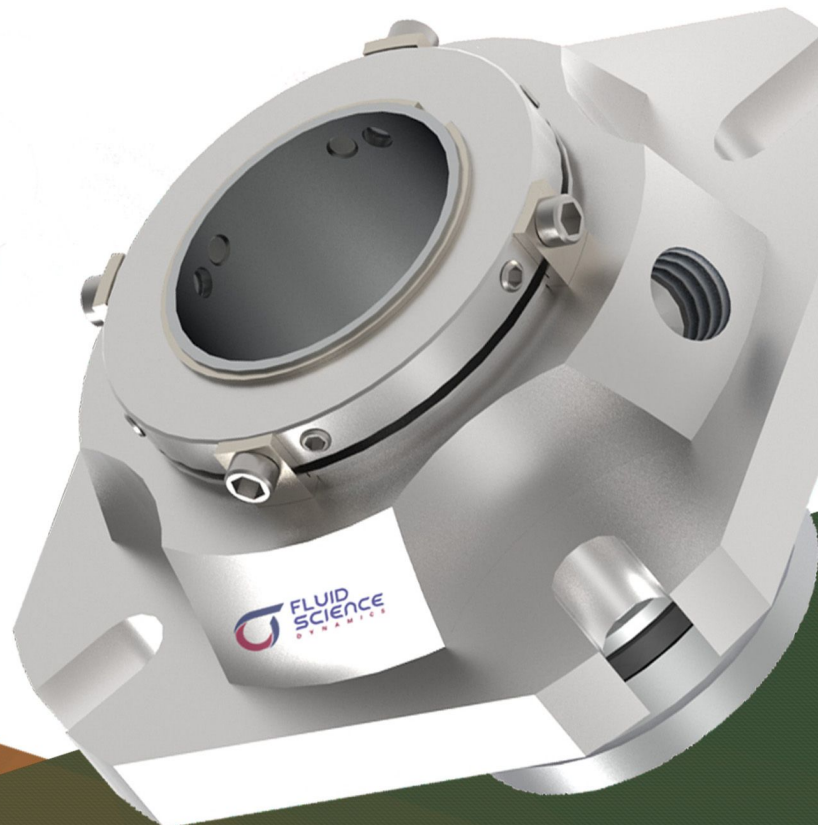
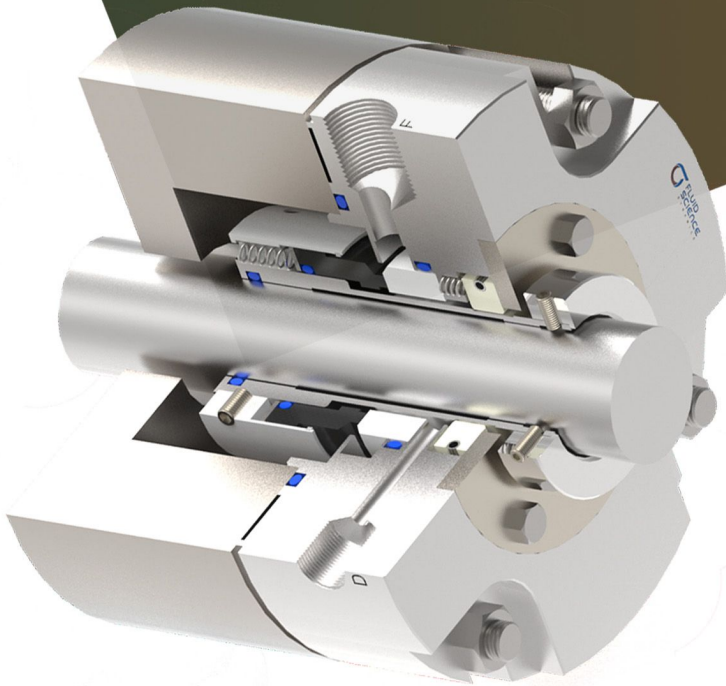


**PT. FLUID SCIENCE DYNAMICS INDONESIA**

# ***MECHANICAL SEAL SERVICE CENTER***





## OUR WORKSHOP



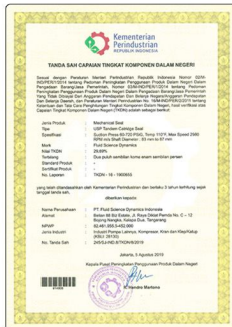
# WHY FSD SEAL?

