

# Reciprocating Compressor Solutions



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# Institutional

Leader for over **30 years** in expertise and technology for reciprocating compressors and precision machining.

Headquartered in **Sao Bernardo do Campo**, Brazil, our 43,000-square-foot facility with modern machinery and equipment holds a staff of over 160 employees.

Selco seeks to **fully meet client needs** by means of long-term partnerships. To do so, the company invests in research and development, employee training, and continuing process improvements. As a result, Selco has experienced a **steady growth over the years**.



**43,000** |  
sq ft



FAMILY OWNED

**ISO 9001**

# Pillars



## **PROXIMITY**

Establish long-term partnerships with our clients to provide specific and innovative solutions.



## **EXPERTISE**

Experienced professionals able to identify opportunities that improve compressor performance.



## **TECHNOLOGY**

Continuous investment in research and development to always offer our clients the latest technology.

# Timeline

**1984**

**Begins operations** by manufacturing seals for reciprocating compressors.

**2007**

**Expands internationally** by establishing a subsidiary in Argentina.

**2011**

Earns first large scale contract of reciprocating compressor **monitoring and predictive analysis**, encompassing over 110 machines.

**2001**

**Acquires valve technology** from A. IBACH, a German company with over 100 years of experience.

**2010**

Achieves **ISO 9001** certification for compressor parts.

**2014**

**Starts large scale exports** of valves and valve components for reciprocating compressors.



A blurred, blue-tinted photograph of a large industrial factory floor. In the foreground, there are stacks of metal coils and various industrial equipment. A white, curved, translucent shape, resembling a stylized arrow or a piece of machinery, points from the bottom center towards the middle of the frame. The word "PRODUCTS" is overlaid in the center in a bold, white, sans-serif font.

# PRODUCTS

# Valves

**Suction and Discharge Valves** are critical components for the performance and reliability of reciprocating compressors. Over a third of the reciprocating compressors non-programmed stops are related to valve problems.

Valve projects must consider cylinder characteristics, gas profiles, pressure and temperature conditions, among other parameters.



Projected with a **valve performance software** that takes into account process and design.



Manufactured with **modern** thermoplastics and **high grade** special steels.



**Resistant** to high temperatures and pressures, as well as to different acidity and humidity conditions.

## Exclusive Projects

Sc-Disc, Sc-Convex, Sc-Plus,  
Sc-Convert, Sc-Modular, Sc-VR  
and Sc-Trust.

# Piston Rings

Reciprocating compressors use **Compression Rings** to seal gases in their compression chamber. These components are critical and require high performance and long lifespan, for their sealing efficacy is essential to the compressor performance.

**Guide Rings** guide the piston movement inside the cylinder. Project errors may cause piston wear onto the cylinder liner, with consequent damage to the compressor.



Manufactured with a wide array of modern **thermoplastic** materials.



**Sintered** in-house with total control of the production process and traceability.



**Resistant** to temperatures of up to 392°F, pressures of up to 350 bar, and to contaminated or corrosive gases.





# Packings

**Packings** (sealing elements) perform the dynamic seal of gases compressed inside the cylinder. They also direct waste and purge gases to safe areas, or back to the pipeline to be compressed again.

Packings are either primary or secondary (pre-packing). Primary ones are mounted on cylinders near the compression chamber, while secondaries are mounted on intermediate housings.



Subjected to **final inspection** in all models with auxiliary lubrication, cooling or vent.



Projected with **purge control** for the applications that present toxic gases or that require emission control.



Manufactured with **many different types** of metallic and non metallic materials.

# Oil Scrapers

Certain reciprocating compressor components require constant and abundant lubrication. **Oil Scrapers** prevent that oil contained in the force system (from the carter region) empty out through the rod.

This type of leakage can generate several problems, among which excess oil consumption, contamination of the compressed air and work environment, and packing sealing malfunctioning.



Projected to **solve specific problems** including those of vertical compressors.



Manufactured with **single** and **double effect** with metallic and thermoplastic materials.



Designed to **prevent** crankcase oil leakage and premature wear of rods.



# Pistons, Rods and Liners

**Pistons** are located at one of the Rod extremes, and operate inside the reciprocating compressor cylinder as a moving barrier.

**Rods** convey reciprocating movements of crossheads to pistons.

**Liners** allow the compression of gases and prevent cylinder wear. They must be resistant to support high pressures and temperatures.



Developed to reestablish original **compressor conditions** as well as new ones. (revamps).



Manufactured with **materials** such as aluminum, gray and nodular cast irons, stainless steels, and alloy steels.



