



*Bringing Reliable Technology  
and Quality Services*

## General Company Information

Ver. 02.23



# PT TRI ANDALAN SERVINDO

[www.triandalan.com](http://www.triandalan.com)

Johnson  
Controls

**WATSON**  
**MARLOW**  
Fluid  
Technology  
Solutions

**masosine**  
Process Pumps

**ANDRITZ**

**CDI**  
OILFIELD SERVICES  
S.R.L.

**RODELTA**

**Santasalo**  
David Brown Santasalo

**SPP**  
PUMPS

## Core Customer



Offshore



Refineries



Upstream



Petrochem



Power Gen

General Industries



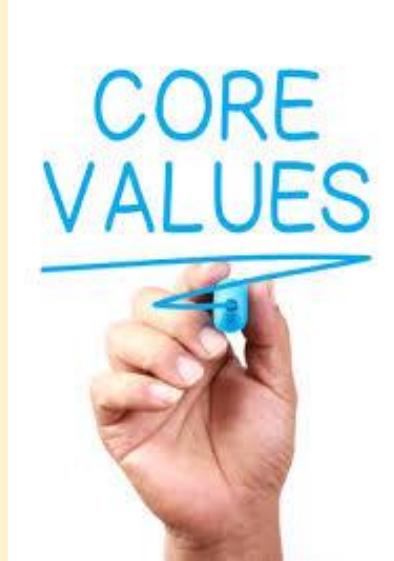
Bringing Reliable Technology  
and Quality Services

## Company Background

- Tri Andalan Servindo (TAS) was established in 2016  
Head Quarter → Tangerang - Sales & Workshop, 1500 M2  
Sales Office → Dumai, PKU, Palembang, Cilegon, CLP, Surabaya  
Facilities → HQ Workshop is for fabrication and repair of rotating equipment parts, mechanical seal parts, heat exchanger, vessel (API 682 Plan 23/ 52/ 53/ 65) and general metal parts.
- TAS has appointed as authorized distributor/ agent for SPP Pump, RODELTA Pump API 610 - Netherland, Johnson Controls Inc. - USA, CDI Oilfield Service - Romania, David Brown Santasalo - UK, Revalve, Watson Marlow Fluid Technology Solutions, Andritz Separation
- TAS is committed to providing 24/7 service and technical support to our valued customers with great satisfaction

## Core Business





- Customer Focused - Excellent services
- Growth & Winning mindset - go beyond
- Ethical - Create culture of honesty
- Respect diversity
- We are one team - Build positive & family spirit
- Integrity - Be real
- Value creation

## VISION :

TAS has a vision to provide a high quality Products & Services to customers in the field of Sealing & Flow Systems for Rotating and Static Equipment in various industries.

## MISSION :

To reach this vision, TAS indicates a strategic approach to :

- Improve service excellence in order to meet our customer's cost effectiveness
- Create a safety environment to ensure the well-being and security of our staffs and clients
- Strengthening our process to increase efficiency in our products and services

