



Coming together is a beginning; keeping together is progress; working together
is success — Henry Ford



REMS



WHO WE ARE?

- Rapid Engineering and Maintenance Solutions - REMS is the branch of Providence Doytch AG (PDL) company. It is set with the aim to provide engineering and maintenance solutions as well as construction services to Oil & Gas, Chemical & Petrochemical, Power Generation and other General Industry sectors, in Turkey and in region.
- REMS company relies on rich experience acquired for years by PDL company as founder on one hand, and partner companies (Flowserve, Ethos Energy and VOITH Turbo), world leaders in manufacturing and servicing rotating equipment for the world's most critical applications, on the other hand.

OUR MISSION AND VISION



* Mission

Our core business is providing the highest quality engineering and maintenance solutions as well as construction services to our customers in Oil & Gas, Chemical & Petrochemical, Power Generation, Water Treatment and other industries, with special focus on safety and environmental protection.

REMS

* Vision

Our vision is to become key after-sales market player in Turkey and region, offering wide range of the highest quality products and services to our customers.



WHAT WE DO?



Together with our partners we are able to bring most contemporary engineering and aftersales solutions to customer's site and help them addressing their most pressing challenges:

- Expenses reduction
- Risk minimization
- Performance maximization

Relying on its long-term experience in different fields of industry, we provide following services to the customers:

- Rotating equipment (pumps, centrifugal compressors, reciprocating compressors, steam and gas turbines, generators, gearboxes, fans, mixers, etc.) maintenance, repair and lubrication
- Equipment on-site overhauls - Complete Turnkey Projects
- Modernization of equipment (rerate/upgrades, modifications)
- Repair of equipment components: casings, rotors, impellers, bearings, valves, blades, diaphragms, packing sets
- Rotors: Re-blading, Machining, Welding, Balancing and Straightening, low and high speed balancing
- Wide Range Diagnostic: NDT, RBE, MMM, Phased Array, Microstructure Analysis
- Vibration, Laser Alignment and Oil Services
- Machining Services: on-site and at workshop





REMS IS CERTIFIED FLOWSERVE SERVICE PARTNER

Certified Service Centre (CSC) for pumping equipment and mechanical seal repairs, with support and control of Distribution support services team from Flowserve

- ✓ Access to technology and technical documentation of Flowserve;
- ✓ Access to central engineering team support;
- ✓ Continuous education of REMS personnel at Flowserve training centres, and on site;
- ✓ Regular audits of Flowserve on the facility standards and application of working processes (implementation of quality KPIs).



WHAT WE DO?

PUMP RANGE OF SERVICES



- Pump general overhauling (disassembly, cleaning, inspection (dimensions measurements, run outs, OEM spare parts supply or reverse engineering, assembly, pre-commissioning commissioning, start-up, operation monitoring, full overhauling report);
- Mechanical seal maintenance (disassembly, repair, spare parts supply, assembly, commissioning, start up);
- Mechanical seal system (flushing, cleaning, pressurizing as per API, condition monitoring, cooling system cleaning, commissioning);
- Shaft alignment (laser, face and rim method as well as reverse alignment with dial gages);
- Bearings maintenance;
- Lube oil system flushing and monitoring;
- Pump and mechanical seal preventive maintenance (checking operational data, cleaning of filters, strainers and orifice, checking shaft alignment, base plate anchor bolts looseness, soft foot, leakages, noise, vibrations, temperatures, etc.);
- Troubleshooting;
- RCA (Root Cause Analysis);
- Vibration Analysis;
- Condition monitoring;



WHAT WE DO?



PUMP RANGE OF SERVICES



- Spare parts supply and inventory (Rapid Reverse Engineering and Retrofit parts);
- Pump upgrades and modifications (re-ratings, compliance to API610 newest edition, etc.);
- New pumps and mechanical seals delivery;
- Life cycle analysis;
- Reliability improvement (bad actor management, technical assessments, RCA, training, upgrades (RVX programs, etc.));
- Field services.



Sipariş No: 4020267

Vibrasyon Ölçümü / Sıcaklık Kontrolleri

Müşteri: STAR

Ürün No: 430G-052A

Montaj Tarihi:

10.01.2020

Konsol: 6

Pompa S/N: E202H696-1-2

Zaman:

Ref STA6:

Pompa Tipi: V52

Vibrasyon Değerleri

Vibrasyon Seviyesi	Seviye	Sıcaklık
Ölçüm Noktası	mm/s	°C
M1V	1,5	
M1H	1,3	
M2V	1	
M2H	0,9	
P1V	1,1	
P1H	1,3	
P2V		
P2H		

