

Engineering the
Next Generation of
High-Performance Seals





Creating Uncommon Partnerships

Through a uniquely collaborative process, System Seals works closely with each customer to develop next-generation products that are changing the role of fluid seals from standard stock parts to an opportunity for greater performance.

Through advanced technology in materials and design, customers work directly with the industry's leading engineers and manufacturing specialists. Together, they find new ways to increase equipment reliability, reduce downtime and solve problems. Whether it's OEM products or maintenance-and-repair, System Seals delivers a level of expertise and service that consistently exceeds expectations.





It's Time We Had the **Engineer-to-Engineer** Talk.

Customers new to System Seals are surprised when they work directly with engineers who know their industry and their specific equipment.

By analyzing the entire application, specialists explore new ways to advance performance and reliability with every order. In many cases, System Seals' utilizes advanced analytical tools, such as finite element analysis, to identify hidden problems and develop breakthrough advancements. New designs are then tested in System Seals' state-of-the-art facility, while customers remain engaged in the development process, every step of the way.

It's this unique approach that has enabled System Seals and its customers to collaborate on designs that have changed performance standards throughout several major industries, such as steel, mining, wind, forging, injection molding and oil & gas. Don't just place an order. Talk to an engineer and discover a better approach.



Original Equipment Manufacturers

System Seals supplies products to some of the most respected brands on the planet, creating sealing systems that add considerable value to OEM products. The company frequently develops OEM seals that outlast the manufacturer's warranty by several years.

When original equipment manufacturers approach System Seals, they work in collaboration with in-house engineers, who walk each case through a comprehensive design process that exacts specific needs. Through proven scientific methods and precision engineering, System Seals works with each customer to produce OEM products that are considerably more reliable than any off-the-shelf solution.

And with an increasing sense of urgency, System Seals now provides proposals and finished OEM products more quickly than other companies take to return a phone call. This expedited service comes with a team of specialists assigned to each customer. The team includes application engineers, researchers, customer service representatives and an inside logistics expert, who tracks new products from proposal to delivery.

This shared process ensures that every OEM product is the best in the world and delivered as quickly and efficiency as possible – anywhere in the world.

Advanced Research & Development

At the core of System Seals' success in design and innovation lies an elaborate research and development department. There, engineers use the latest technology to develop new designs, refine materials and innovate in ways that extend seal life and add considerable value to the products our customers build and maintain.

The process involves some of the most advanced analytical tools in the industry, such as differential scanning calorimetry and direct mechanical analysis. This equipment helps researchers address specific material concerns such as fluid compatibility, temperature and pressure capability and unusual operating conditions.

Following initial product development, System Seals sends samples to its testing facility to refine designs and provide important data to customers. The process was established to dramatically reduce design time, expedite development and get it right the first time.

OEM Industry Specialists

System Seals' expertise runs deeper than technical design. For each major industry, the company provides a specialist who understands the precise details of key equipment within their segment. This allows the company to make continuous improvements over time, pinpoint unique challenges and work more closely with customers in their own environment.

MAJOR INDUSTRIES INCLUDE:

- Oil & Gas
- Mining
- Steel and Aluminum Processing
- Forging and Extrusion
- Injection Molding
- Mobile Hydraulics
- Pulp and Paper
- Hydraulic Cylinder Repair & Maintenance
- Industrial Compressors
- Valves, Pumps and Instruments
- Wind Energy

Interruptions. Are. Bad.

For. Pro. Duc. Tiv. Ity.

Maintenance & Repair

Too often, equipment operators settle for routine leaks and the expensive habit of relying on inferior stock seals. System Seals works closely with maintenance-and-repair customers to solve problems, find new and better ways to stop leaks, reduce downtime and significantly increase reliability.

In many cases, System Seals has custom designed maintenance-and-repair seals that have saved customers millions of dollars in lost productivity. In heavy duty applications, such as forging and steel mills, the company has dramatically extended time between scheduled maintenance by improved designs specific to their equipment.

Speed is critical. That's why System Seals manufactures and delivers customized products more quickly than any other seal producer. And our highly experienced engineers and industry specialists work directly with equipment operators to ensure their products are performing at their best. This includes installation help, technical support, failure analysis and troubleshooting long after delivery.

