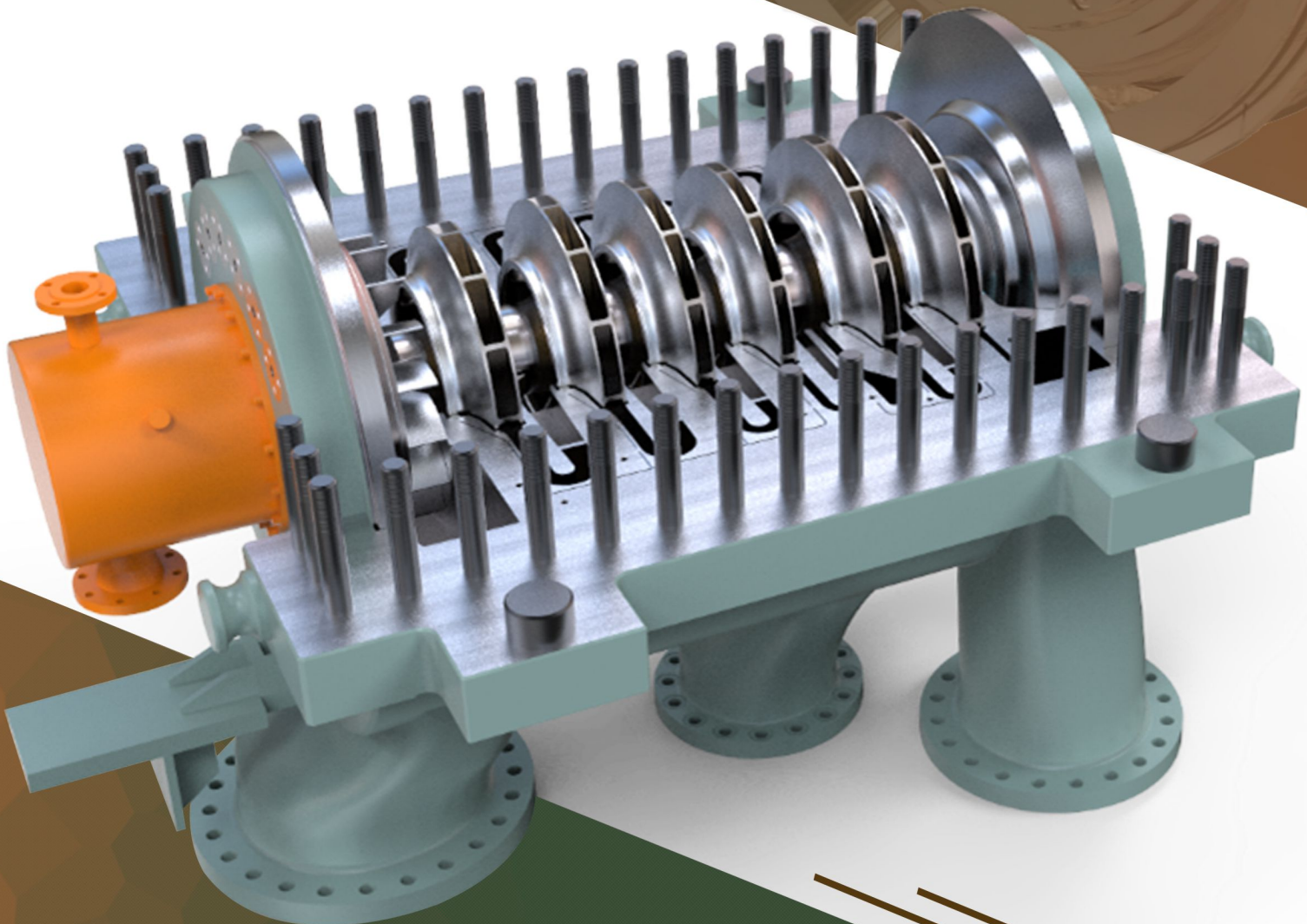


PT. FLUID SCIENCE DYNAMICS INDONESIA

DRY GAS SEAL SERVICE CENTER

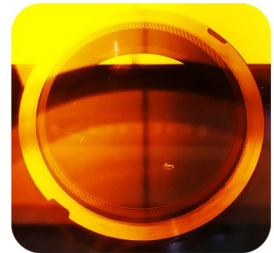
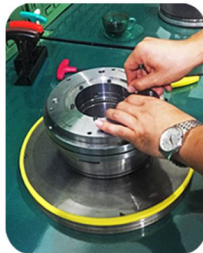


ABOUT US

PT. Fluid Science Dynamics Indonesia is a member of Fluid Science Dynamics Group, headquartered in Singapore.