ISO 10816-3 Titreğin Eşik Değerleri Tablosu

Hız (RPM)	1500				3000			
	1	2	3	4	1	2	3	4
1500	0,10	0,15	0,20	0,25	0,10	0,15	0,20	0,25
3000	0,05	0,07	0,10	0,12	0,05	0,07	0,10	0,12
4500	0,03	0,04	0,06	0,08	0,03	0,04	0,06	0,08
6000	0,02	0,03	0,04	0,05	0,02	0,03	0,04	0,05
7500	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04
9000	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04
10500	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04
12000	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04
13500	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04
15000	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04
16500	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04
18000	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04
19500	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04
21000	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04
22500	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04
24000	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04
25500	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04
27000	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04
28500	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04
30000	0,01	0,02	0,03	0,04	0,01	0,02	0,03	0,04

ISO 10816-3 Tablosu

ISO 10816-3 Tablosu			
1500	3000	4500	6000
0,10	0,05	0,03	0,02
0,15	0,07	0,04	0,03
0,20	0,10	0,06	0,04
0,25	0,12	0,08	0,05
0,30	0,15	0,10	0,06
0,35	0,18	0,12	0,08
0,40	0,20	0,14	0,10
0,45	0,22	0,16	0,12
0,50	0,25	0,18	0,14
0,55	0,28	0,20	0,16
0,60	0,30	0,22	0,18
0,65	0,32	0,24	0,20
0,70	0,35	0,26	0,22
0,75	0,38	0,28	0,24
0,80	0,40	0,30	0,26
0,85	0,42	0,32	0,28
0,90	0,45	0,34	0,30
0,95	0,48	0,36	0,32
1,00	0,50	0,38	0,34
1,05	0,52	0,40	0,36
1,10	0,55	0,42	0,38
1,15	0,58	0,44	0,40
1,20	0,60	0,46	0,42
1,25	0,62	0,48	0,44
1,30	0,65	0,50	0,46
1,35	0,68	0,52	0,48
1,40	0,70	0,54	0,50
1,45	0,72	0,56	0,52
1,50	0,75	0,58	0,54
1,55	0,78	0,60	0,56
1,60	0,80	0,62	0,58
1,65	0,82	0,64	0,60
1,70	0,85	0,66	0,62
1,75	0,88	0,68	0,64
1,80	0,90	0,70	0,66
1,85	0,92	0,72	0,68
1,90	0,95	0,74	0,70
1,95	0,98	0,76	0,72
2,00	1,00	0,78	0,74
2,05	1,02	0,80	0,76
2,10	1,05	0,82	0,78
2,15	1,08	0,84	0,80
2,20	1,10	0,86	0,82
2,25	1,12	0,88	0,84
2,30	1,15	0,90	0,86
2,35	1,18	0,92	0,88
2,40	1,20	0,94	0,90
2,45	1,22	0,96	0,92
2,50	1,25	0,98	0,94
2,55	1,28	1,00	0,96
2,60	1,30	1,02	0,98
2,65	1,32	1,04	1,00
2,70	1,35	1,06	1,02
2,75	1,38	1,08	1,04
2,80	1,40	1,10	1,06
2,85	1,42	1,12	1,08
2,90	1,45	1,14	1,10
2,95	1,48	1,16	1,12
3,00	1,50	1,18	1,14

MACHINE

M1

Operasyon Başlangıç Değerleri

Emiş Basıncı	kg/cm ²
Çıkış Basıncı	4 kg/cm ²
Debi	4,8 m ³ /s
Hız (RPM)	3000 rpm
Akım (Amper)	30 amper

Renk	Seviye	Tanım
Red	Yüksek Vibrasyon	Yüksek selen (yüksek titreşim) alarmı.
Yellow	Orta Vibrasyon	Orta selen (yüksek titreşim) alarmı.
Green	Düşük Vibrasyon	Düşük selen (yüksek titreşim) alarmı.
Blue	Yüksek	Yüksek titreşim (yüksek titreşim) alarmı.

