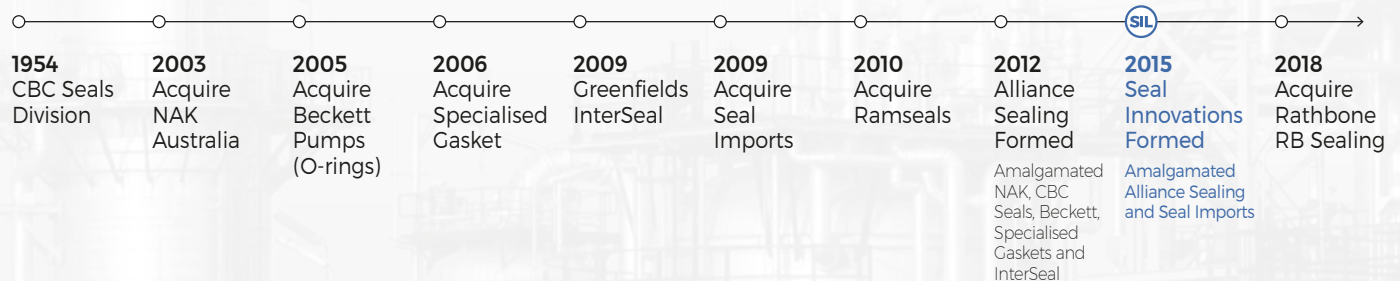


# MAXIMISING CUSTOMER PRODUCTIVITY



# The SiL Story



## Keeping Industry Moving

Our story began in 1954, as a division of CBC, over the next 60 years, the business grew its customer product range by purchasing several sealing businesses.

In 2012, Alliance Sealing was formed by amalgamating NAK Australia, CBC Seals, Becketts, Specialised Gaskets and Interseal.

Seal Innovations (SiL) was formed in 2015 when Alliance Sealing and Seal Imports were combined. The acquisition of Rathbone RB Sealing in 2018 has rounded out SiL's product portfolio to include Mechanical Seals and Pump Refurbishment.

Today SiL has a distribution network of 15 branches across Australia and New Zealand with interests in SE Asia. With the largest choice of seals available to industry, we have become the one-stop shop for products, service and support across the 4 key sealing technologies. Our focus is to deliver reliable service which maximises customer productivity by keeping customer machine and manufacturing assets operational.



## We Make, Sell & Repair Seals



**QUALITY PRODUCTS**



**MARKET KNOWLEDGE**



**MANUFACTURING CAPABILITY**



**GEOGRAPHIC LOCATIONS**

# 4 Sealing Technologies

## Delivering Product, Service & Support



### GASKETS

#### COMPRESSION PACKING, SOFT CUT, METALLIC, SEMI METALLIC, CORROSION MANAGEMENT

A gasket is a compressible material or combination of materials, which when clamped between two stationary surfaces, prevents the passage of media. SiL manufactures gasket product under license exclusively for Flexitallic static sealing solutions for process industries. Complimented with our extensive range of compression packing, SiL covers all our client's gasket and packing requirements.



### HYDRAULIC

#### HYDRAULIC AND PNEUMATIC SEALS, MACHINED SEALS, O-RINGS, TOOLS

Vital to machinery hydraulic seals are non-metallic rings captured in a groove or fixed in a combination of rings to form a seal assembly to block or separate fluid in reciprocating motion applications. In other words – stopping leaks.



### ROTARY

#### AUTO & INDUSTRIAL, V-RINGS, GAMMA SEALS, MOULDINGS, SHAFT REPAIR SLEEVES

Widely used for the retention or exclusion of fluids on rotating shafts across many applications in the industrial and automotive sectors.

SiL provides a complete range of rotary seals which deliver solutions for all industry sectors.



### MECHANICAL

#### MECHANICAL SEALS, SEAL REFURBISHMENT, PUMP REFURBISHMENT, SITE MAINTENANCE

Mechanical seals come in all shapes and sizes and contain fluid in machinery such as pumps and mixers, where a rotating shaft passes through stationary housing or occasionally where the housing rotates around the shaft. We manufacture and service a wide range of cartridge and bellow seals and work to keep our client's business working in areas such as mining, oil & gas, and water pumping.

