API 682 4th edition
Sealing competence
A sealing system provider to count on:
More than 21,000 EagleBurgmann API seals and systems installed world-wide.

India
EagleBurgmann has installed more than 7,000 API seals in a large number of refining and petrochemical plants.

Europe
More than 3,300 EagleBurgmann API seals are installed in numerous European refineries, petrochemical and oil & gas plants.

Service Contracts, Germany
Four major refineries in Germany benefit from our Service Contracts. EagleBurgmann takes care of the entire installed seal base.

Satorp refinery, Saudi Arabia
EagleBurgmann provides 400 sealing systems acc. to API 682 e.g., APItex and H75 pusher seals.

Leuna, Germany
Total-Refinery Mitteldeutschland (TRM) is equipped with over 700 sealing systems acc. to API in various configurations and arrangements.

Reliance Petroleum Ltd., Jamnagar, India
EagleBurgmann is the largest sealing solution provider with about 2,400 mechanical seals and sealing systems installed on more than 1,700 pumps.

Middle East and North Africa
In the MENA region, over 6,000 API 682 seals from EagleBurgmann are in operation.

Asia-Pacific
In the Asia-Pacific region, EagleBurgmann has installed over 2,300 API seals in a number of refineries and petrochemical plants for all major companies.

Sohar, Oman
EagleBurgmann provides over 300 API 682 seals for the refinery and petrochemical complex and render various TotalSealCare services.
The API experts

EagleBurgmann is one of the leading international system providers of sealing technology. For more than 20 years we have been actively contributing our expertise to developing and implementing the API 682 standard for the selection and application of seals and supply systems in centrifugal and rotary pumps.

Solutions for more safety and productivity

The new 4th edition of API 682 is in line with the latest achievements and current developments. EagleBurgmann offers the widest portfolio of seals and seal supply systems acc. to API 682 4th edition, and consequently has the optimum product for each API-compliant requirement: technically mature, practical solutions that provide significantly greater safety and process reliability in refining technology, petrochemical, oil & gas and chemical industries.

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China

EagleBurgmann has installed over 1,200 API seals in different refineries and petrochemical plants for major companies like Sinopec and Petrochina.

Americas

More than 1,000 API 682 seals are installed in Brazil, Venezuela, Mexico, USA and Canada.

BASF YPC Co. Ltd., Nanjing, China

For this large scale chemical complex, EagleBurgmann is the main seal supplier with over 600 installed seals, many of them according to API 682.

Fujian Refining & Petrochemical Co.Ltd., China

The majority of the critical pump applications were awarded to EagleBurgmann, supplying over 100 seals and supply systems to API 682.

Petróleos de Venezuela, S.A., Venezuela

PDVSA El Palito Refinery signed a frame contract with EagleBurgmann to modernize 40% of all mechanical seals to API 682 standard.

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Petróleos de Venezuela, S.A., Venezuela

PDVSA El Palito Refinery signed a frame contract with EagleBurgmann to modernize 40% of all mechanical seals to API 682 standard.
Experience from more than 1,000 projects: Our products and services increase safety and efficiency.

The optimum solution – from the start

Our customers include leading pump manufacturers, engineering companies (EPC) and plant operators. We know all industry or plant-specific requirements through a continuous exchange and close cooperation: the basis for smooth cooperation along the entire process chain.

Full service partner with global presence

Research and development, consulting and engineering, layout and calculation, design and production and a wide range of modular services – these are types of expertise that our customers benefit from all over the world. A dense network of production facilities and sales and service centers means we are nearby whenever you need us.

Sealing solutions to meet any requirement

Several factors play a major role when choosing the product, the product type, the materials used and how it is operated: process conditions at the sealing location, operating conditions and the medium to be sealed.

No matter what requirements our customers have, we know how these factors affect functionality and economic viability, and we translate this expertise into outstanding long-term, reliable sealing solutions. EagleBurgmann has all the expertise needed to manage and support the entire development, life and service cycle of its sealing solutions.

Thompson Byron Jackson cold service pumps circulate light hydrocarbons in the Santos Moomba gas plant in Australia. Reliably sealed by EagleBurgmann dual pressurized API type A seals, supplied by a Plan 53C barrier fluid system (max. 40 bar (580 PSI)). Configuration 3CW-BB, piping plans 53C and 61. Seal pressure: 10% above discharge pressure (32 bar (464 PSI)), t = –20 °C ... +38 °C (–4 °F ... +100 °F), n = 1,480 min⁻¹.