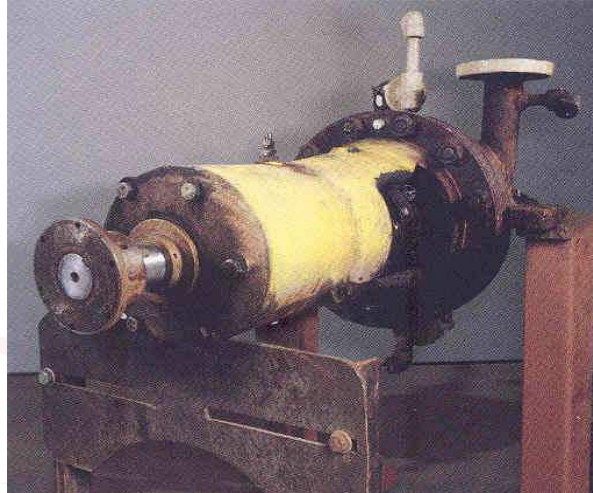
Diğer Göstergeler

FLowsERVE/REMS RVX (PUMP RETROFIT) PROGRAM

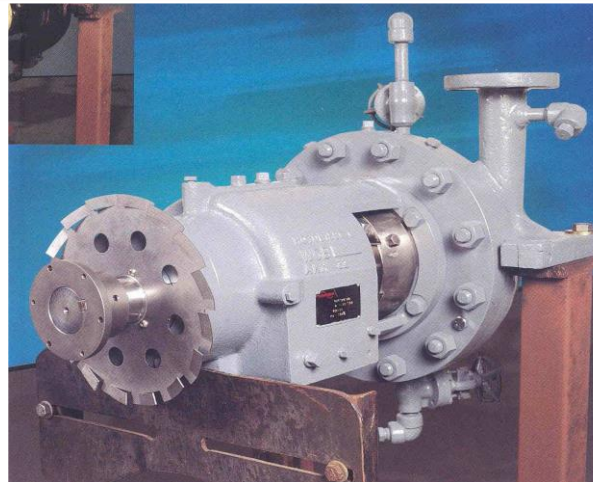


- Upgrade Solution (RVX+Mechanical Seal)
- ATEX- / Safety coverage
- Support System Supply
- Coupling & Coupling Guard
- Interconnecting Pipework
- High quality repair and rework of pumps incl. hydraulic Upgrades
- Hydrostatic Test of each pump
- Installation of New Equipment (Laser Alignment, Filling with Oil, make Equipment ready for Purpose)
- Documentation according Customer Specification
- Startup Support and RCA if needed

BEFORE RVX



AFTER RVX



RVX program benefits:

- Full compliance with API 610
- Increased seal life
- High parts interchangeability
- Applicable to any overhung pump, regardless of the OEM
- Increased reliability
- Eliminate cooling water
- No disturbance piping
- Reduced inventory
- Reduced lead time

WHAT WE DO?



COMPRESSOR RANGE OF SERVICES



- Rotor inspections (Incoming Inspection, Non-destructive testing (NDT), Magnetic Particle, Dye penetrant, Ultrasonic, Dimensional inspections, Rotor run-out, Mechanical run-out check, Electrical run-out check, Rotor dis-/re-assembly, Repair recommendations, Rotor balance checks, Rotor low & high speed balance);
- Rotor repairs (Shaft weld repairs, Impeller weld repairs, Component weld restoration, Chromium plating, Metal spraying (HVOF), Laser cladding, Coating of impellers);
- Advanced weld repairs (Sealing locations, Bearing journals, Coupling tapers, Balance drums, Thrust collars, Impeller eye seal areas, Stub shaft welding)
- Diaphragm/stationary repairs
- Rapid Reverse Engineering
- Retrofit parts
- Reverse Engineered parts (Complete Rotors, Shafts, Impellers, Balance drums, Thrust disks, Sleeves, Diaphragms, Labyrinth seals)



WHAT WE DO?



COMPRESSOR RANGE OF SERVICES



- Field Inspection Services (Troubleshooting, Performance Assessments, Technical Assistance, Optical Alignment & Checks, Inspections Surveys, Major Overhauls, Start-up and Commissioning, Condition Monitoring, Spare Parts Management, Maintenance Contracts, Third Party Advise)
- Unit Overhauls
- Troubleshooting
- Unit Re-rates / Re-designs
- Dry Gas Seal Upgrade
- Labyrinth / Brush Seals
- Low & High Speed Balancing (Low - Rotor balance, Impeller balance, Field balancing; High - Rotor operating speed balance, Rotor overspeed test, Rotor check balance, Max RPM: 30,000 under vacuum, Max Weight: 22,7 t)