Subjected to non-destructive, chemical and mechanical **trials** to ensure reliability.

## Finite Element Analysis (FEA)

Assures adequate safety factors, minimizing costs while holding no components at risk.

# Check Valves

**Check Valves** prevent reverse gas flow from causing damage to equipments and threatening the safety of industrial facilities. They must be resistant, reliable, and operate in a fast but smooth manor (non-slam), in order to prevent any potentially harmful pressure peaks.



Developed based on extensive experience with **large scale plant projects**.



Suitable for **reciprocating compressor protection** and applications involving pressure pulsation gas flow.



Field proven **performance**, energy efficiency and life span.



# Other Products

These components have relevant importance to the compressor overall performance, and are necessary for operational reliability. Because of this, design, manufacturing stages, and inspection requirements must rigorously follow Selco specifications.

## Components

- ✓ Bearings;
- ✓ Bushings;
- ✓ Connecting Rods;
- ✓ Pins;
- ✓ Crossheads;
- ✓ Heads;
- ✓ Crankshafts;
- ✓ Valve Cages;
- ✓ Valve Covers.



The background image is a blurred photograph of an industrial factory floor. It shows various pieces of machinery, including what appear to be large rollers or presses, and some shelving units. The lighting is somewhat dim, and the overall color palette is muted, with a blue tint applied across the entire image. The word "SERVICES" is centered in the middle of the image in a bold, white, sans-serif font.

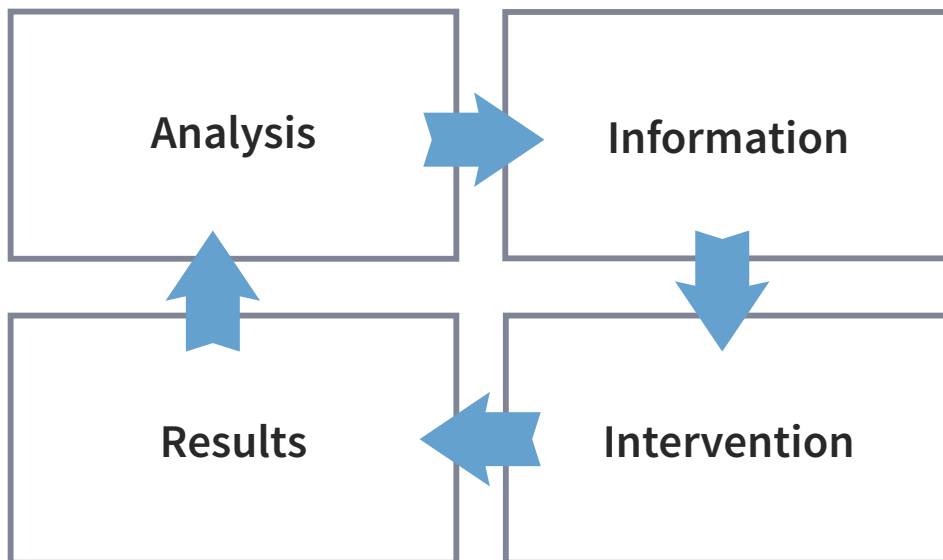
# **SERVICES**



# Performance Analysis

Periodic efficiency and mechanical condition evaluations are necessary to guarantee the reliability of reciprocating compressors.

Selco has an experienced and specialized team of analysts and field engineers to conduct **Performance Analyses** on critical equipment.



## Root Cause Analysis

(Troubleshooting)

Identifies the root cause of specific problems such as:

- ✓ Component failure;
- ✓ Excessive vibration or pulsation;
- ✓ Resonance.

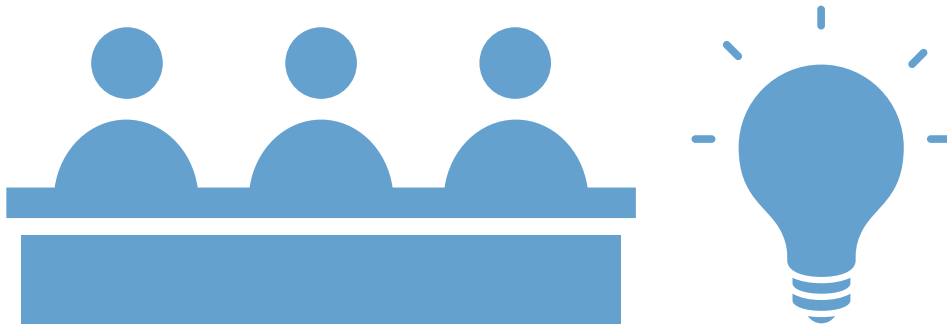
## Portable Analyser

Collects and records operational data to generate pressure-volume graphs for reciprocating compressors.