## Manufacturing & Servicing For Operational Efficiency

SiL's custom seal workshops mean the customer's unique needs can always be accommodated with manufacturing services across all 4 sealing technologies. Supported by a team with well rounded field and technical experience, SiL is focussed on solving sealing problems with the provision of quality products and reliable service which maximises customer productivity. This expertise and product mix bring together the market leaders of each sealing technology, providing customers with a single point of contact for all sealing requirements.

# Gaskets & Packing



Making the world safer and cleaner through engineered sealing solutions.

Encompassing 75 years of manufacturing experience in Australasia under license for Flexitallic, SiL is the market leader in the manufacture and supply of static sealing solutions, delivering high quality industrial gaskets.

We strive to achieve by providing best-in-class sealing solutions that allow our customers to operate their plants, complete projects, and start up from turnarounds safely and efficiently. We aim to help customers achieve zero leaks on machine start-up and throughout the operating cycle.



## COMPRESSION PACKING

### COMPRESSION PACKING

SiL's extensive range of 20 Gland Packing types with a vast variety of materials and constructions to suit a wide range of industry applications. All square-braided Gland Packing is made using advanced braiding machines and materials available to maximise packing service life and performance in pumps, valves and static applications.



## METALLIC

### RING TYPE JOINT

Ring Type Joints (RTJs) excel in high-pressure applications such as oil and gas exploration and production. RTJs are also used on valves and pipework assemblies in refineries and other process industries. Available in oval, octagonal profiles and standard style, RTJs are manufactured to meet both API 6A and ASME B16.20 sizes and ratings. Also available are Style RX ring type joints which energizes on assembly. This type is designed to fit the same groove as a style R, making them interchangeable. For very high pressures, often found in sub-sea wellheads and Christmas tree systems, the style BX is used. Sub-sea versions of all styles are available with pressure balance holes. SiL designs and manufactures special RTJ and bespoke solid metal gaskets for topside and subsea blow-out preventers.



## SOFT CUT

### COMPRESSED FIBRE, GRAPHITE & POLYMER SHEET

SiLs range of compressed sheet fibre, graphite and polymer sheet are designed for a wide range of applications where sealing performance and specification are essential. These include a comprehensive range of grades, covering a wide spectrum of applications, chemical compatibility and sealing performance. Sheet Jointing can be supplied in sheet form or as cut gaskets, either to standard or non-standard dimensions.



### THERMICULITE

A breakthrough in both heat and chemical resistance, Thermiculite® high temperature gasket materials are rated for temperatures up to 1000°C and have passed the API 607 fire test. Thermiculite® sealing materials withstand high temperatures in critical service, corrosive environments and are free from oxidation.



### SIGMA PTFE SHEET

Sigma® pairs outstanding chemical resistance of PTFE with enhanced dimensional stability. Developed for processes ranging from cryogenic temperatures to 260°C and suitable for sealing virtually every chemical medium across the entire pH range (0-14). The Sigma® range of materials contain non-stick properties making it easy to remove after usage, dramatically reducing downtime on shutdown. All components in the Sigma® range are FDA compliant. The material's clean nature makes it ideal for use in industries such as food, pharmaceuticals and electronics where product contamination is a concern.





## SEMI METALLIC

### SPIRAL WOUND GASKET

The Spiral Wound Gasket is a precision-engineered solution for flanged joints, heat exchangers, boiler handholes, manholes and other high temperature, high pressure applications –providing resistance to virtually every known corrosive and toxic element.



### KAMMPROFILE GASKET

The Kammprofile gasket Flexpro™ has the compressibility of a sheet gasket for low sealing stress, along with the bolt tightness of a spiral wound gasket—plus the handling ease of a solid metal gasket and its resistance to buckling. This gasket fights against flange rotation, bolt stress relaxation and creep including extreme pressure and temperature fluctuations.



### CHANGE™ GASKET

Originally developed in direct response to customers' long-term heat exchanger sealing problems. Change™ is a highly-resilient metal-wound gasket, designed to deliver best in class dynamic static sealing technology. Manufactured using proprietary equipment, Change™ has a proven track-record outperforming conventional gasket technology in challenging environments, especially in applications with mechanical and thermal cycling conditions.