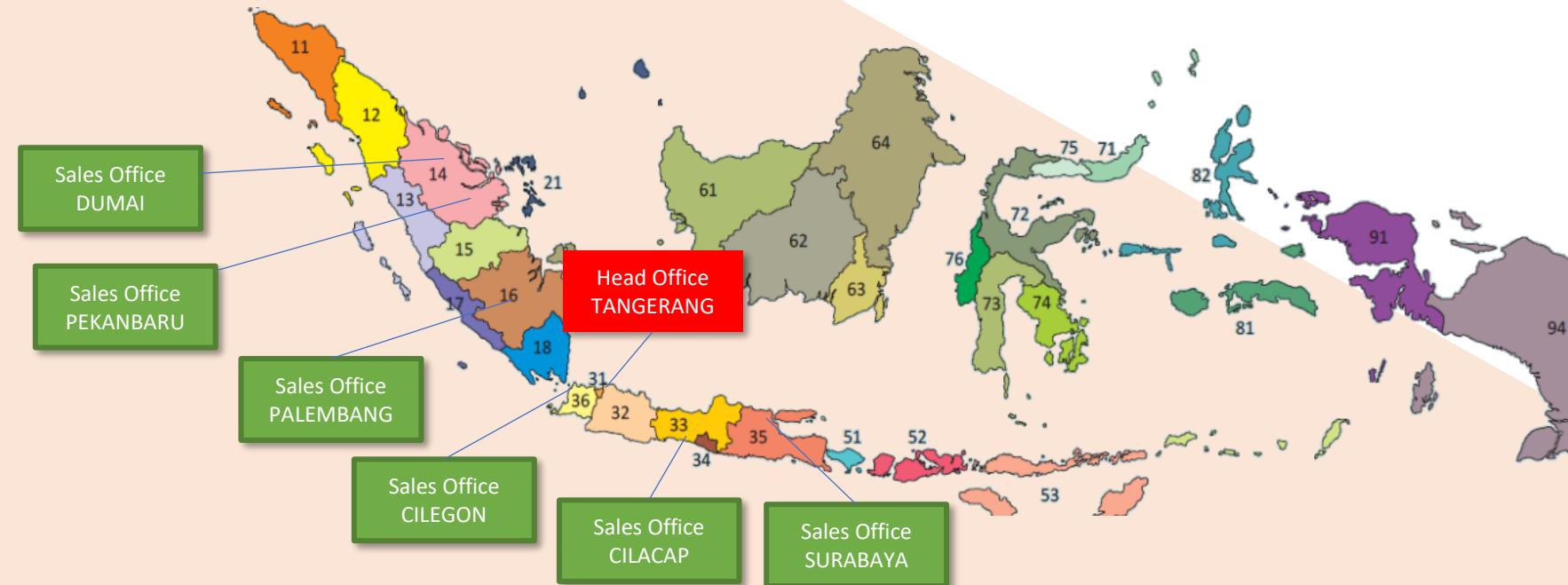
## OUR FACILITIES :

TAS Repair center is located in Tangerang, Banten Province, Indonesia.

Tri Andalan Servindo works alongside Indonesia. The repair center has 30 full time employees and totally 50 sets of manufacturing and repair devices. Besides, FSD Indonesia is the center of Engineering which develops its own product design and engineering under the brand of FSD. The FSD brand is registered in Indonesia.



PT TRI ANDALAN SERVINDO



# Products & Service Capabilities



Bringing Reliable Technology  
and Quality Services

## PRODUCT SUPPLY

- SPP Pump, Rodelta Pump API 610
- WATSON MARLOW FLUID TECHNOLOGY SOLUTIONS
- Industrial Refrigerant Chiller – Johnson Controls Inc
- Mechanical Seals – FSD, Dry Gas Seal - FSD
- Artificial Lift Products (Sucker Rod Pump) – CDI Oilfield
- ANDRITZ Separation
- Gear Box – David Brown Santasalo UK
- REVALVE - Valve Test Bench, On-Site PSV Tester, Valve Lapping/Grinding Machine

## SERVICES

- Rotating Equipment Repair & Overhaul (Centrifugal Pump, Mixer/Agitator, Gear Box)
- Mechanical Seal Refurbishment
- Dry Gas Seal Refurbishment
- Seal Systems/ Vessel Fabrication





