Engineered cartridge seal technologies, incorporating the latest innovation and technology with seal face features, offer solutions for the most demanding applications.

### Split Seals

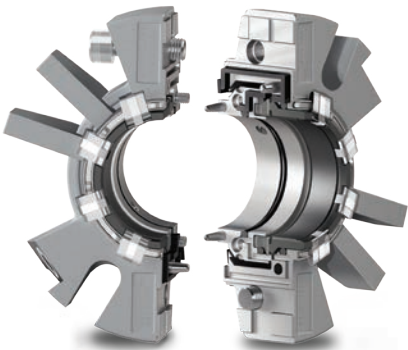
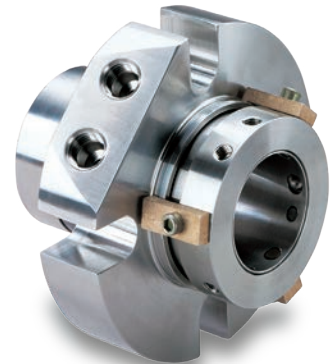
Our innovative split seal technology provides the ability to seal most pumps at the plant without equipment disassembly, thus saving time and money.

### Pump Packing

Chesterton pump packing systems extend the life and enhance the safety and performance of auxiliary systems across the plant.

### Engineered Polymer Seals

Both solid and split polymer seal designs are available for various rotary equipment requirements.



# Sealing Systems for Valves, Flanges, Heat Exchangers, and Stationary Equipment

## Valve Sealing Systems

Chesterton designs innovative valve sealing solutions that address specific geothermal applications. Our solutions focus on reducing leakage and improving operability, which result in enhanced control, longer life, and greater reliability.

### Control Valves

Chesterton's sealing sets for air- and motor-operated control valves provide the lowest valve stem friction available to the industry while still reducing leakage.

### Balance of Plant/Block Valves

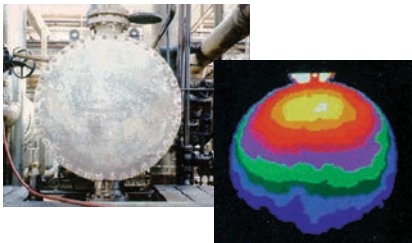
Chesterton offers a variety of die-formed ring sets and spool packings for the plant's critical block and the balance of plant valves.

### Flange Sealing Systems

We provide a complete range of flange sealing products, including graphite and chemical sheets, semimetallic gasket options, and engineered live loading sets, for the plant's joint integrity requirements.

### Heat Exchanger Sealing

We offer a complete solution that focuses on selecting the proper gasket, maintaining proper sealing stress, optimizing bolt load, and improving performance of anti-seize to provide advanced sealing technology for a leak-free\* seal.



\* Leak-free is defined as leakage  $\leq 500$  ppm during a 3-year period. Leak-free capabilities depend on operating and other conditions. Ask your Chesterton representative for more details.



### Chesterton's Steel Trap™ Gasket Technology

Our Steel Trap gasket represents the latest development in semimetal gasket technology. The unique design requires the lowest seating stress while maintaining outstanding sealability during unloading, when it counts the most.





# Protective Coatings, Maintenance

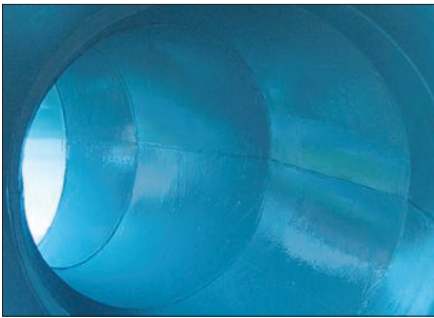
## Industrial Coatings to Protect Plant Equipment



### ARC Efficiency & Protective Coatings

Chesterton's ARC line of advanced coatings protects and rebuilds metal and concrete equipment and structures exposed to corrosion, erosion, and chemical attack. ARC coatings are 100% solids, low VOC, and have innovative, reinforced product formulations. ARC coatings protect plant infrastructure and equipment subjected to corrosion and wear including:

- Circulating cooling water systems
- Chemical treatment systems
- Condensate systems
- Demineralization systems
- Service water systems



### *Metal Coatings*

Prolonged exposure to corrosive fluids and abrasive particulates wears down unprotected metal surfaces which impacts plant reliability and costs. ARC coatings protect equipment and structures, thus extending years of service under the harshest conditions.

- Ceramic-reinforced claddings for abrasion and impact
- Rebuilding compounds to repair worn equipment
- Sprayable barrier coatings for corrosive and chemical services

### *Concrete Coatings*

Concrete throughout geothermal power plants is prone to damage and attack from chemicals as well as the environment. ARC coating technologies are used to repair damaged concrete surfaces and protect them against further attack.

- Primers and sealers to reduce permeation and improve adhesion
- Grouts for rebuilding and resurfacing
- Protective coatings and linings shield equipment from chemical attack and abrasive wear



# Products, and Services

## Products to Increase Bearing Reliability and Lower Maintenance Costs

### Industrial Lubrication Technology

Chesterton offers a wide variety of high performance oils, greases, anti-seizes, and corrosion inhibitors to help extend the life of your equipment and keep production running smoothly.

With lubrication as the main cause of bearing failure (64%), our solutions provide high-load carrying ability and best-in-class water and chemical washout resistance to reduce premature bearing failure. Our line of Lubri-Cup™ automatic lubrication dispensers delivers just the right amount of grease to critical areas at exact intervals.



### MRO Products

From rust removal to protective corrosion-preventive compounds to PTFE sealing tapes, Chesterton's full line of MRO products supports primary maintenance functions that increase overall plant reliability and allow for quick repairs. Our industrial cleaners and degreasers incorporate cutting-edge formulation technologies that address your most demanding requirements.

## Consultation and Support

### Programs and Services

Chesterton provides knowledge, programs, and services to support your plant's equipment reliability and effectiveness. Programs and services can be customized to fit your specific requirements including:

- Failure analysis of equipment and components
- Custom engineering/clean sheet design solutions
- Training
- Valve sealing program
- Outage support
- Consultative services





## 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

Visit our website at [chesterton.com](http://chesterton.com)



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