Our state-of-the-art repair facility in Indonesia is located in Tangerang, Banten. Our business focuses on manufacture and refurbishment of Dry Gas Seal and Mechanical Seal as well as fabrication of Dry Gas Seal System and Mechanical Seal System.

As the first and only Dry Gas Seal facility in the country, we are fully committed to supporting our customers with possible shortest delivery time and good quality assurance.



VISION MISSION

To become a National leader in bringing Reliable Technology and Quality Services to people in the field of sealing systems, flow systems and maintenance systems for rotating and static equipment in wide range industries.

Achieve customer's satisfaction by providing quality products and services that meet or exceed customer's expectation.

Commit to continuously improve product & service quality and reliability through service excellence.

Promote total quality & safety environment in all processes to show commitment to service excellence.

KEY MARKETS



Offshore Pipeline



LNG



Upstream



Downstream



Petrochemical



Fertilizer



Power Gen

CERTIFICATES

Kementerian Perindustrian REPUBLIK INDONESIA

TANDA SAH CAPAIAN TINGKAT KOMPONEN DALAM NEGERI

Sesuai dengan Peraturan Menteri Perindustrian Republik Indonesia Nomor 02/M-IND/PER/1/2014 tentang Pedoman Peningkatan Penggunaan Produk Dalam Negeri Dalam Pengadaan Barang/Jasa Pemerintah, Nomor 03/M-IND/PER/1/2014 tentang Pedoman Peningkatan Penggunaan Produk Dalam Negeri Dalam Pengadaan Barang/Jasa Pemerintah Yang Tidak Dihayati Dan Anggaran Pengadaan Dan Belanja Negara/Anggaran Pengadaan Dan Belanja Daerah, dan Peraturan Menteri Perindustrian No. 16/M-IND/PER/2/2011 tentang Ketentuan dan Tata Cara Penghitungan Tingkat Komponen Dalam Negeri, hasil verifikasi atas Capaian Tingkat Komponen Dalam Negeri (TKDN) adalah sebagai berikut:

Jenis Produk	Dry Gas Seal
Tipe	Tandem Dry Gas Seal BCL455/BCL603
Spesifikasi	Duty: Max Pressure Dynamics 0.6 MPaG, Max Pressure Statics 0.73 MPaG, Temp: Max 140°C, Max Speed: 11435 rpm Shaft Dia: 101 mm
Mark	Fluid Science Dynamics
Nilai TKDN	26.47%
Tarbiyah	Dua puluh lima koma empat tujuh persen
Standard Produk	-
Sertifikat Produk	-
No. Laporan	TKDN - 16 - 1900654

Jakarta, 5 Agustus 2019

Kepala Pusat Peningkatan Penggunaan Produk Dalam Negeri

R Hendro Martono

R Hendro Martono

Local Content (Dry Gas Seal)

Kementerian Perindustrian REPUBLIK INDONESIA

TANDA SAH CAPAIAN TINGKAT KOMPONEN DALAM NEGERI

Sesuai dengan Peraturan Menteri Perindustrian Republik Indonesia Nomor 02/M-IND/PER/1/2014 tentang Pedoman Peningkatan Penggunaan Produk Dalam Negeri Dalam Pengadaan Barang/Jasa Pemerintah, Nomor 03/M-IND/PER/1/2014 tentang Pedoman Peningkatan Penggunaan Produk Dalam Negeri Dalam Pengadaan Barang/Jasa Pemerintah Yang Tidak Dihayati Dan Anggaran Pengadaan Dan Belanja Negara/Anggaran Pengadaan Dan Belanja Daerah, dan Peraturan Menteri Perindustrian No. 16/M-IND/PER/2/2011 tentang Ketentuan dan Tata Cara Penghitungan Tingkat Komponen Dalam Negeri, hasil verifikasi atas Capaian Tingkat Komponen Dalam Negeri (TKDN) adalah sebagai berikut:

Jenis Produk	Mechanical Seal
Tipe	USP Tandem Carbide Seal
Spesifikasi	Suction Press 60-720 PSIG, Temp 110°F, Max Speed 2980 RPM min Shaft Diameter: 83 mm to 87 mm
Mark	Fluid Science Dynamics
Nilai TKDN	29.89%
Tarbiyah	Dua puluh sembilan koma enam sembilan persen
Standard Produk	-
Sertifikat Produk	-
No. Laporan	TKDN - 16 - 1900655

Jakarta, 5 Agustus 2019

Kepala Pusat Peningkatan Penggunaan Produk Dalam Negeri

R Hendro Martono

R Hendro Martono

Local Content (Mechanical Seal)

KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL DIREKTORAT JENDERAL MINYAK DAN GAS BUMI

SURAT KEMAMPUAN USAHA PENUNJANG MIGAS
No. 2474/19.07/03/2019

Memperhatikan surat permohonan PT. Fluid Science Dynamics Indonesia No. 023/LFSD/2019 tanggal 20 Februari 2019 serta berdasarkan:

- Peraturan Menteri Energi dan Sumber Daya Mineral No. 16 Tahun 2013 tentang Penggunaan Produk Dalam Negeri Pada Kegiatan Usaha Hulu Minyak dan Gas Bumi;
- Peraturan Menteri Energi dan Sumber Daya Mineral No. 14 Tahun 2018 tentang Kegiatan Usaha Penunjang Minyak dan Gas Bumi;
- Hasil penelitian dan penilaian kemampuan usaha penunjang Migas meliputi aspek legal (status usaha dan finansial), teknis (kemampuan produksi dan sistem manajemen), jaringan pemasaran dan layanan purna jual;

DIREKTUR JENDERAL MINYAK DAN GAS BUMI

Dengan ini memberikan Surat Kemampuan Usaha Penunjang (SKUP) Migas kepada:

Nama Perusahaan : PT. FLUID SCIENCE DYNAMICS INDONESIA
Alamat : Berlian 88 Bz Estate, Blok C No. 12, Jl. Raya Diklat Pemda, Kel. Bojong Nangka, Kec. Kelapa Dua, Tangerang 15820
Penanggung Jawab : Rudyanto Wijaya (Direktur Utama)

sebagai industri penunjang migas yang telah mampu memproduksi barang dalam negeri:

Hasil Produksi : Sealing & Insulating Product (data resume dan spesifikasi terlampir)
Rating Perusahaan : ☆☆☆

Dengan ketentuan dan catatan sebagai berikut:

- Perusahaan wajib memenuhi spesifikasi teknis, standar dan TKDN sebagaimana tercantum dalam lampiran SKUP Migas ini;
- Perusahaan wajib meningkatkan capaian TKDN barang dan jasa hasil produksinya;
- Perusahaan wajib menyampaikan laporan setiap 6 (enam) bulan sekali dan dapat apabila ada perubahan data dan informasi dalam SKUP Migas ini kepada Direktur Jenderal Minyak dan Gas Bumi;
- Direktur Jenderal Minyak dan Gas Bumi akan melakukan Asesmen Kemampuan Usaha secara berkala terhadap perusahaan/penyerta pemegang SKUP Migas;
- Apabila dalam pelaksanaan usaha terdapat pelanggaran tidak memiliki kemampuan sebagaimana tercantum dalam SKUP ini, maka Direktur Jenderal Minyak dan Gas Bumi akan memberikan sanksi sampai dengan pencabutan SKUP Migas.

Dikeluarkan di Jakarta
Tanggal: 26 Agustus 2019
Direktur Jenderal Minyak dan Gas Bumi
Rudyanto Wijaya (Direktur Utama)

Rudyanto Wijaya

SKUP-2019-14190032001

SKUP MIGAS

ACM **IAF** **UKAS**

Certificate of Registration

This is to certify that the Occupational Health and Safety Management System of

PT. FLUID SCIENCE DYNAMICS INDONESIA,
Berlian 88 Bz Estate, Blok C No. 12,
Jl. Raya Diklat Pemda,
Kel. Bojong Nangka, Kec. Kelapa Dua,
Tangerang - 15820, Banten,
Indonesia.