PT Fluid Science Dynamics Indonesia is a manufacturer and repair center for mechanical seal in Indonesia. Located in Tangerang City, just off Jakarta Province, we are surrounded by industrial premises which makes us accessible and close to the customers.

We manufacture mainly mechanical seals for industrial rotating equipment such as pumps, mixers and compressors. In line with the national regulations, we are specifically certified with local content products. That will make our mechanical seals economical.

## OUR STRENGTHS

- High quality products (ISO 9001)
- Safety compliant and environmentally friendly (ISO 45001; ISO 14001)
- Products with local content (TKDN)
- Located at the heart land of customer premises and easy-access logistics
- Fast response, competitive price and shorter delivery time



Local Content (Mechanical Seal)



OHSAS 18001:2007



ISO 9001:2015



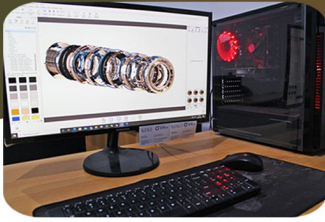
ISO 45001:2018

## PRODUCT OVERVIEW

- API mechanical seal: Type FAP8 (Single, Dual Unpressurized and Dual Pressurized Cartridges).
- Non-API mechanical seal: Type SCS (Single and Double Cartridges), other types for general purpose industries.
- Mechanical seals for low, medium and high duty applications for various industries.
- Fluid Support Systems: API Piping Plan 23, 32, 52, 53A, 53B, 54, 72, 74, and custom fabrications.

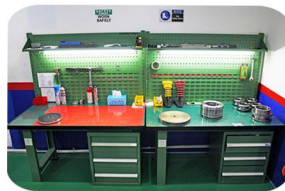


## DESIGN CENTER



## REPAIR CENTER

FSD repair centers are headquartered in Tangerang and branched in Cilegon and Cikarang.



Our priority is high quality products and services,  
so as for the materials that make up our mechanical seal assembly.

### O-Ring / Polymer Seal



Viton  
Kalrez  
Chemraz

### Carbon



Carbon Graphite  
Carbon Antimony

### Silicon Carbide



Sintered  
Silicon Carbide  
Reaction Bonded  
Silicon Carbide

### Tungsten Carbide



Co-binder  
Tungsten Carbide  
Ni-binder  
Tungsten Carbide

### Metal



304 SS  
316 SS  
316L SS  
410 SS

## OUR IN HOUSE CAPABILITIES

Full failure  
mode analysis  
& reporting

Lapping and  
polishing  
up to 19"

Re-engineering  
of Rotary &  
Stationary  
faces

Custom  
Machining,  
Sleeve, Gland,  
Collar, etc

Metal Bellows  
face re-insert

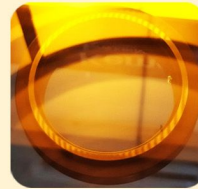
Static &  
dynamic testing  
with air, oil,  
& water

Hydro &  
Solvent,  
ultrasonic  
Cleaning

Hard Surface  
material,  
e.g. Ceramic,  
Stellite Coating

Mfg. custom  
containers  
for high  
value seals

Custom fixture  
building for  
seal testing



## ON SITE SERVICES

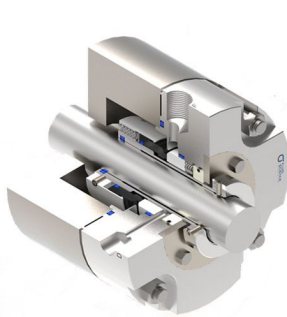
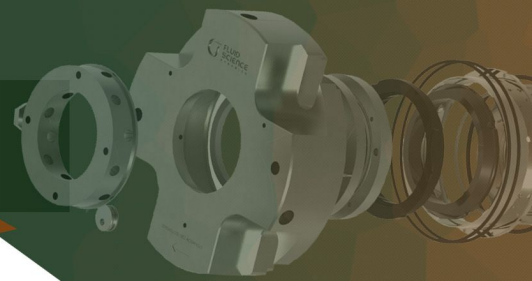
Our experienced field teams are ready to get your critical equipment up and running. In specific geographies, FSD offers on-call, on-site service support for installation and inspection, repair and troubleshooting of mechanical seals and support systems, couplings, and filtration systems.