# PT TRI ANDALAN SERVINDO

## OUR PARTNERSHIP



# FACILITIES IN AFFILIATE WITH FSD



## PRODUCTION EQUIPMENT

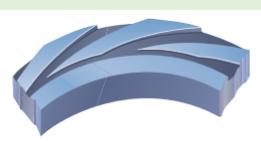
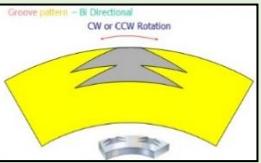
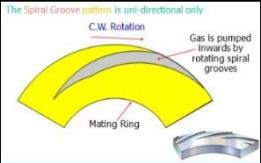
Description	Brand	Year	Qty
Lathe Machine 1200	Standard	2019	1 Unit
Lathe Machine 1500	Ecoca	2010	1 Unit
Lathe Machine 1000	Ecoca	2005	1 Unit
CNC Milling 800 X 600 V100X	Kasuga	2015	1 Unit
Balancing Machine- 500kgs X 1 meter	Schenk	206	1 Unit
Milling Machine	Standard	2019	1 Unit
Milling Machine	Standard	2010	1 Unit
Milling Machine	Pinacle	2010	1 Unit
Band Saw Machine, Dia 14 inch	Standard	2019	1 Unit
Lapping Machine, Size 24 inch (polish)	Kemet UK	2018	1 Unit
Lapping Machine, Size 24 inch (roughing)	Kemet UK	2018	1 Unit
Lapping Machine, Size 40 inch	GNM	2020	2 Unit
Lapping Machine, Size 40 inch	GNM	2020	2 Unit
Vertical Drill Mill, Size : 32 mm	NA	2000	1 Unit
Vertical Drill Mill, Size : 15 mm	Swan	2019	1 Unit
Heating Oven 1000W	NA	2016	1 Unit
Air Compressor 25HP - Screw Type	Sullair	2018	1 Unit
Air Compressor 2HP - Piston Type	Swan	2017	2 Unit
N2 Bottle Rack 150 Bar	NA	2017	1 Unit
Auto Grooving Machine - Spiral Groove	FSD	2018	1 Unit

## QC – TESTING – ENGINEERING

Description	Brand	Year	Qty
Spin Test 30.000 RPM - 50 kg x 12" Dia.	FSD Std	2018	1 Unit
Dry Gas Seal Dynamics Test Rig - 12"	FSD Std	2018	1 Unit
DGS Automatic Control Systems	FSD Std	2017	1 Unit
Mechanical Seal Cartridge Static Test	FSD Std	2018	3 Unit
Hand Lifting Equipment 1500	FSD Std	2018	1 Unit
Coordinate Measurement Machine 1000	Mitutoyo	2000	1 Unit
Measurement Tool - Complete Set (L)	Mitutoyo	2018	3 Set
Measurement Tool - Complete Set (M)	Mitutoyo	2018	3 Set
Measurement Tool - Complete Set (S)	Mitutoyo	2018	3 Set
Test Cell for Dry Gas Seal - Size 12 inch	FSD Std	2019	1 Unit
Test Cell for Dry Gas Seal - Size 10 inch	FSD Std	2019	1 Unit
Test Cell for Dry Gas Seal - Size < 8 inch	FSD Std	2019	1 Unit
3D Software - Premium License	Solidworks	2018	2 units