Has been independently assessed and is compliant with the requirements of:

OHSAS 18001:2007

For the following scope of activities:

Provision of engineering consultancy related to turbo machinery products and services for oil and gas industry

Certificate Number: 18ACM4946C

Initial Registration Date	16 th May 2018
Issue Date	21 st May 2018
1 st Surveillance on or before	16 th May 2019
2 nd Surveillance on or before	16 th May 2020
Recertification Due on or before	15 th May 2021
Certificate Expiry Date	16 th May 2021

(subject to the company maintaining its system to the required standard)

R. Hendro Martono
Authorised Signatory

This certificate is the property of ACM (limited) and shall be returned immediately on request.
ACM Limited, Unit 5, Merca Court, Meridian Business Park, Leicester, LE19 1B1

OHSAS 18001:2007

ACM **IAF** **UKAS**

Certificate of Registration

This is to certify that the Quality Management System of

PT. FLUID SCIENCE DYNAMICS INDONESIA,
Berlian 88 Bz Estate, Blok C No. 12,
Jl. Raya Diklat Pemda,
Kel. Bojong Nangka, Kec. Kelapa Dua,
Tangerang - 15820, Banten,
Indonesia.

Has been independently assessed and is compliant with the requirements of:

ISO 9001:2015

For the following scope of activities:

Provision of engineering consultancy related to turbo machinery products and services for oil and gas industry

Certificate Number: 18ACM4946C

Initial Registration Date	16 th May 2018
Issue Date	21 st May 2018
1 st Surveillance on or before	16 th May 2019
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Authorised Signatory

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ACM Limited, Unit 5, Merca Court, Meridian Business Park, Leicester, LE19 1B1

ISO 9001:2015

TRUSTED FOR OUR STANDARDS

IAF **ACM** **UKAS**

Certificate of Registration

This is to certify that the Occupational Health and Safety Management System of

PT. FLUID SCIENCE DYNAMICS INDONESIA
Berlian 88 Bz Estate, Blok C No. 12, Jl. Raya Diklat Pemda,
Kel. Bojong Nangka, Kec. Kelapa Dua,
Tangerang - 15820, Banten,
Indonesia.

Has been independently assessed and is compliant with the requirements of:

ISO 45001:2018

For the following scope of activities:

Provision of engineering consultancy related to turbo machinery products and services for oil and gas industry

Certificate Number: 18ACM4946C

Date of initial registration	16 th May 2018
Certificate expiry	15 th May 2021

(subject to the company maintaining its system to the required standard)

R. Hendro Martono
Authorised Signatory

Date of this certificate 12th August 2020, UK

This certificate is the property of ACM (limited) and shall be returned immediately on request.
ACM (limited), Unit 5, Merca Court, Meridian Business Park, Leicester, LE19 1B1, UK.
Tel: +44 (0) 116 255 5231, email: info@acmcert.com

ISO 45001:2018

THE 1ST DRY GAS SEAL FACILITY IN INDONESIA



DRY GAS SEAL FACILITY

Pressure : up to 175 bar
Speed : up to 20.000 RPM
Shaft diameter : up to 250 mm
Test gas media : nitrogen, helium, shock air

Test Category:

- Single seal, double seal, tandem seal
- Remote (online) web viewer witnessing
- Simulate compressor start-up and shutdown
- Simulate compressor slow roll

DRY GAS SEAL REFURBISHMENT

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

STANDARD REFURBISHMENT / CHECK

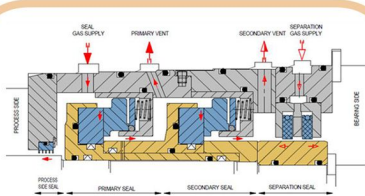
- Visual inspection
- Disassembly, detailed inspection, cleaning
- Dimension check
- Machining / fabrication of parts
- Balancing of rotor parts

REPLACE COMPONENTS

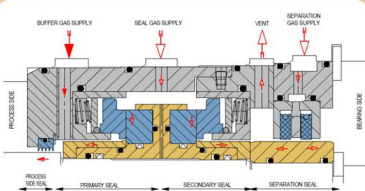
- Primary Ring (Carbon, Silicon Carbide)
- Mating Ring (Silicon Carbide, Tungsten Carbide)
- Elastomer (O-ring), polymer seal
- Springs, screws, centering device