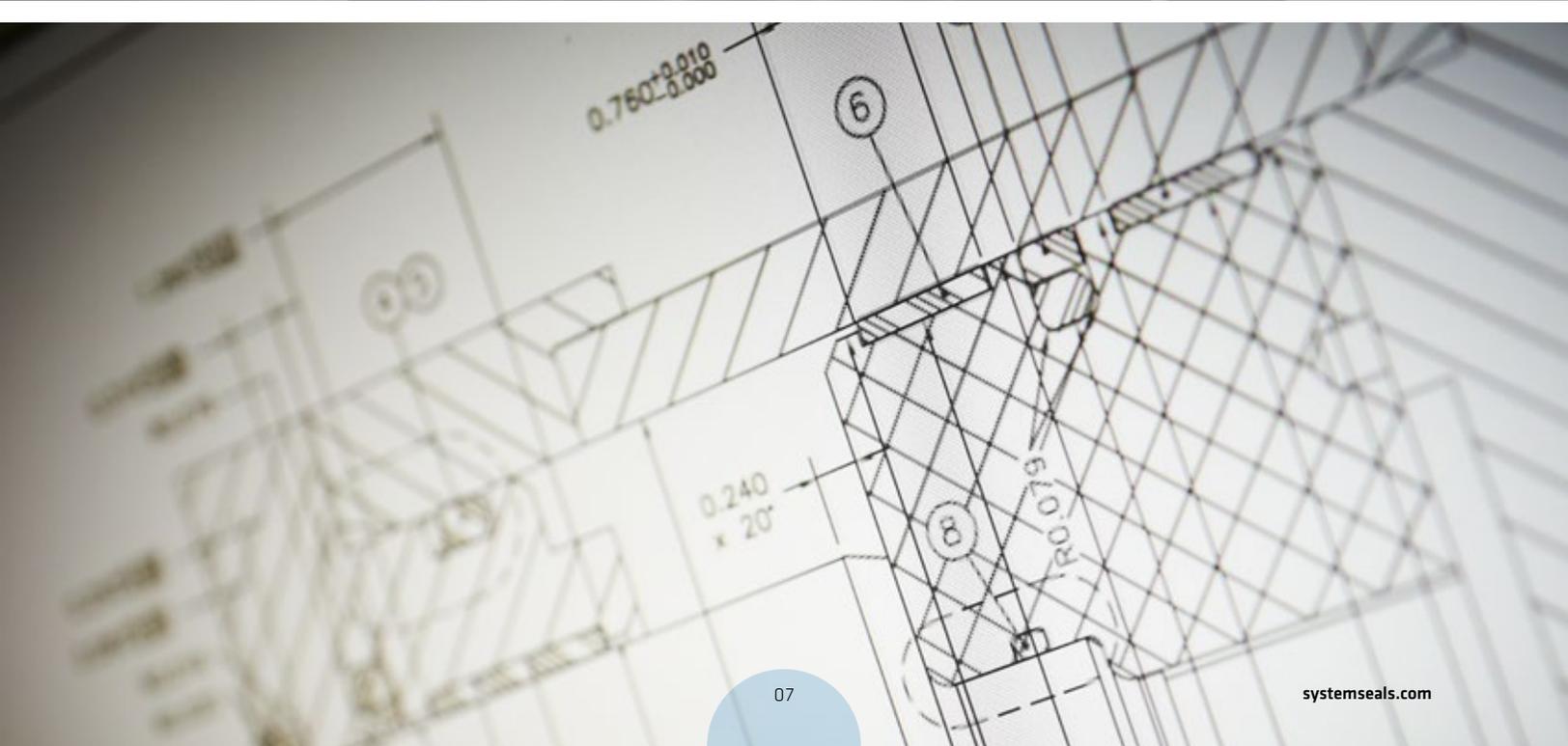
24/7 Emergency Response Service

Interruptions in mining operations can cost millions of dollars in lost productivity. That's why System Seals maintains a 24-hour emergency response service, which fills orders and expedites delivery faster than any other supplier in the industry. Nights, weekends, holidays – when seals fail, it's really your profit margin that's leaking. For many customers, System Seals has produced and delivered replacement parts within 24 hours, just when they needed it most.

For emergency response call:

USA 216 220 1800

Don't just buy a replacement seal,
Upgrade your productivity with products and services that are specific to your unique equipment.



Industries Overview

With extensive research and development capabilities and a team of application engineers, System Seals custom designs entire sealing systems for a wide variety of uses and industries. In most cases, a custom designed seal will substantially outperform a stock product, regardless of the application. Contact System Seals today, and we'll put you in touch with a specialist who knows your equipment and your concerns. Then, we'll work together to solve problems and help you save money.