In the Refinery Complex Amuay-Cardón run by Petróleos de Venezuela, S.A. our seals are installed in about 90 of the most demanding services. In one of the critical applications, the BB5 Pacific pumps are successfully sealed with dual EagleBurgmann API type A seals and appropriate supply systems. Configuration 3CW-BB, piping plans 02 and 53B. Operating conditions: p = 18 bar (261 PSI), t = 200 °C (392 °F), n = 3,600 min⁻¹. Media: Naphtha and Gasoil (3% H₂S).

A Sulzer HDS feed pump type GSG 100-300 is applied at Total Refinery in Leuna, Germany. Sealed by an EagleBurgmann API balanced pusher seal with containment seal (configuration 2CW-CS). Piping plan 75 (EagleBurgmann gas supply and leakage collection systems). Operating conditions: p = 6 barg (87 PSIG), t = max. 120 °C (248 °F), n = 2,980 min⁻¹. Medium: Hydrocarbon (Kerosene).

To convey sour water with high SO₂ content, a Weir pump is installed in the fluid catalytic cracker (FCC) of the Amuay-Cardón refinery in Venezuela. The shaft is sealed by dual pressurized EagleBurgmann API type A seals and equipped with a barrier fluid system with bladder accumulator. Configuration 3CW-BB, piping plans 02 and 53B. Operating conditions: p = 15 bar (218 PSI), t = 50 °C (122 °F), n = 3,600 min⁻¹.
Since commissioning in January 2009, one of the critical pumps in the Bangchak refinery, Bangkok, **Thailand** performs well with a dual EagleBurgmann API type C metal bellows seal with an unpressurized buffer fluid system. Configuration: 2CW-CW, piping plans 23, 52. Operating conditions: \( p = 1.6 \ldots 5.6 \text{ barg} \) (23.2 \ldots 81.2 \text{ PSIG}), \( t = 302 \degree C \) (576 \degree F), \( n = 1,470 \text{ min}^{-1} \). Medium: High temperature hydrocarbon.

De-ethanizer pump in a LPG fractionation unit of ENOC refinery, **U.A.E.** equipped with an unpressurized dual EagleBurgmann sealing system acc. to API 682. Configuration: 2CW-CS, piping plans 14 and 76. Operating conditions: \( p = 36 \ldots 39 \text{ bar} \) (522 \ldots 566 \text{ PSI}), \( t = 1 \degree C \ldots 43 \degree C \) (34 \degree F \ldots 109 \degree F), \( n = 2,933 \text{ min}^{-1} \). Medium: LPG. Since installation, MTBF improved drastically.

In Xinjiang, **China**, CNPC PetroChina Dushanzi Petrochemical Co. Ltd., operates an ethylene cracker based on Linde technology. In one of the typical low temperature applications, a vertical inline pump from Ruhrpumpen is sealed by an EagleBurgmann dual metal bellows seal that is supplied by a barrier fluid system with piston accumulator. API configuration 3CW-FB, piping plans 02, 53C, 61. The medium is Methane. Operating conditions: \( p = 33 \text{ barg} \) (479 PSI), \( t = -97.16 \degree C \ldots -142.89 \degree F \), \( n = 2,925 \text{ min}^{-1} \).

**Fujian Refining & Petrochemical Co., Ltd. in China** applies a BB2 pump for propane de-asphalting. The shaft seal is an EagleBurgmann API type A seal. Configuration 2CW-CW, piping plans 21+52. Operating conditions: \( p = 73 \text{ barg} \) (1,059 PSI), \( t = 165 \degree C \) (329 \degree F), \( n = 2,970 \text{ min}^{-1} \).

A dual EagleBurgmann API type C double ply bellows seal performs well in a Kirloskar Ebara debutanizer reboiler pump which is installed in the RPL refinery complex in Jamnagar, **India**. Configuration: 2CW-CW, piping plans 21, 52. Shaft diameter: 130 mm (5.12"). Operating conditions: \( p = 19.3 \ldots 21.1 \text{ bar} \) (280 \ldots 307.5 PSI), \( t = 274 \degree C \ldots 317 \degree C \) (525 \degree F \ldots 603 \degree F), \( n = 1,500 \text{ min}^{-1} \). Medium: Aromatic hydrocarbon.