REMS



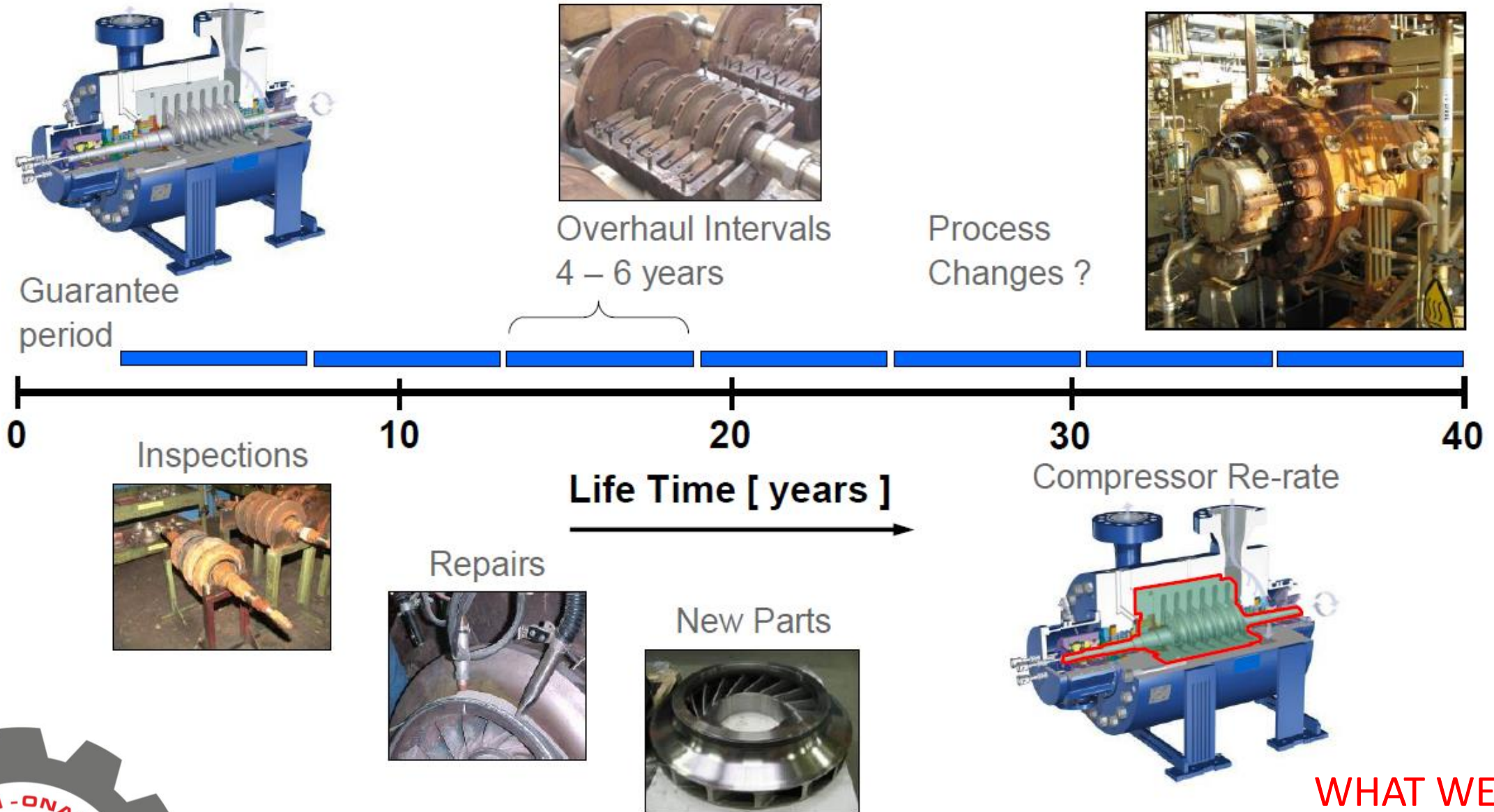
....regardless of Original Equipment Manufacturer

Dresser, Cooper, Solar, GE, MHI, Mitsui, Sulzer, Thermodyn, Creusot Loire, Elliott / Ebara, MAN / GHH, Borsig, Nuovo Pignone

WHAT WE DO?



COMPRESSOR LIFE TIME EXTENSION



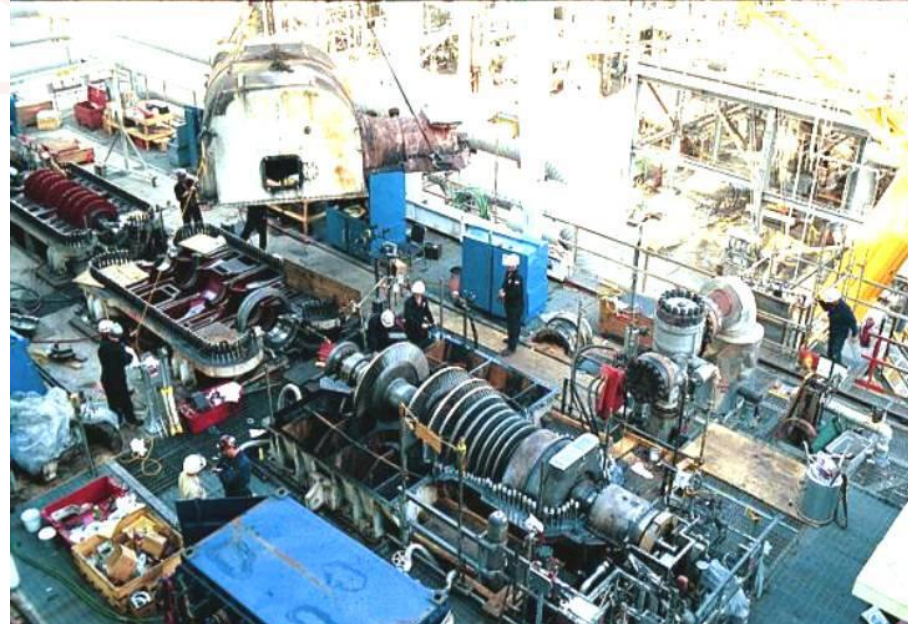
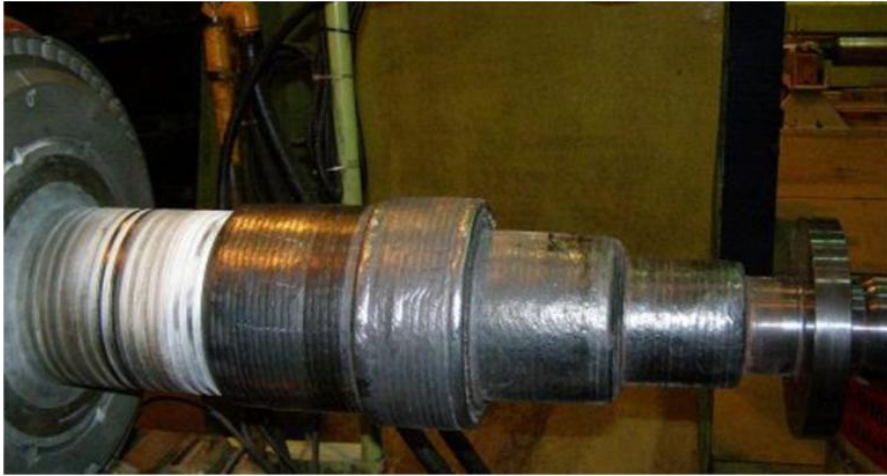
WHAT WE DO?