# The 1st company in Indonesia for Dry Gas Seal repair



**“All Groove  
Profile”**

**“All Brands”**

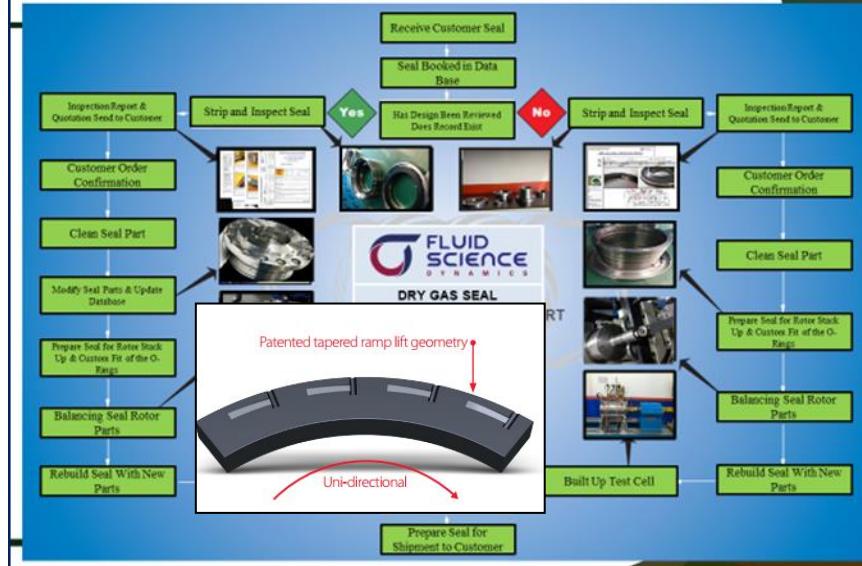


**EagleBurgmann.**  
Rely on excellence

Refurbishment is recommended once every 5 years or so, depending on Plant TA Schedule.

- A. Standard Refurbishment
- B. Rework components (Re-lap and Re-grooving)
- C. Replace components

## REFURBISHMENT PROCEDURE



## DRY GAS SEAL REPAIR FACILITY



## Dry Gas Seal Test Center



Location : Tangerang - Indonesia

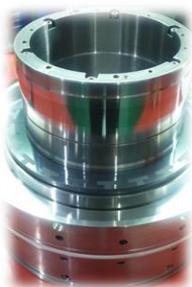
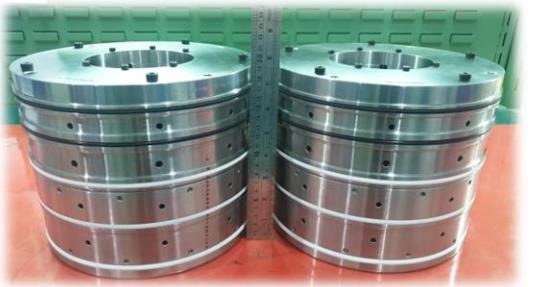


## Dry Gas Seal Test Center

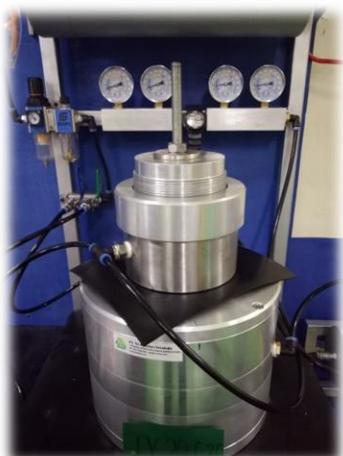
Location : Tangerang - Indonesia



Advance Automatic Control Monitoring Systems



# THE PRODUCTS





### API 682 CARTRIDGE SEAL

**MATERIALS**

- Rotary face : Antimony Carbon, SiC, TC
- Stationary face : SiC, TC
- Spring : Alloy C-276, SS 316L
- O-ring : EPDM, FKM, Aflas, FFKM

**PRODUCT DETAILED DESCRIPTION**

Type FAP8-1 multiple spring pusher seal (API 682 Categories 2 and 3, Type A, Arrangement 1) is specified within API 682 for sealing low temperature flashing hydrocarbons. Type FAP8-1 seal is designed to handle low pressure applications and has the flexing potential of light hydrocarbon fluids to provide long seal life and a low fugitive emissions.

Typically, a Plan 100 or Plan 23 is applied depending on the pump's temperature. If the pumping temperature is above 140°F/60°C, a circulating device should be added. Dual unpressurized (FAP8-2) and dual pressurized (FAP8-3) seals may also be considered for these services, especially LPGs.

Type FAP8-1 and 2 seals typically control emissions to less than 500 ppm.

**CARTRIDGE SEAL TYPE FAP8-1**

**DESIGN FEATURES:**

- API 682 qualification tested.
- Easy-to-install cartridge design with registered fit.
- Segmented spring-loaded carbon throttle bushing for effective containment.
- Dual seal optimizes circulation of liquid at faces and prevents trapped vapor.
- Available with pumping ring when utilizing an API 682 Plan 23.
- Dual seals equipped with pumping ring for optimized flow.