In the LNG processing plant at Cacimbas, **Brazil**, 238 pumps are applied. 75% of them are equipped with EagleBurgmann seals. For pumping C2+, Sulzer type CAP8 80-430 pumps are installed. Shaft seals are EagleBurgmann API type C seals. Configuration 2CW-CW, piping plans 13, 21, 52 and 65. Liquefied propane is used as cooling fluid for Plan 21 and 52. Operating conditions: \( p = 34 \text{ bar} \) (493 PSI), \( t = -45 \degree C \ldots +120 \degree C \) (-49 \degree F \ldots +248 \degree F), \( n = 3,565 \text{ min}^{-1} \).

In the Toa Oil FCC Plant in **Japan** the Sundyne API 610 type OH6 reactor recycle pump handling Butane is operating successfully with a dual pressurized face-to-back EagleBurgmann API 682 type A pusher seal. It runs with plans 13/54 at 20,000 min\(^{-1}\) at a sealing pressure of over 66 bar (957 PSI).
## API 682 4th edition solutions at a glance: EagleBurgmann product locator for mechanical seals and seal supply systems.

### Configuration

<table>
<thead>
<tr>
<th>Category</th>
<th>Configuration</th>
<th>1CW-FL</th>
<th>2CW-CW</th>
<th>2CW-CS</th>
<th>2NC-CS</th>
<th>3CW-FB</th>
<th>3CW-BB</th>
<th>3CW-FF</th>
<th>3NC-FB</th>
<th>3NC-BB</th>
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<tr>
<td>Seal type A</td>
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<td>H75A4-C</td>
<td>H75LG4-C</td>
<td>H75A4-T</td>
<td>H75A4-B</td>
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<td>LL9DTUU</td>
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<td>Seal type B</td>
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</tbody>
</table>

### Engineered seals

Beyond API specifications, EagleBurgmann offers a comprehensive range of engineered seals and systems, tailored to customers specifications. Please inquire.

### API piping plans

| Plan 01 | | | | | | | | | | | |
| Plan 02 | | | | | | | | | | | |
| Plan 03 | | | | | | | | | | | |
| Plan 11 (12) | | | | | | | | | | | |
| Plan 13 | | | | | | | | | | | |
| Plan 14 | | | | | | | | | | | |
| Plan 21 (22) | | | | | | | | | | | |
| Plan 23 | | | | | | | | | | | |
| Plan 31 | | | | | | | | | | | |
| Plan 41 | | | | | | | | | | | |
| Plan 52 | | | | | | | | | | | |
| Plan 55 | | | | | | | | | | | |

### Recommended and Possible

- **Recommended**
- **Possible**
EagleBurgmann offers the right product portfolio for each logical and practical API configuration in accordance with current API specifications.

**How to read the table**

Select a category and a configuration. In vertical order, first the EagleBurgmann seal solutions sorted by seal type, then the API piping plan applicable for that configuration can be found. Once you have selected a piping plan, you will find the fitting EagleBurgmann seal supply systems and components on the right side of the table.

For detailed information, we recommend consulting our special line of API brochures: Our API 682 4th edition Application guide helps to make you familiar with API basics, such as objectives, categories, arrangement configurations and seal types, all API 682 piping plans, new seal coding system and how to select the proper mechanical seal according to media groups.

The line of our 15 Configuration Brochures lead within a certain API configuration to tried and tested mechanical seal solutions, show applicable API piping plans and give a survey on the appropriate seal supply systems.

For the latest product data on our API range of seals and systems, contact your local EagleBurgmann representative, or visit us at eagleburgmann.com/api682.

**Seal supply systems and components**

<table>
<thead>
<tr>
<th>Seal type A</th>
<th>Seal type B</th>
<th>Seal type C</th>
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<tbody>
<tr>
<td>WEF6, WEN6, SPT6</td>
<td>ZYA6</td>
<td>WEF6, WEN6, SPT6, ZYA6</td>
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<td>TSA6, TSN6 Engineered</td>
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<tr>
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</tbody>
</table>

**EagleBurgmann – your system provider**

EagleBurgmann offers the right product portfolio for each logical and practical API configuration in accordance with current API specifications.
EagleBurgmann, a joint venture of the German Freudenberg Group and the Japanese Eagle Industry Group, is one of the internationally leading companies for industrial sealing technology. Our products are used everywhere where safety and reliability are important: in the oil and gas industry, refining technology, the petrochemical, chemical and pharmaceutical industries, food processing, power, water, mining, pulp & paper, aerospace and many other spheres. Every day, more than 6,000 employees in more than 60 subsidiaries contribute their ideas, solutions and commitment towards ensuring that customers all over the world can rely on our seals. Our modular TotalSealCare service underlines our strong customer orientation and offers tailor-made services for every application.

eagleburgmann.com/api682
api682@eagleburgmann.com