STEAM TURBINE SERVICES



- Non-Destructive Testing (Dye penetrant, Magnetic Particle, Phased Array, Edicurrent, Boresonic, Ultrasonic);
- Rotor Services (Rotor straightening, Blade repair & replacement, Journal repairs, Seal replacement, Rotor Balancing (HSB / LSB), Advanced rotor welding);
- Turbine case repairs (Case Revitalization, Case Machining, Weld repairs);
- Diaphragm repairs (Partition weld repairs, Deflection correction);
- Reverse Engineering (CMM, Laser Faro Arm Scan, White light scan).

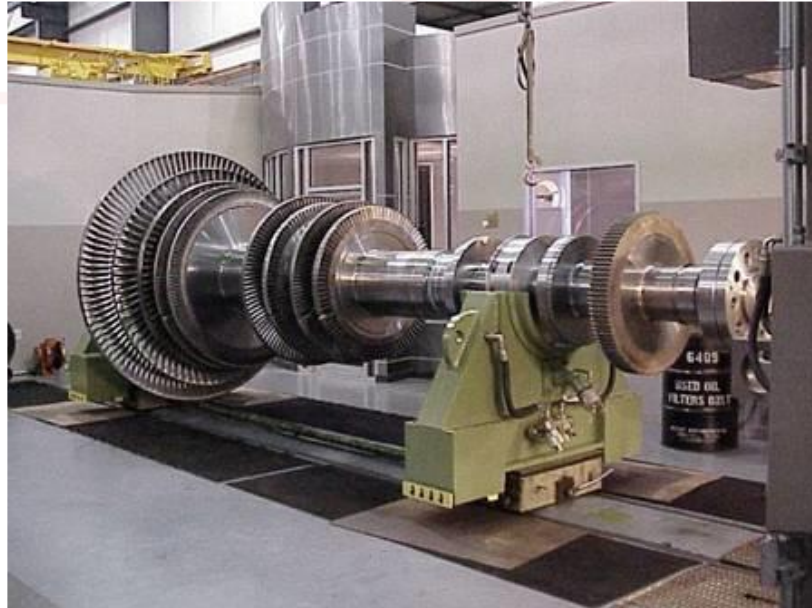
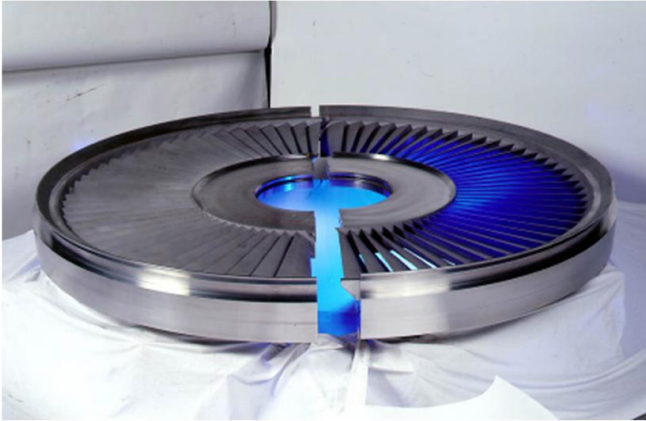
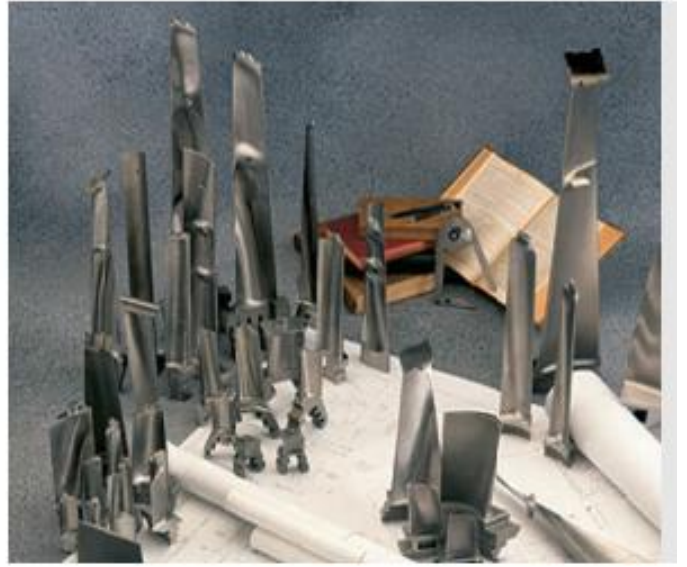


WHAT WE DO?