## CORROSION MANAGEMENT

### CORRICULITE

Corriculite® is a spiral wound gasket filler material, designed to provide optimum sealing performance and corrosion resistance in seawater and hydrocarbon services. Using Thermiculite® technology, it provides a cost-effective, innovative sealing solution for proactive prevention and flange corrosion management. Comparative tests have shown this non-conductive material combination provides sealing reliability in corrosion-sensitive conditions.



### FLANGE RESCUE GASKET (FRG)

When corrosion or damage occurs to flange faces, impact on operating costs due to downtime repairs can be significant. Easy to install, the FRG can be used for remedial repairs on corroded equipment and as a preventative solution on new equipment to prolong its life and avoid costly shutdowns.



### ISOLATION KIT

The I-Flex isolation system, is an insulation gasket providing electrical & cathodic insulation in pipeline systems and has passed the stringent API 6FB Fire Safety test. SiL provides a complete product range which limits corrosion in pipeline systems, utilising modified PTFE material Sigma® and unique high temperature material Thermiculite®.



# Hydraulic



We stop leaks.

Hydraulic cylinders are used in numerous mechanical applications where linear motion and force are required, and the most important part of these cylinders are the sealing elements. Successful sealing involves containment of fluid within fluid power systems and components while excluding contaminants.

SiL provides customers with a full product range for all Hydraulic and Pneumatic requirements, supported by CNC (Computer Numerical Control) machining capability to manufacture custom and/or specialty seals quickly and efficiently. Our products are backed up by specialist sales staff supported by our engineers for more complex applications.



## HYDRAULIC AND PNEUMATIC SEALS

SiL stocks a large range of Hydraulic and Pneumatic seals. Used between the piston and the cylinder bore, preventing leakage of hydraulic fluid or pneumatic air. Examples include:

- Rod Seals
- Piston Seals
- Wipers
- Wear Bands



## O-RINGS

A elastomeric ring with a round cross-section, designed to be seated in a groove and compressed during assembly between two or more parts, creating a seal at the interface. SiL stock a wide range of sizes with various material types and hardness available depending on application.