**SCOPE OF APPLICATION:**

- Pressure : up to 1000 PSIG
- Temperature : -40°C to 260°C
- Speed : up to 25 m/s
- Size range : 1,000" to 4,500" (25mm to 120mm)

Customization of design is possible to suit your operating parameters. Please contact us with your requirements.

[www.fsd.co.id](http://www.fsd.co.id)

### API 682 CARTRIDGE SEAL

**MATERIALS**

- Rotary face : Antimony Carbon, SiC, TC
- Stationary face : SiC, TC
- Spring : Alloy C-276, SS 316L
- O-ring : EPDM, FKM, Aflas, FFKM

**PRODUCT DETAILED DESCRIPTION**

Type FAP8-2 is a dual, unpressurized, engineered API 682 cartridge seal. The standardized cartridge seal is designed to be used as a component API 682 Plan 23. It is supplied with qualified face material pairs and is supplied in two arrangements: wet seal for use with liquid to liquid applications and inner wet seal plus containment seal for use with gaseous buffer fluids.

**DESIGN FEATURES:**

- API 682 qualification tested.
- Easy-to-install cartridge design with registered fit.
- Distributed flush optimizes circulation of liquid at faces and prevents trapped vapor.
- Available with pumping ring when utilizing an API 682 Plan 23.
- Dual seals equipped with pumping ring for optimized flow.

**SCOPE OF APPLICATION:**

- Pressure : up to 1000 PSIG (gas buffer up to 500 PSIG)
- Temperature : -40°C to 260°C (gas buffer -29°C to 205°C)
- Speed : 25 m/s or less. (gas buffer up to 20 m/s)
- Size range : 1,000" to 4,500" (25mm to 120mm)

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### STANDARD CARTRIDGE SEAL

**PERFORMANCE**

- Pressure : up to 2.5 MPa
- Temperature : -40°C to 320°C
- Speed : up to 20 m/s
- Size range : 20mm to 125mm (1.0 inch to 5.0 inches)

**MATERIALS**

- Rotary face : SiC, TC
- Stationary face : Carbon, SiC, TC
- Spring : Alloy C-276, SS 316L
- O-ring : Silicon, EPDM, FKM, Aflas, FFKM

**PRODUCT DETAILED DESCRIPTION**

Type F-DCS 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 the need for seal face materials.

Inboard seal faces are double balanced to ensure excellent sealing at high or low differential pressure. Seal faces are balanced to ensure excellent sealing conditions between seal faces. The unique bi-directional pumping ring design coupled with stationary deflector delivers high volumes of liquid to seal faces. Inboard and outboard seals in constant directions.

**DESIGN FEATURES:**

- Double hydrostatic balanced seal faces.
- Reliable face drive mechanism with monolithic seal face materials.
- Unique bi-directional pumping ring (for boiler feed and low vapor pressure).
- Easy-to-install cartridge design with registered fit.
- Available in standard / medium / big bore gland design.

**SCOPE OF APPLICATION:**

- Industries: Oil & Gas, Petrochemical, Chemical, Power Gen, General Industries.
- Equipment: Process Pump, Mixer, Blower.

**CUSTOMIZATION:**

Changes of materials for other operating parameters are possible. Contact us with your requirements.

[www.fsd.co.id](http://www.fsd.co.id)

### STANDARD CARTRIDGE SEAL

**PERFORMANCE**

- Pressure : up to 2.5 MPa
- Temperature : -40°C to 320°C
- Speed : up to 20 m/s
- Size range : 25mm to 125mm (1.0 inch to 5.0 inches)

**MATERIALS**

- Rotary face : SiC, TC
- Stationary face : Carbon, SiC, TC
- Spring : Alloy C-276, SS 316L
- O-ring : Silicon, EPDM, FKM, Aflas, FFKM

**PRODUCT DETAILED DESCRIPTION**

Type F-SSCS 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 the need for seal face materials.