STEAM TURBINE PARTS SERVICES



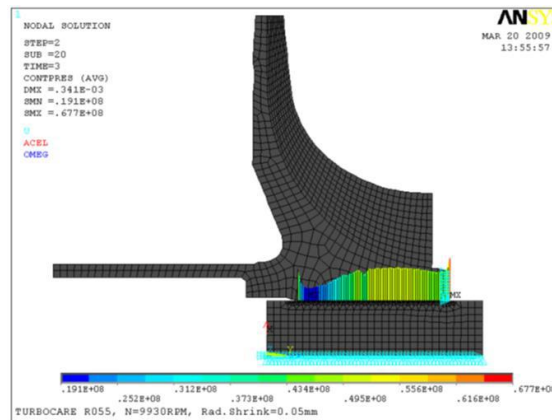
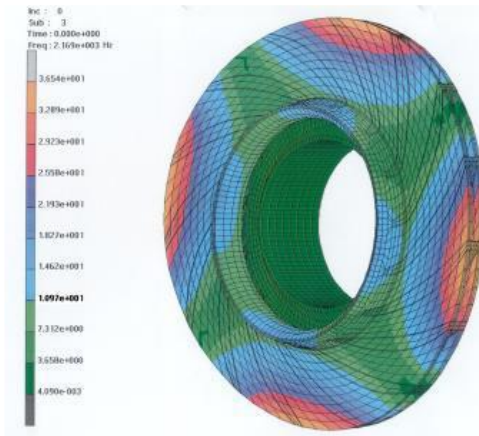
- Blades (In-kind or up-grade, Rapid manufacture, delivery);
- Diaphragms & Nozzles (In-kind or upgrade, Advanced manufacturing and welding technology);
- Seals (Inserted (J-strip style) seals, Conventional packing rings, Labyrinth seals, tip seals, Advanced seals (Retractable Brush));
- Bearings (Upgrades, Repair, Solutions for operational problems)
- Valve Parts (Stems, seats, bushings, etc., Special coatings, Reverse Engineering and manufacture)
- Complete Rotors



WHAT WE DO?



- Engineering support (Reverse Engineering, Flow calculations, Rotodynamic analysis, Vibration measurement & analysis, Failure and Finite element analysis, Modal analysis, Performance measurement, Technical assistance at site, Troubleshooting activities);
- High Quality Engineered Solutions In Close Partnership With The Customer;
- Engineering Design and New Product Development (Uprate Projects, Blade Failure Analysis and Redesign);
- Engineering Support Manufacturing and Service Shops (Manufacturing Engineering and CAD Drawings, Reverse Engineering, Technical Support of Field Installation and Assembly, Technical Direction During Turbine Repairs and Overhauls, Multi-Facility Project Integration);
- Reliability Upgrades (Failed Component Analysis and Redesign, Material Upgrades);
- Efficiency Upgrades (Component Geometry, Retractable Packing and Seals);
- Re-Rate / Change of Use (Plant and Process Optimization, Custom Redesigned Steam Path Components);
- Life Extension



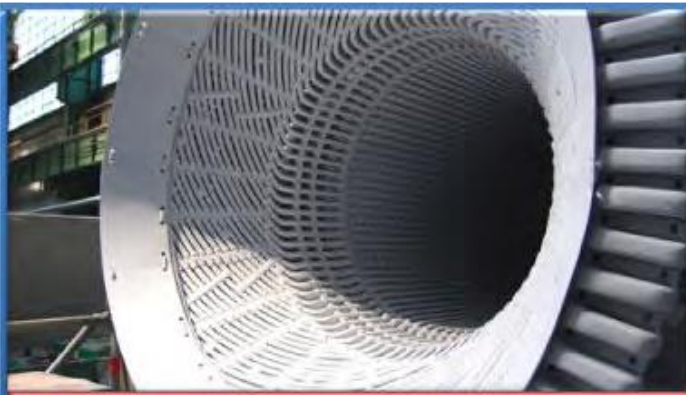
WHAT WE DO?



GENERATOR AND TRANSFORMER SERVICES



- Generator stator (New product: Design, Manufacturing; Upgrades: Longer life cycle, Improved output ratings; Troubleshooting: Mobile diagnostic teams; Repairs, Rewinds: Scheduled routine rewinds, Emergency rewinds; Reverse Engineering);
- Generator rotor (Manufacturing, Upgrades, Repairs, Rewinds, Inspections, High Speed Balancing (Schenk DI-90 dynamic balancing equipment), Mechanical legalization - In Facility or As Field Service;
- Transformers (Manufacturing capabilities of complete transformer, Large manufacturing area, Expertise in modern design & calculations software, Upgrades & modernizations, Trouble shooting, Tech recommendations, Powerful High Voltage, Testing Station at site, Traditional as well as modern testing equipment, Field Service).