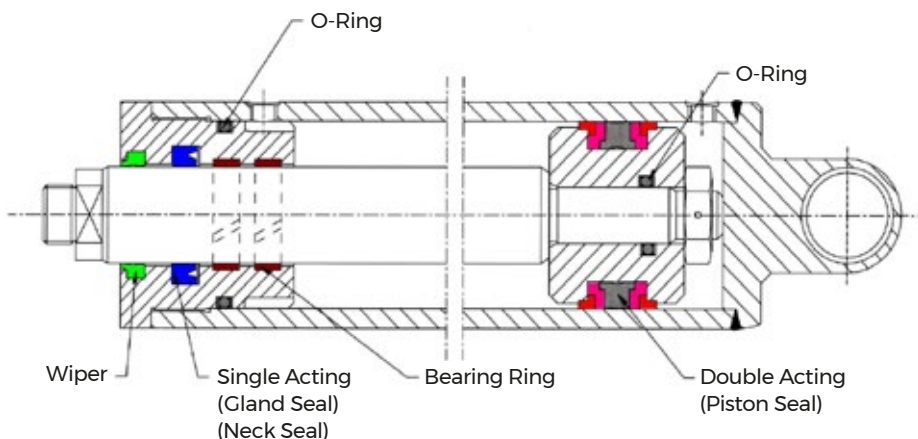


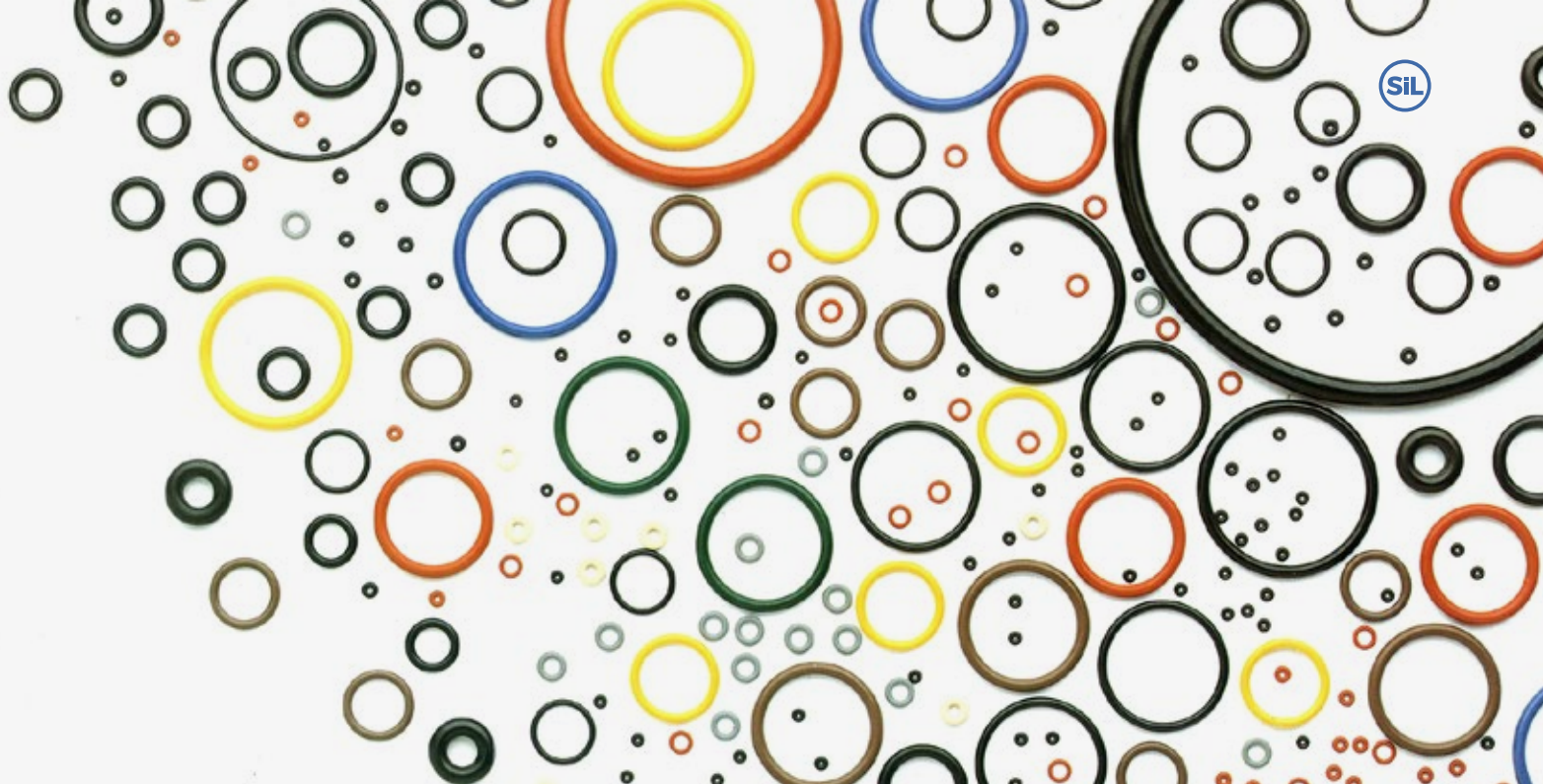
## TOOLS

SiL range various seal installation/removal tools/measuring devices which provide assistance in current workshop practices. These include;

- Inner Groove Callipers
- Seal Twisting Sets
- Seal/O-Ring Hook Sets
- Seal Stretchers
- Seal Claspers
- Depth and Width Digital Calipers

Hydraulic also share the Machined Seals facility / capability with Rotary.





## MACHINED SEALS

When standard stock seals are not available off the shelf, SiL provides a one stop manufacturing solution to meet unique customer needs for **hydraulic and rotary seals**.

SiL's fully machined customer seals use a wide selection of profiles and materials including, Polyurethane (HPU), Nitrile (NBR) & Polytetrafluoroethylene (PTFE) and are produced on our CNC controlled machines in minutes. Custom manufacturing solutions are available for one-off requirements in Brisbane, Perth, Sydney and Hamilton (NZ) branches.

The Sydney centre is HACCP certified and supplies FDA (Food & Drug Administration) certified machined seals and components to food processing industry customers nationwide.

SiL staff have deep experience of successfully delivering prototypes and concept development to customers with both engineering knowhow and machine capability



# Rotary



Manufacturing to deliver customer solutions.