# Technical Consultancy

Reciprocating compressors operate under an ample range of pressures, temperatures, and flow rates.

Because of this, it is necessary to determine the impact of these parameters on compressor operational performance. Some combinations may lead to unsafe conditions.



**Count on  
our specialists**

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## Consultancy Steps

- ✓ Identify unsafe conditions;
- ✓ Take preventive measures;
- ✓ Make actionable recommendations;
- ✓ Determine necessary modifications;
- ✓ Make operational objectives viable.

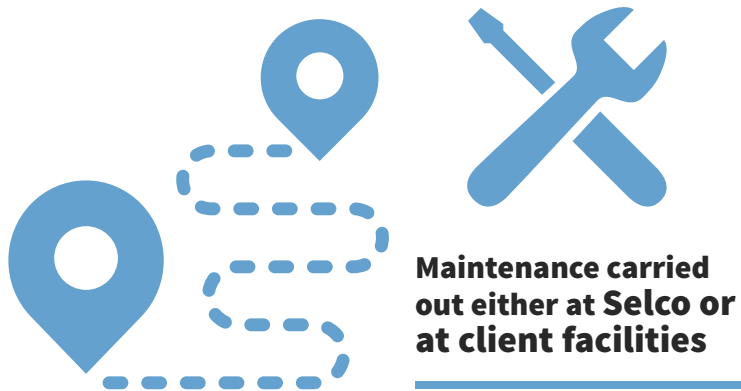
## Performance Simulator

Proprietary technology that allows an extensive and reliable evaluation.

# Maintenance

Selco offers highly reliable reciprocating compressor **Maintenance** solutions.

The technicians have at their disposal complete sets of tools and devices to carry out maintenance work on a variety of reciprocating compressor types.



## Technical Support

Regardless of the maintenance location, Selco's field technicians have integral support of the Engineering team.

## Results Optimization

Selco combines maintenance with performance analysis to provide improvement opportunities.

# Reconditioning

Selco holds a separate production cell to recondition reciprocating compressor parts. This way clients are swiftly served, even under emergency situations.

The highly qualified and experienced cell operating technicians have integral support of the Engineering team.

## Complex Services

Selected third party companies



Monitored by experienced engineers

## Reconditioning:

- ✓ Valves;
- ✓ Packings;
- ✓ Rods;
- ✓ Connecting Rods;
- ✓ Crossheads;
- ✓ Actuators;
- ✓ Pistons;
- ✓ Cylinders;
- ✓ Crankshafts;
- ✓ Liners.



**Cost savings with brand new product performance**



The background image is a blurred, high-angle shot of a large industrial facility, likely a manufacturing plant or warehouse. The floor is filled with various equipment, materials, and structural elements, creating a complex pattern of lines and shapes. The overall color palette is a monochromatic blue, giving it a professional and industrial feel. The word "SEGMENTS" is centered in the middle of the image in a bold, white, sans-serif font.

# SEGMENTS

# Plastic Packagings

A fully verticalized production, along with strategic inventories, allows Selco to meet the needs of the **Plastic Packagings** segment of agility and competitive prices.

Companies present in the Plastic Packaging industry convert polyethylene terephthalate (PET) into consumer good packages, such as soft drink bottles and cosmetic recipients. The production of plastic packaging requires the usage of oil free reciprocating compressors, capable of feeding blowers with compressed air of up to 40 bar.



## Applicable Products

- ✓ Valves;
- ✓ Check Valves;
- ✓ Packings;
- ✓ Oil Scrapers;
- ✓ Piston Rings;
- ✓ Pistons, Rods and Liners;
- ✓ Other Components.

## Applicable Services

- ✓ Technical Consultancy;
- ✓ Performance Analysis;
- ✓ Reconditioning;
- ✓ Maintenance.



# Natural Gas

Selco develops high quality products made of specific materials to meet the needs of the **Natural Gas** segment, conforming rigorously to international norms such as API 618 and NACE 0175.

The Natural Gas segment comprehends the exploration, injection, transport, and storage of natural gas, commonly originated from oil extraction. Reciprocating compressors used in this industry normally operate at speeds ranging between 300 and 1,500 rpm, under extreme conditions of temperature and pressure.



## Applicable Products

- ✓ Valves;
- ✓ Check Valves;
- ✓ Packings;
- ✓ Oil Scrapers;
- ✓ Piston Rings;
- ✓ Pistons, Rods and Liners;
- ✓ Other Components.