Steel Mills and Metal Processing

Nearly a decade ago, System Seals transformed the reliability of steel mill hydraulics nationwide when it first applied HNBR material as a replacement for the previous Viton. The breakthrough came from a single customer concerned that fire-resistant fluids were degrading Viton seals.

Most steel mill operators don't realize the extent to which they can dramatically improve performance by altering designs and materials. Using finite element analysis and advanced engineering techniques, customized products from System Seals in both OEM and maintenance and repair can dramatically extend the time between scheduled maintenance.



Mining

Over the past two decades System Seals has developed a proprietary line of the industry's most robust and reliable sealing systems designed specifically for mining equipment. These products carry an unrivaled durability able to withstand the harshest environments. Knowing that operating conditions vary greatly, System Seals works closely with each customer to determine the best solution for every application.

Whether it's OEM or maintenance and repair, design engineers and material technicians can custom design seals for mining that substantially outperform any standard part. This is made possible through System Seals' extensive research-and-development laboratory, on-site testing facilities and team of specialists dedicated to mining.



Oil, Gas & Petroleum

Seal failure in the Oil & Gas industry can be catastrophic, with downtime costing upwards of a \$1 million per day. It was a lesson underscored by the Deep Sea Horizon in 2010. This is why System Seals custom designs and develops the most reliable and technologically advanced products in the industry for OEMs and maintenance and repair.

Whether it's valves, blowout preventers, accumulators, riser lines or subsea equipment – System Seals has the industry expertise and expedited service that outperforms all other seal manufacturers. And well after new seals have been delivered, System Seals specialists are available 24/7 for ongoing technical support.



Forging and Extrusion

For an industry that relies heavily on decades-old equipment, System Seals has transformed the stock rubber V-packing commonly used for forging equipment and developed a custom sealing solution with more than twice the normal lifespan.

System Seals' proprietary Elite system integrates at least one polyurethane seal in conjunction with the traditional rubber-and-cloth seals that run up to 2 meters in diameter. The combination maximizes the sealing abilities of rubber, while increasing the abrasion resistance of polyurethane.

Because each press differs greatly, System Seals custom designs blended-material V-packing for every ram. System Seals specialists analyze all previously worn seals to identify weaknesses, and then examine the condition and intricacies of the ram itself to recreate an entirely new V-packing.



Mobile Hydraulics

Through meticulous attention to detailed engineering, System Seals has developed new ways to substantially increase production efficiency in mobile mining equipment by eliminating bypass issues and preventing drift under load.

The vast majority of OEM seals in mobile mining carry critical design inefficiencies that inhibit productivity and reliability. By upgrading a typical O-ring and backup ring seal with System Seals' Zero-Leak Technology products, mine operators are doubling their meantime between repairs. These highly engineered custom seals eliminate static gland leakage that creates bypass from normal tube swell.



Hydraulic Cylinder Manufacture and Repair

More than a decade ago, System Seals was the first company to provide cylinder repair shops with customized seals that allowed them to rework old bores and avoid replacing the cylinders altogether.

When reworking old bores, the inside clearances widen and change the seal specifications. This is where System Seals helps. Our engineers develop custom seals and guide bands that perfectly fit each newly sized cylinder, regardless of the dimensions. The practice extends cylinder life, reduces waste and saves a substantial amount of money for the repair shops and their customers.



Hydraulic Presses

The condition and operating parameters of hydraulic presses varies greatly, even within the same facility. This is why System Seals carefully analyzes all existing equipment before recommending a sealing solution. In many cases, even a small modification in seal design or material can make a substantial difference in seal life, reliability and performance.

For OEMs, customers work directly with System Seals' engineers in a collaborative process to create sealing systems that add value to the products they make. This often involves utilizing the most advanced engineering tools, such as Finite Element Analysis.



Injection Molding Machines

For years, System Seals has partnered with some of the largest injection molding companies in North America, designing and producing seals for both OEM and maintenance and repair customers. System Seals' products have become so reliable in the OEM market that customers of OEMs have started requesting that System Seals products be included in their new orders.

For maintenance and repair, System Seals can custom design seals that substantially outperform standard replacement parts. In fact, System Seals has even developed modified designs that fit better on older injection molding equipment with worn components.