Rotary seals, used in applications where seals are required to protect and retain lubrication, prevent contaminants and maintain pressure. Rotary shaft seals work by squeezing and maintaining lubricant in a slim layer between the lip and the shaft. Sealing is aided by the hydrodynamic action caused by the rotating shaft, which creates a slight pump action.

In most applications, the seal's main function is to retain the bearing or system lubricant. SiL uses a variety of suppliers to provide seals to Australian Industry.

Rotary has custom machined seals CNC capability, as detailed in the Hydraulic section on page 7.

## AUTOMOTIVE

SiL have an extensive aftermarket range of seals in various materials for the automotive industry suitable for various models and makes of cars, truck, farm machinery and are manufactured to OEM specifications.



## INDUSTRIAL SEALS

Often industrial seals are unique for each application. SiL provides design services for our customers to deliver an upgraded seal solution. We work directly with our customers, firstly to understand their problem and then provide the best sealing solution. SiL is one of the only suppliers that sells, off the shelf seals supported by service and experience which identifies when a specific custom solution is required.



## MOULDINGS

Moulded bellows to protect exposure to moving parts such as CV and Steering Rack. Customised elastomers are used to develop specified custom applications. A highly durable range of moulded and/or extruded rubber products is available.



## SHAFT REPAIR SLEEVES

A Shaft Repair Sleeve is a very thin metal sleeve that can be inserted onto a worn or damaged shaft as a quick and cost-effective alternative to repairing the shaft. They provide an alternative cost-effective repair, minimising the downtime for shaft repair.







## V-RINGS

V-rings are versatile axial shaft seals with many different uses. V-rings are mounted to the shaft and can be used as a face seal, lip seal or more commonly as a flinger where centrifugal forces from the spinning shaft deflect fluids away from a counter-face surface.

Made entirely of rubber, v-rings can be easily stretched to fit over assembled parts with one size fitting several shaft diameters. The soft sealing lip provides a low friction surface contact and can readily tolerate out-of-round, misaligned and eccentric shaft movement. Specific functions include

1. Used as a secondary seal, to reduce exposure to bearings
2. Mainly used for contaminating exclusion.



## GAMMA SEALS

Another type of V-Ring is the Gamma Seal used for extreme contamination exclusions. The Gamma Seal is an axial rotary seal that excludes contamination, moisture and grease. It consists of an elastomer sealing lip contained in a metal carrier. This design copes with arduous static and dynamic conditions in mobile hydraulics and power transmission applications.



# Mechanical



Keeping industry moving.

**RB SEALING**

Mechanical seals are used as a method of containing fluid within a vessel (typically pumps, mixers etc.) where a rotating shaft passes through a stationary housing commonly known as a stuffing box or seal chamber. The challenge is providing a sealing arrangement that is suitable and compatible with the media being pumped / sealed preventing large volumes of pressurised fluid to escape from the sealed area to atmosphere.

To address this challenge, a mechanical seal is positioned between the shaft and the pump housing that can contain the pressure of the process being pumped and withstand the friction caused by the shaft rotating. SiL provides customers with a full mechanical seals range for every industry application.



## MECHANICAL SEALS

SiL's RB Sealing range specialises in all mechanical seals. These range from large variety of standard seals to custom made seals, manufactured to suit individual requirements and include:

- Welded metal bellows
- High temperature metal bellows
- Low cost fully balanced cartridge seals
- Pusher cartridge designs
- Rubber bellows seals
- High pressure cartridges
- Stationary single spring slurry seals
- Dual cartridge seals
- Tandem cartridge seals
- Seals for reactors
- Mixer seals
- Dry running seals
- Seal support systems and
- Environmental sealing systems

## MECHANICAL SEAL REFURBISHMENT

SiL delivers a cost-effective, as-new, refurbishment service for virtually any mechanical seal, whether our own or our competitors' products.

Our as-new refurbishment process restores customers' seals to their original functionality, saving the cost of replacement hardware. Available at our service centres and supported by our highly skilled technical specialists, our refurbishment service offers a cost-effective and environmentally sound alternative to purchasing new seals.