Seal faces are double balanced to ensure excellent sealing at high or low differential pressure, minimize seal face wear and ensure excellent sealing conditions between seal faces. The unique bi-directional pumping ring design coupled with stationary deflector delivers high volumes of liquid to seal faces. Inboard and outboard seals in constant directions.

**DESIGN FEATURES:**

- Hydrostatic balanced seal faces.
- Reliable face drive mechanism with monolithic seal face materials.
- Unique bi-directional pumping ring (for boiler feed and low vapor pressure).
- Easy-to-install cartridge design with registered fit.
- Available in standard / medium / big bore gland design.

**SCOPE OF APPLICATION:**

- Industries: Oil & Gas, Petrochemical, Chemical, Power Gen, General Industries.
- Equipment: Process Pump, Mixer, Blower.

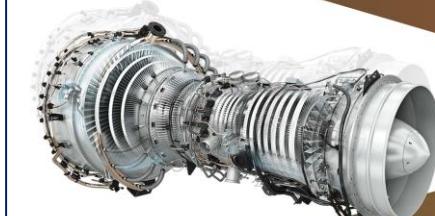
**CUSTOMIZATION:**

Changes of materials for other operating parameters are possible. Contact us with your requirements.

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### FLUID SCIENCE DYNAMICS

## ROTATING EQUIPMENT DIAGNOSTICS SERVICES (REDS)



**GCS SYSTEMS**

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### PT FLUID SCIENCE DYNAMICS INDONESIA

## TYPE EMB SERIES 160 Bar

### Dry Gas Seal Pressure Boosters



**GCS SYSTEMS**

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### PT. FLUID SCIENCE DYNAMICS INDONESIA

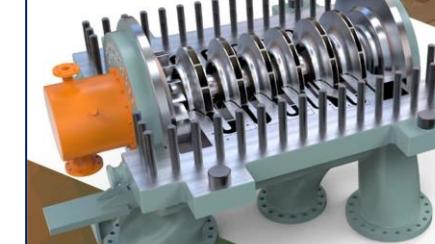
## MECHANICAL SEAL SERVICE CENTER



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### PT. FLUID SCIENCE DYNAMICS INDONESIA

## DRY GAS SEAL SERVICE CENTER



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## HEAD QUARTER :

Kawasan Industri Blessindo Blok A2  
Jl. Raya H. Tabri, Kel. Cirarab, Kec. Legok,  
Kab. Tangerang, Banten 15820  
INDONESIA

Total Size : 3000 M2

Building Size : 1200 M2 (X2)





# Workshop Facilities





# Workshop Facilities





## Lapping Machine

4 Units 40" Size  
2 Units 24" Size

La



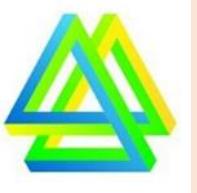
# Workshop Facilities





# Workshop Facilities – DGS Test Rig





# Customers



PT DELTA DJAKARTA Tbk



**etex**  
inspiring ways of living



**ASC**  
AGC Group

Otsuka  
PT Amerta Indah Otsuka



Chandra Asri  
Petrochemical

**EagleBurgmann.**  
a member of EKK and FREUDENBERG

**PUPUK** **KALTIM**

**Sabah International Petroleum**



**Cargill**™



**Tereos**



**INACO**  
PT Niramas Utama

**ANGELS PRODUCTS**  
Sugar Refinery



elnusa fabrikasi konstruksi

**PERTAMINA**  
HULU ENERGI

**INDOTURBINE** PT

**Mubadala**  
Petroleum

**PETROKIMIA**  
GRESIK  
Solusi Agroindustri

**Nestle**  
Good Food, Good Life

**MULTI BINTANG**

**PT. INDOLAKTO**