Industrial Compressors

Industrial compressors are too often manufactured and maintained with off-the-shelf seals and with little consideration for how those seals affect overall performance. At System Seals, we take the time to understand the nuances on each piece of equipment and make modifications that provide large results – results in reliability, performance and dependability.

For OEMs, customers work directly with System Seals' engineers in a collaborative process to create sealing systems that add value to the products they make. This often involves utilizing the most advanced engineering tools, such as Finite Element Analysis.



Wind Energy

Specializing in large-diameter, customized seals, System Seals quickly became a natural fit for the wind industry several years ago during the surge of new turbines. Today, the company produces the industry's top performing bearing and pitch seals in diameters up to 2 meters.

Systems Seals engineers have a unique ability to custom design seals in Teflon and polyurethane that substantially outperform all standard parts. They offer lower friction, greater reliability and are more resistant to extrusion. These advanced designs became known as Wind-Fit Technology, which now leads the wind industry in performance and reliability.



Valves, Pumps and Instruments

System Seals has extensive experience supplying OEM seals to some of the largest manufacturers of valves, pumps and instruments throughout the world. System Seals designs an infinite variety of customized products in its research-and-development facility using proprietary blended materials based on leading base constituents, such as Teflon and PEEK.

With an elaborate in-house testing facility, System Seals ensures that all of its materials are highly compatible with all operating conditions, including unique fluids, pressures and temperatures. System Seals also specializes in tight specifications and designs that overcome special circumstances.



Pulp and Paper

System Seals has taken the breakthrough technology that it developed for the steel processing industry and applied it to pulp and paper applications. By analyzing specific seal characteristics within hydraulic applications, our engineers have a clear understanding for performance issues like side loading, friction and responsiveness.

At System Seals, we seldom provide stock parts. Instead, our team of industry specialists and application engineers review precise operating parameters within your facility and design seals that substantially outperform all standard parts. And, we do it more quickly than most companies can return a phone call.

	APPLICATION	MATERIAL	TEMPERATURE	PRESSURE	SPEED
 101 Rod U-Cup Seal	Rod Seal	MP03	-5 to +240° F -20 to +115° C	≤6,000 PSI ≤400 bar	1.6 ft/sec. 0.5 m/sec.
 109 Standard Duty Rod Seal	Rod Seal	MT23	-22 to +212° F -30 to +100° C	≤6,000 PSI ≤400 bar	16.5 ft/sec. 5 m/sec.
 117 Double-Lipped Rod U-Cup Seal	Rod Seal	MP03	-5 to +240° F -20 to +115° C	≤6,000 PSI ≤400 bar	1.6 ft/sec. 0.5 m/sec.
 135 Heavy-duty Rod U-Cup Seal with Full Face Backup Ring	Rod Seal	MP30	-5 to +240° F -20 to +115° C	≤20,000 PSI ≤1,380 bar	1.6 ft/sec. 0.5 m/sec.
 137 Rod U-Cup Seal with Full Face Backup Ring	Rod Seal	MP30	-5 to +240° F -20 to +115° C	≤20,000 PSI ≤1,380 bar	1.6 ft/sec. 0.5 m/sec.
 151 Heavy Duty Loaded Rod U-Cup Seal with Active Backup Ring	Rod Seal	MP62	-5 to +240° F -20 to +115° C	≤10,000 PSI ≤690 bar	1.6 ft/sec. 0.5 m/sec.
 190 Heavy-duty Rod Seal	Rod Seal	MT23	-22 to +212° F -30 to +100° C	≤6,000 PSI ≤400 bar	16.5 ft/sec. 5 m/sec.
 208 Standard-Duty Piston Seal	Piston Seal	MT23	-22 to +212° F -30 to +100° C	≤6,000 PSI ≤400 bar	16.5 ft/sec. 5 m/sec.
 227 Heavy-duty Piston U-Cup Seal with Active Backup Ring	Piston Seal	MP30	-5 to +240° F -20 to +115° C	≤6,000 PSI ≤400 bar	1.6 ft/sec. 0.5 m/sec.
 232 Heavy-Duty, Three-Piece Piston Seal	Piston Seal	MP30	-5 to +240° F -20 to +115° C	≤20,000 PSI ≤1,380 bar	1.6 ft/sec. 0.5 m/sec.
 233 Heavy-Duty, Four-Piece Piston Seal	Piston Seal	MP38	-5 to +240° F -20 to +115° C	≤20,000 PSI ≤1,380 bar	1.6 ft/sec. 0.5 m/sec.
 234 Heavy-Duty, Four-Piece Piston Seal	Piston Seal	MP38	-5 to +240° F -20 to +115° C	≤20,000 PSI ≤1,380 bar	1.6 ft/sec. 0.5 m/sec.
 235 Heavy-Duty, Four-Piece Piston Seal	Piston Seal	MP38	-5 to +240° F -20 to +115° C	≤10,000 PSI ≤690 bar	1.6 ft/sec. 0.5 m/sec.