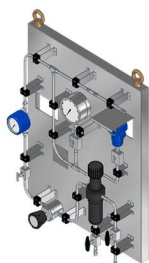
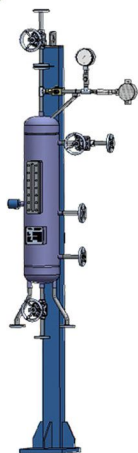
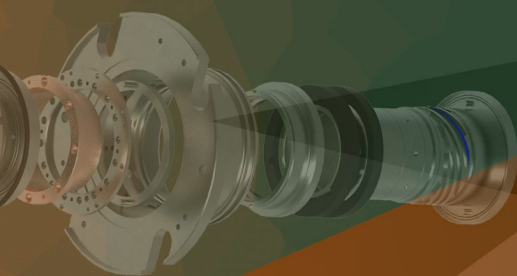
### SERVICE BENEFITS

- Quick response to urgent needs
- Expert support for seal installation and inspection, repair and troubleshooting
- Dedicated service engineers
- Trained technical workforce on-site
- Reduced health and safety risks
- Less downtime increases productivity and efficiency
- Reduced costs and extended life expectancy of equipment

# PRODUCTS



| Type         | FAP8-1/FAP8-2/FAP8-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | F-SSCS/F-DSCS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | F-MB04/F-MB09                                                                                                                                                                                                                                                                                                                     |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description  | <p>Type FAP8-1, FAP8-2 and FAP8-3 are API 682, 4th edition qualified Family A seals for use in general petroleum services. These are dependable, engineered mechanical seals developed typically to control emissions of light hydrocarbons and VOCs to less than Type FAP8-1 is a single cartridge seal designed to provide low emissions/leakage for most refinery applications.</p> <p>Type FAP8-2 is a dual unpressurized cartridge seal designed to provide additional safety for hazardous</p> <p>Type FAP8-3 is a dual pressurized cartridge seal designed for maximum containment of hazardous fluids and light hydrocarbons.</p> | <p>Type F-SSCS/DSCS is designed to accommodate medium duty applications in various industries, especially difficult and arduous applications found on-site. All seal faces are monolithic construction thereby eliminating temperature applications. Seal faces are double balanced to ensure excellent sealing at high or low differential pressure, minimize seal face distortion to ensure stable fluid film conditions between seal faces.</p> <p>An alternative design for hot liquid applications, typically for boiler feed and low vapour pressure products, the unique bi-directional pumping ring design coupled with stationary deflector delivers high volumes of barrier fluid to the seals in constant directions.</p> | <p>Type F-MB04/F-MB09 high-temperature, corrosion-resistant, welded metal bellows seal is a unique advanced technology for reliably sealing fluids in harsh high temperature corrosive environments. It also provides superior face stability at elevated Available with double-ply bellows for higher pressure applications.</p> |
| Temperature  | -40°F to 500°F/-40°C to 260°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -40°F to 600°F/-40°C to 320°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -100° to 800°F/-75° to 425°C                                                                                                                                                                                                                                                                                                      |
| Pressure     | up to 1000 psig/69 barg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | up to 360 psig/25 barg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Dynamic: Vacuum to 300 psig/20.7 barg<br>Static: 450 psig/31 barg                                                                                                                                                                                                                                                                 |
| Speed        | up to 5000 fpm/25 m-s <sup>-1</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | up to 4000 fpm/20 m-s <sup>-1</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Type F-MB04:<br>Up to 10,000 fpm/50 m-s <sup>-1</sup><br>Type F-MB09:<br>Up to 5,000 fpm/25 m-s <sup>-1</sup>                                                                                                                                                                                                                     |
| Applications | <ul style="list-style-type: none"> <li>• Petroleum services</li> <li>• API compliant</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>• Petrochemical</li> <li>• Chemical</li> <li>• Power Generation</li> <li>• Water and wastewater</li> <li>• General Industry</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>• Oil and gas</li> <li>• Chemical</li> <li>• Petrochemical</li> </ul>                                                                                                                                                                                                                      |