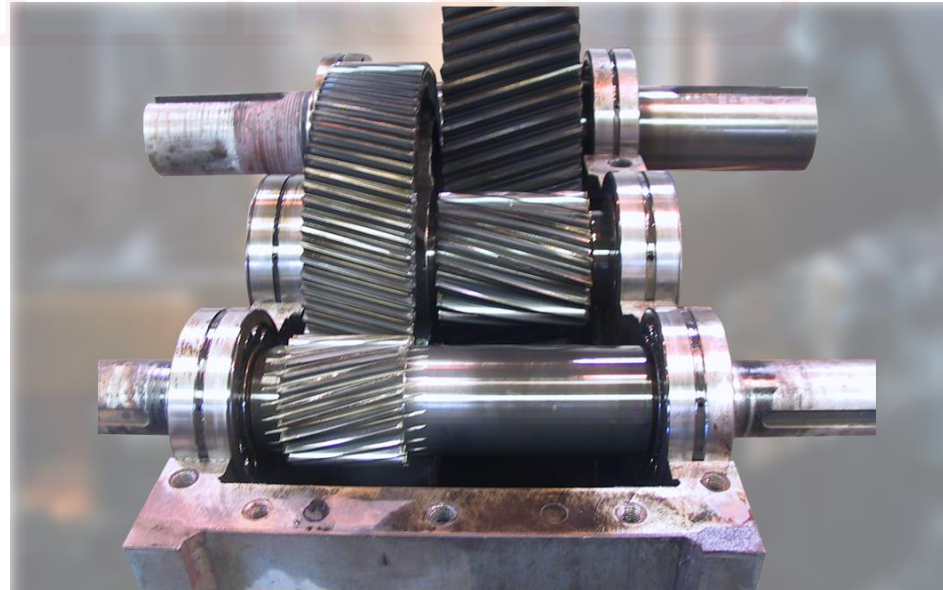


WHAT WE DO?

GEARBOX SERVICES



- Gearbox general overhauling (disassembly, cleaning, OEM spare parts supply or reverse engineering, parts repair, assembly, pre-commissioning commissioning, start-up, operation monitoring, full overhauling report);
- Inspection
 - Structural Interfaces
 - Measure Gear Backlash and Shaft Endplay
 - Check Gear Tooth Contact Patterns
 - Check Micro pitting
 - Dye penetrant examination
- Shaft alignment (laser, face and rim method as well as reverse alignment with dial gages);
- Bearings maintenance;
- Lube oil system flushing and monitoring;
- Troubleshooting;
- RCA (Root Cause Analysis);
- Vibration Analysis;
- Condition monitoring;
- Field services.



WHAT WE DO?



VALVE SERVICES



- Valves Maintenance & Testing:
 - Valve dismantling and inspection
 - Troubleshooting and Root Cause Analysis
 - Control valves positioners calibrating, using an Emerson Hart communicator
 - Valve body/Leak tests are performed according to the appropriate standard (API etc).
 - Pressure Safety Valves calibrating according to its set pressure (afterwards we are performing test as per API standard)
 - Valve repair (lapping, machining, etc.);
- Operations Technical Support
 - Root Cause Analysis –RCA
 - Valve modifications and upgrades;
- Process Safety Management;
- Field services;
- Long term service agreements.



WHAT WE DO?



VALVE SERVICES – MOBILE CONTAINERS AND EQUIPMENT



- Fully equipped test container for on-site testing of all common Shut-off valves, Safety valves and Control valves;
- Fully equipped repair container for on-site overhaul and repair of all common Shut-off valves, Safety valves and Control valves;
- Online Test & Repair equipment (Pre Vent Test, Ven Track, Orbit 10, Orbit 24, Polir, Profile, Titan, Optic 15, Valve Brush toolkit, Valve Inspection Set).

* All mobile equipment produced by Ventil company - Nederland



WHAT WE DO?



ELECTRICAL SERVICES



- Projects consultation
- Turnkey project solutions to Owners and Contractors for industrial projects
 - Engineering
 - Procurement
 - Construction
- Commissioning and Startup
- Maintenance Works
 - Generator maintenance
 - Electrical motor maintenance
 - Electrical heater maintenance
- Electrical Testing
 - Electrical Wiring Continuity Testing
 - Electrical Insulation Resistance Testing
 - Electrical Earth Continuity Path Testing
 - Electrical Testing of Non-linked Single Pole Switches
 - Electrical Earth Resistivity Testing
 - Electrical Performance Testing
- Automation

EFMS



WHAT WE DO?