## Applicable Services

- ✓ Technical Consultancy;
- ✓ Performance Analysis;
- ✓ Reconditioning;
- ✓ Maintenance.

# Industrial Gases

Selco supplies compressor parts that present no risk of final product contamination for the **Industrial Gases** industry, following international norms linked to applications absent of oil and impurities.

The segment of Industrial Gases comprises companies that produce oxygen, nitrogen, hydrogen, helium, and others. Reciprocating compressors used in this market segment must operate with components specifically designed to particular gas and process characteristics.



## Applicable Products

- ✓ Valves;
- ✓ Check Valves;
- ✓ Packings;
- ✓ Oil Scrapers;
- ✓ Piston Rings;
- ✓ Pistons, Rods and Liners;
- ✓ Other Components.

## Applicable Services

- ✓ Technical Consultancy;
- ✓ Performance Analysis;
- ✓ Reconditioning;
- ✓ Maintenance.

# Food Industry

Selco continuously invests in research and development to meet the **Food Industry** needs. Our exclusive valve **Sc-Trust** is exceptional in terms of life span and performance.

Reciprocating compressors used in this segment compress residual carbon dioxide. In view of the high cost of this gas, non programmed stops of the compressors generate significant financial losses.



## Applicable Products

- ✓ Valves;
- ✓ Check Valves;
- ✓ Packings;
- ✓ Oil Scrapers;
- ✓ Piston Rings;
- ✓ Pistons, Rods and Liners;
- ✓ Other Components.

## Applicable Services

- ✓ Technical Consultancy;
- ✓ Performance Analysis;
- ✓ Reconditioning;
- ✓ Maintenance.

# Chemical Industry

Reciprocating compressors used in the **Chemical Industry** must operate with components that are appropriate to the type of gas and process characteristics. Selco is capable of providing the ideal products for each application.

The Chemical Industry encompasses companies that convert raw materials, such as petroleum, natural gas, oxygen and nitrogen, into input materials for other industries, or into final consumer products.



## Applicable Products

- ✓ Valves;
- ✓ Check Valves;
- ✓ Packings;
- ✓ Oil Scrapers;
- ✓ Piston Rings;
- ✓ Pistons, Rods and Liners;
- ✓ Other Components.

## Applicable Services

- ✓ Technical Consultancy;
- ✓ Performance Analysis;
- ✓ Reconditioning;
- ✓ Maintenance.



# OEM

Selco is the ideal sourcing partner for reciprocating compressor manufacturers (**OEMs**). The company strictly follows confidential information agreements, is capable of developing components for new equipment projects, and has high scale production with low costs.

OEM companies supply reciprocating compressors applicable to a variety of industrial processes. They use only reliable quality products, for their reputation is at stake.



## Applicable Products

- ✓ Valves;
- ✓ Check Valves;
- ✓ Packings;
- ✓ Oil Scrapers;
- ✓ Piston Rings;
- ✓ Pistons, Rods and Liners;
- ✓ Other Components.

## Applicable Services

- ✓ Technical Consultancy;
- ✓ Performance Analysis;
- ✓ Reconditioning;
- ✓ Maintenance.

# Transportation

Selco serves its **Transportation** clients with competitive prices and short delivery times. The company follows rigorous quality control procedures, submitting all assembled valves to leakage testing.

The Transportation segment comprises companies that operate cargo and passenger trains, in long distance railways or urban short lines. Since the compressors are essential to guarantee passenger safety, it is essential they operate with reliable components.



## Applicable Products

- ✓ Valves.

## Applicable Services

- ✓ Technical Consultancy;
- ✓ Performance Analysis;
- ✓ Reconditioning.



# Other Segments

Selco acquired over the years know-how and experience to meet the needs of various market segments. This capability is possible through the combination of a highly qualified technical team with a vertically integrated production.

The market for reciprocating compressors includes a number of segments, such as **CNG, Refrigeration, Marine and Road Transportation, Mining, Steel, Electricity Generation** and **Transmission**, among others.

Reciprocating compressors used in these segments operate under a variety of temperature and pressure conditions, as well as different types of gases.



## Applicable Products

- ✓ Valves;
- ✓ Check Valves;
- ✓ Packings;
- ✓ Oil Scrapers;
- ✓ Piston Rings;
- ✓ Pistons, Rods and Liners;
- ✓ Other Components.

## Applicable Services

- ✓ Technical Consultancy;
- ✓ Performance Analysis;
- ✓ Reconditioning;
- ✓ Maintenance.



Count on us to  
**optimize results.**

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