| Type               | FS 52/53A                                                                                                                                                                                                                                                                                                                 | FS 72/74                                                                                                                                                                                                                                                                                       | FS 23                                                                                                                                                                                                                       | SLM8-G / SLM8-AGT                                                                                                                                              | Cyclone Separator                                                                                                                                                                                                               |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | These reservoir-based seal support systems are designed for API Plan 52/53A and 53B applications to support unpressurized and pressurized dual seals. Circulation to buffer or barrier fluid is achieved with a pumping ring (or optional circulating pump). A range of heat exchangers can be packaged with this system. | FS 72/74 systems are used to provide a clean, regulated gas supply to either a dual unpressurized or pressurized seal arrangement. A gas, typically nitrogen, is introduced in the area between the inner and outer seals, thus preventing fugitive emissions from escaping to the atmosphere. | These water-cooled heat exchangers, either vertical or horizontal configurations, may be applied where water is readily available and may be packaged together with seal support systems when additional cooling is needed. | The KYTOLA® Seal Water Flow Meter Model SLM protects your seal and reduces downtime. Significant savings are achieved in maintenance and seal water costs.     | Cyclone separators (API Plan 31) are incorporated in the flush line from discharge of the pump. This separator does not require cleaning and is designed to remove solids, providing a clean flush stream back to seal chamber. |
| Temperature        | -                                                                                                                                                                                                                                                                                                                         | -                                                                                                                                                                                                                                                                                              | -                                                                                                                                                                                                                           | Up to 212°F/100°C                                                                                                                                              | Up to 600°F/315°C                                                                                                                                                                                                               |
| Pressure           | -                                                                                                                                                                                                                                                                                                                         | -                                                                                                                                                                                                                                                                                              | -                                                                                                                                                                                                                           | Up to 290 psig/20 barg                                                                                                                                         | Up to 3,000 psig/ 206 barg                                                                                                                                                                                                      |
| Capacity           | PR 52/53A Reservoir sizes: 3 and 2 U.S. gal/12 and 20 l<br>PA 53B Accumulator sizes: 2.5 to 15 U.S. gal/10 to 50 l                                                                                                                                                                                                        | -                                                                                                                                                                                                                                                                                              | -                                                                                                                                                                                                                           | -                                                                                                                                                              | -                                                                                                                                                                                                                               |
| Standard Materials | PR 52/53A Reservoirs: 316/L stainless steel<br>PA 53B Accumulators: Cr.molybdenum                                                                                                                                                                                                                                         | Panel: 304 stainless steel<br>Piping: 316/L stainless steel                                                                                                                                                                                                                                    | Carbon steel<br>Tubing/Piping: 316/L stainless steel                                                                                                                                                                        | -                                                                                                                                                              | 316 stainless steel                                                                                                                                                                                                             |
| Applications       | <ul style="list-style-type: none"> <li>• Oil and Gas</li> <li>• Petrochemical</li> </ul>                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• Oil and Gas</li> <li>• Petrochemical</li> </ul>                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• Oil and Gas</li> <li>• Petrochemical</li> </ul>                                                                                                                                    | <ul style="list-style-type: none"> <li>• Chemical</li> <li>• Pharmaceutical</li> <li>• General industry</li> <li>• Pulp and paper</li> <li>• Mining</li> </ul> | <ul style="list-style-type: none"> <li>• Chemical</li> <li>• Pharmaceutical</li> <li>• General industry where solids may be present</li> </ul>                                                                                  |



📍 HQ Office   📍 Sales Office   📍 Service Centre

## PT. FLUID SCIENCE DYNAMICS INDONESIA

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