TURN-KEY SOLUTIONS



Having PDL as a parent company, with a lot of experience in EPC projects in different industries, REMS can offer to its customers turn-key solutions for the following:

- Nitrogen Generation Package;
- Cooling Water Treatment System;
- Boiler Water Treatment System;
- Waste Water Treatment System;
- Chemical Dosing Skids;
- Compressor Stations (instrument air, inert gases, air, etc.);
- Cooling towers;
- Fire-fighting Pumping Stations;
- General Purpose Pumping Stations (boiler feed, water supply, irrigation, etc.);
- Loading arms.



WHAT WE DO?

PSA Nitrogen Generation Plant



Water Treatment Package



Chemical Dosing Skids



WHAT WE DO?

Compressor Stations



Cooling Towers



Fire-fighting Pumping Stations



WHAT WE DO?

Loading Arms



General Industry Pumping Stations





OUR REFERENCES



Long Term Maintenance Contract

- **Project:** Long Term Rotating Equipment Maintenance, Repair and Lubrication Contract
- **Location:** Aliaga/Izmir, Turkey
- **Year:** 2019
- **End user:** STAR Refinery
- **SOW:** Long Term Contract (5 years)





Lub Oil System Reconditioning

- **Project:** Extruder Lub Oil System Reconditioning
- **Location:** Aliaga - Turkey
- **Year:** 2019
- **End user:** Petkim Petrochemical Holding
- **SOW:** PC



PSA N₂ Generation Plant

- Project: N₂ PSA
- Location: Baku - Azerbaijan
- Year: 2013
- End user: SOCAR Methanol Company
- SOW: EPC

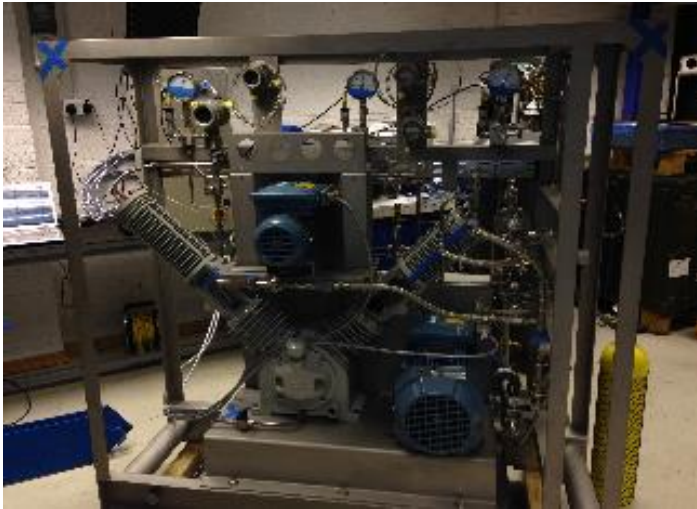




Cryogenic N₂ Plant

- **Project:** N₂ Cry-Plant
- **Location:** Baku - Azerbaijan
- **Year:** 2012
- **End user:** SOCAR Methanol Company
- **SOW:** Re-engineering of old plant





Inert Gas Booster/Receiver (Offshore)

- **Project:** Inert Gas Re-Compressor package
- **Location:** Offshore, Caspian Sea (West Azeri Platform)
- **Year:** 2014
- **End user:** BP/AMEC
- **SOW:** EPC



Compressed Air Package

- **Project:** Utility Air Compressor
- **Location:** Baku - Azerbaijan
- **Year:** 2012
- **End user:** SOCAR Methanol Company
- **SOW:** EPC



Chemical Dosing Package

- **Project:** Chemical dosing package
- **Location:** Baku - Azerbaijan
- **Year:** 2012
- **End user:** SOCAR Methanol Company
- **SOW:** PC





Water Treatment Package

- **Project:** Water treatment package
- **Location:** Baku - Azerbaijan
- **Year:** 2013
- **End user:** SOCAR Methanol Company
- **SOW:** EPC



Cooling Tower

- **Project:** Cooling tower upgrade
- **Location:** Baku - Azerbaijan
- **Year:** 2012
- **End user:** AzMeCo
- **SOW:** EPC



Fire Water Pump Station

- **Project:** Fire Water Pump Station
- **Location:** Baku - Azerbaijan
- **Year:** 2013
- **End user:** AzMeCo
- **SOW:** EPC



Isomerization Plant

- Project: Isomerization Plant
- Location: Nijniy Novgorod - Russia
- Year: 2016
- End user: Lukoil
- SOW: Steel & Pipework Construction





Loading Arm

- Project: Methanol Loading Arm
- Location: Baku - Azerbaijan
- Year: 2012
- End user: AzMeCo
- SOW: EPC





Pumps and mechanical seals (wet and dry gas seals)



Compressors (turbo – centrifugal and axial flow, positive displacement – reciprocating, rotary vane and screw), steam turbines, gas turbines and generators

VOITH

Power transmission – gear boxes and hydraulic couplings

OUR PARTNERS:





Üstay



wood.



OUR CUSTOMERS IN
TURKEY:





CONTACT DETAILS:

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