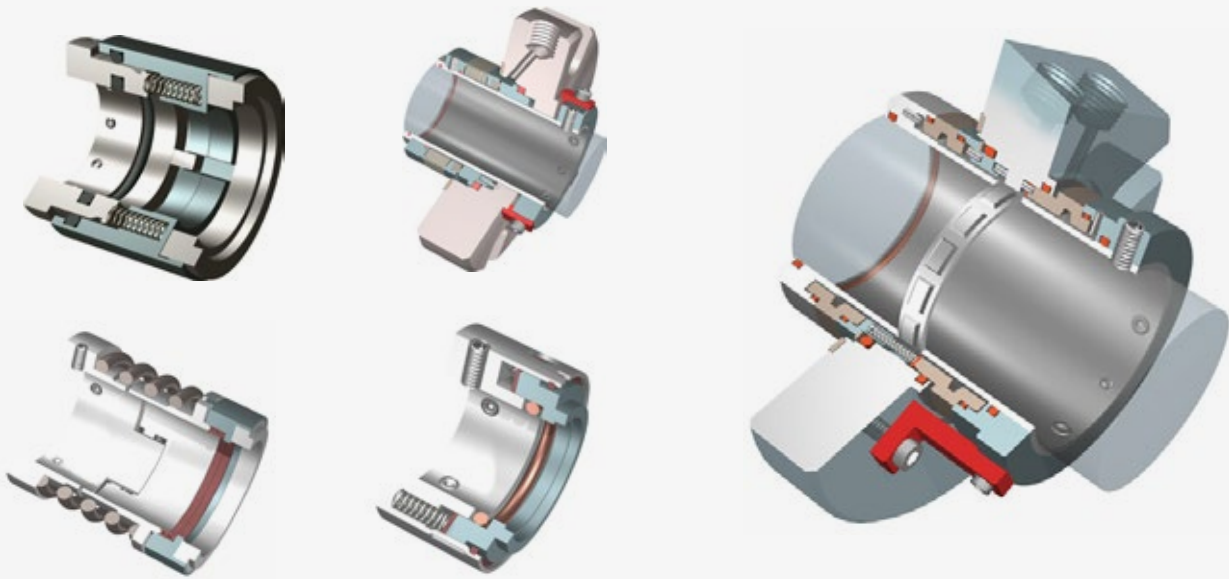
Also available is our comprehensive precision machining, servicing, modification and rebuild service to extend the life of your mechanical seals at our workshop. This includes:

- Supply/Repair to all makes of seals
- All seal spares
- Seals Testing
- Rotating equipment repair
- On site evaluation of seals, machinery & pumps
- Site Surveys
- On site monitoring
- Trouble shooting
- Reliability improvement
- Laser alignments

## PUMP REFURBISHMENT

SiL workshops provide professional pump repairs, refurbishment, and overhaul by recognised pump specialists. Available at our workshops these services deliver longevity of industrial pumping equipment. Our experienced and skilled technicians save time and money with our comprehensive precision machining, servicing, modification and rebuild services that include:

- Supply/Repair to all makes of pumps including; centrifugal pumps, vacuum pumps, PD pumps, blowers
- All pump spares
- Submersible pump and seal spares and repairs
- Rotating equipment repair
- On site evaluation of seals, machinery & pumps
- Site Surveys
- Full pump repair service
- Pump base fabrication
- Steam turbine repairs
- On site monitoring
- Trouble shooting
- Reliability improvement
- Laser alignments



## SITE MAINTENANCE

SiL provide customers a reliability and site maintenance program, with monthly service, visits and inspection. The program includes:

- MEX maintenance system
- Chart and track all pertinent data for every piece of sealed equipment plant wide
- Create and maintain instant access to detailed histories for each piece of equipment
- Generate maintenance reports instantly
- Simple and easy data entry
- Track MTBF for each piece of sealed equipment
- Evaluate failure history and trends
- Track seal costs per piece of equipment
- Historical records of seal replacement costs
- Note and validate all seal change outs
- Export all documentation to a spread sheet format
- Link all existing data files, drawings and systems info
- Create comparisons of similar equipment, both plant wide and on an individual basis.



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<sup>HO</sup> Head Office

<sup>CS</sup> Counter Sales

<sup>GP</sup> Gasket Production

<sup>MA</sup> Machine Shop

<sup>ME</sup> Mechanical Seal Servicing

<sup>PR</sup> Pump Repair Workshop



sealinnovations.com.au