High performance replacement seal kits are readily available, and all seals can be customized and tested by System Seals' application engineers and Research and Development laboratory. Contact a specialist to learn how most customized products can be ordered, designed and shipped in a matter of days.

		APPLICATION	MATERIAL	TEMPERATURE	PRESSURE	SPEED
	254 Heavy-Duty, Four-Piece Piston Seal	Piston Seal	MT24	-22 to +212° F -30 to +100° C	≤7,250 PSI ≤500 bar	5 ft/sec. 1.5 m/sec.
	280 Heavy-duty Piston Seal	Piston Seal	MT23	-22 to +212° F -30 to +100° C	≤6,000 PSI ≤400 bar	16.5 ft/sec. 5 m/sec.
	301 Snap-In Single Lip Wiper	Wiper	MP03	-5 to +240° F -20 to +115° C	N/A	6.5 ft/sec. 2 m/sec.
	302 Snap-In Single Lip Wiper	Wiper	MP03	-5 to +240° F -20 to +115° C	N/A	6.5 ft/sec. 2 m/sec.
	311 Double-Acting Snap-In Wiper	Wiper	MP03	-5 to +240° F -20 to +115° C	N/A	6.5 ft/sec. 2 m/sec.
	314 Heavy-Duty, Double-Acting Wiper	Wiper	MT23	-22 to +212° F -30 to +100° C	N/A	16.5 ft/sec. 5 m/sec.
	315 Heavy-Duty, Double-Acting Wiper	Wiper	MT23	-22 to +212° F -30 to +100° C	N/A	16.5 ft/sec. 5 m/sec.
	317 Mill-Duty, Double-Acting Wiper	Wiper	MP03	-5 to +240° F -20 to +115° C	N/A	6.5 ft/sec. 2 m/sec.
	318 Heavy-Duty, Double-Acting Wiper	Wiper	MT23	-22 to +212° F -30 to +100° C	N/A	16.5 ft/sec. 5 m/sec.
	324 Heavy-duty "Rambo" Snap-In Wiper	Wiper	MP03	-5 to +240° F -20 to +115° C	N/A	6.5 ft/sec. 2 m/sec.
	261 Heavy-duty Static Seal	Static Seal	MP03	-5 to +240° F -20 to +115° C	≤6,000 PSI ≤400 bar	N/A
	845 / 890 (rod & piston) High-Strength Composite Guide Band	Guide Band	MTC1	-40 to +248° F -40 to +120° C	N/A	3.3 ft/sec. 1 m/sec.
	421 Heavy-duty Rotary Seal	Rotary Seal	MN03	-4 to +302° F -20 to +150° C	N/A	65 ft/sec. 20 m/sec.
	439/440 Rotary Seal with Encapsulated Spring	Rotary Seal	MN139	-22 to +212° F -30 to +100° C	≤7.25 PSI ≤0.05 MPa	50 ft/sec. 15 m/sec.
	442 High-Speed Rotary Seal	Rotary Seal	MN40	-4 to +248° F -20 to +120° C	N/A	115 ft/sec. 35 m/sec.



Unsurpassed Global Service

MAIN OFFICE

9505 Midwest Ave.
Cleveland, Ohio 44125
800 465 8835
info@systemseals.com

HOUSTON

1764 West Sam Houston Parkway N
Houston, Texas 77043
713 461 3900
info@systemseals.com

UNITED KINGDOM

Unit 2A Barnstones Business Park
Grimscote Road
Litchborough
Northamptonshire NN12 8JJ
United Kingdom
+44 (0) 1327 83 0954
info@systemseals.com