REWORK COMPONENT

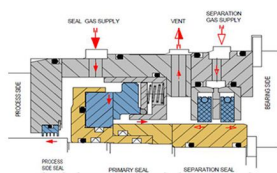
- Lapping and polishing
- Re-grooving



Tandem Seal Schematic



Double Seal Schematic



Single Seal Schematic

Source: API Standard 692:2018, First Edition

FOR FSD SEAL & NON FSD SEAL

Dry Gas Seal Refurbishment activity consist of:

- Tested according to API 692 (Annex B - Dry Gas Seal Test Procedure)
- Refurbishment lead times in less than 8 weeks
- Computerized face analysis
- Polymer or 'O' Ring secondary seal designs
- Full certification pack including video test surveillance
- Post-test inspection reports
- FSD has the engineering knowledge capability and dynamic test facilities to offer FSD certified, guaranteed seal repair for:

any type
(DGS with polymer seal or elastomer)

any brand /
seal maker

any model
(single seal, tandem seal, double seal)

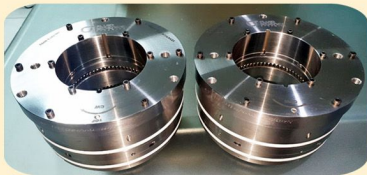
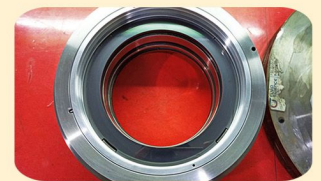
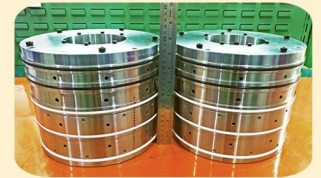
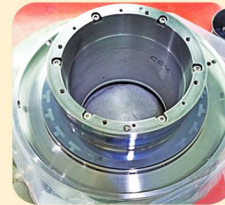
refurbishment of all types of groove profiles
refurbishment of upgrade to diamond coating

DRY GAS SEAL REFURBISHMENT



MAN Energy Solutions
Future in the making

**DGS for Man Energy
Solutions Compressor
Seal Size 112 mm**



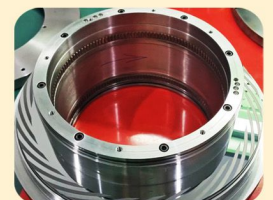
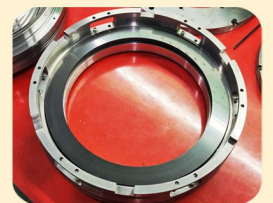
Solar Turbines

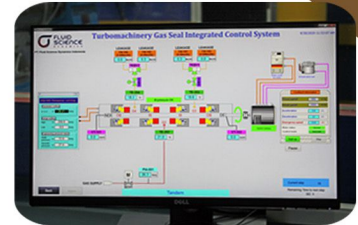
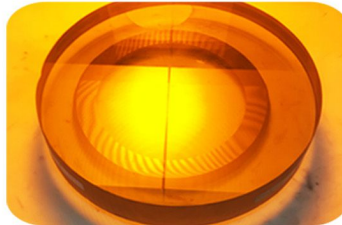
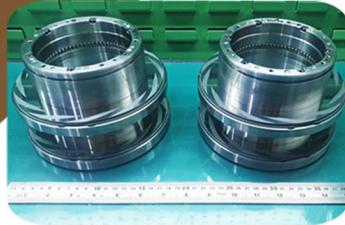
A Caterpillar Company

**DGS for Solar Compressor (C33)
Seal Size 4.937"**



**DGS for MHI Compressor
Seal Size 10.125"**





CLIENTS



COMPRESSOR

Solar C33
Solar C505
Solar C160

MHI MTV 4-5
MHI MTV 2-2
Hitachi 2BCL

Atlas Copco TP 10/10
MannTurbo RB 28-5
Dresser Rand D4R7S



📍 HQ Office 📍 Sales Office 📍 Service Centre

PT FLUID SCIENCE DYNAMICS INDONESIA

Komplek Pergudangan dan Industri Blessindo
Jl. Raya H. Tabri No. 228 Blok A No. 1
Kel. Cirarab, Kec. Legok, Kab. Tangerang
Banten, 15820, Indonesia

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Email : sales@fsd.co.id