JAPAN

28 Kowa Building 1F
2-20-1 Nishi-Gotanda
Shinagowa-ku, Tokyo
141-0031 Japan
+81 3 5740 2377
info@systemseals.com

SHANGHAI

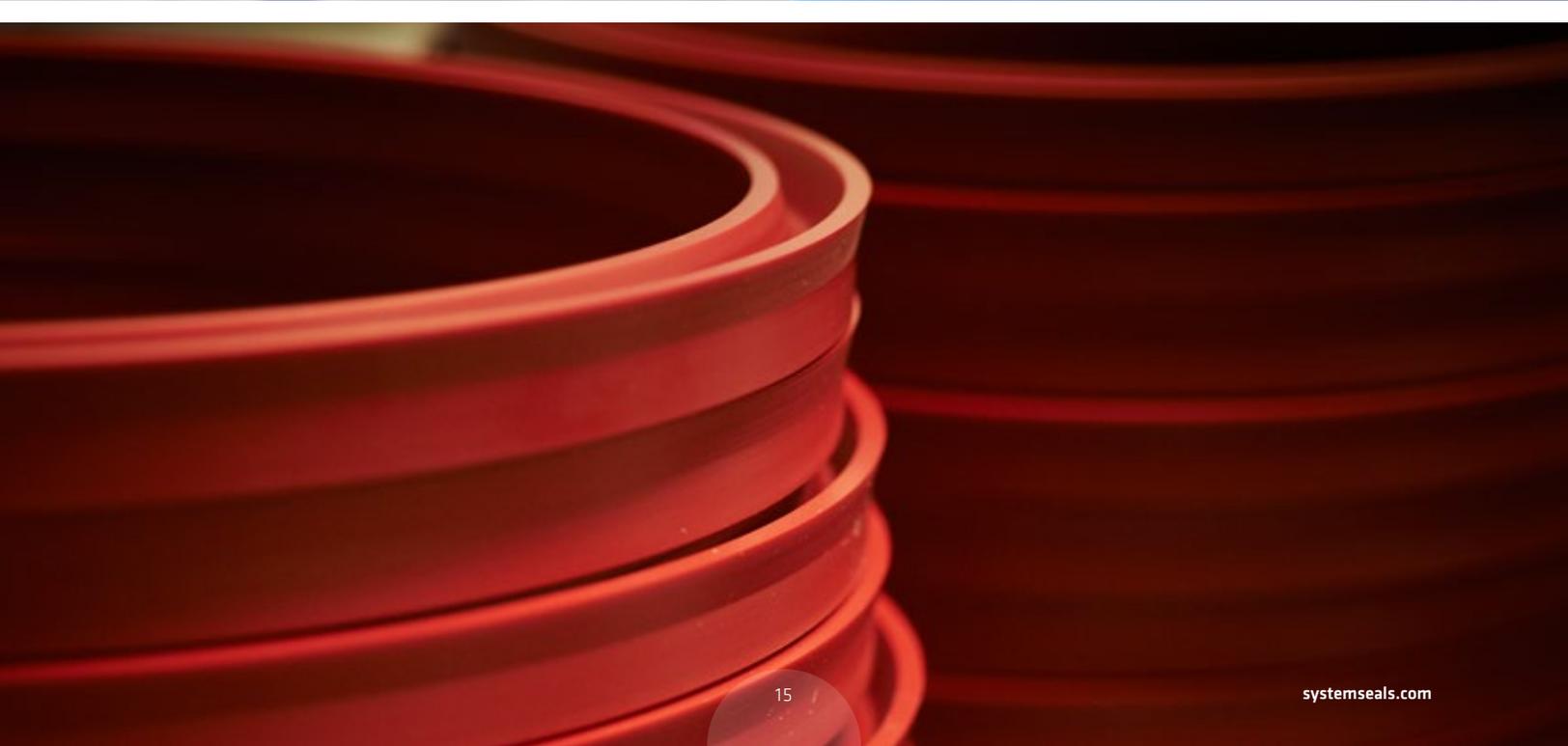
Rm 24F East Ocean Centre
East Tower
No. 588 YanAn Road East
Shanghai 200001
People's Republic of China
(86) 134 7287 9216
info@systemseals.com

KOREA

Shinwon Seals
562- 14 Gwaebeop-Dong
Sasang-Gu , Busan
South Korea
82 51 317 3070 2
info@systemseals.com

THAILAND

Scancorp Limited
885 On-Nut Rd
Suanluang, Bangkok 10250
02 332 0151
info@systemseals.com



You're only as Strong
as Your **Weakest Leak.**

For emergency response call:

USA 216 220 1800

systemseals.com

