



SEFStech
energi



• WHO WE ARE



EFS Enerji Mühendislik Danışmanlık San. ve Tic. Ltd. Şti. is a Türkiye-based engineering company specialized in power plant, marine and wind energy mechanical services and consultancy. Established in 2020 and headquartered in İzmir, EFS Enerji operates a 1,800 m² mechanical overhaul workshop in Menemen, supporting both workshop-based and field-based operations. With a multidisciplinary team of marine and power plant engineers, field technicians and inspectors, EFS Enerji provides reliable, safety-focused and OEM-compliant services across:

- Gas, Bio fuel, Diesel Oil, Dual fuel and also HFO power plants
- Marine propulsion systems
- Wind turbine mechanical and composite components
- Industrial mechanical equipment

Our objective is to act as a long-term technical partner by delivering rapid response, high-quality overhaul solutions and comprehensive reporting for critical mechanical assets.

Thrust y(our)² Energy

- OUR MISSION



To become an energy and marine company that delivers high value-added, innovative, and reliable products and solutions to our customers across multiple sectors at home and abroad; strengthens its brand awareness to achieve national objectives; and inspires pride in its people.

Thrust y(our)² Energy

- OUR VISION



By fulfilling the requirements of its founding national purpose; to be an energy and marine company that sustains its long-term growth through the value it creates for its stakeholders in the domestic and international market, is preferred for its competitiveness, is trusted, and is environmentally and socially responsible.



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- QUALITY CERTIFICATES



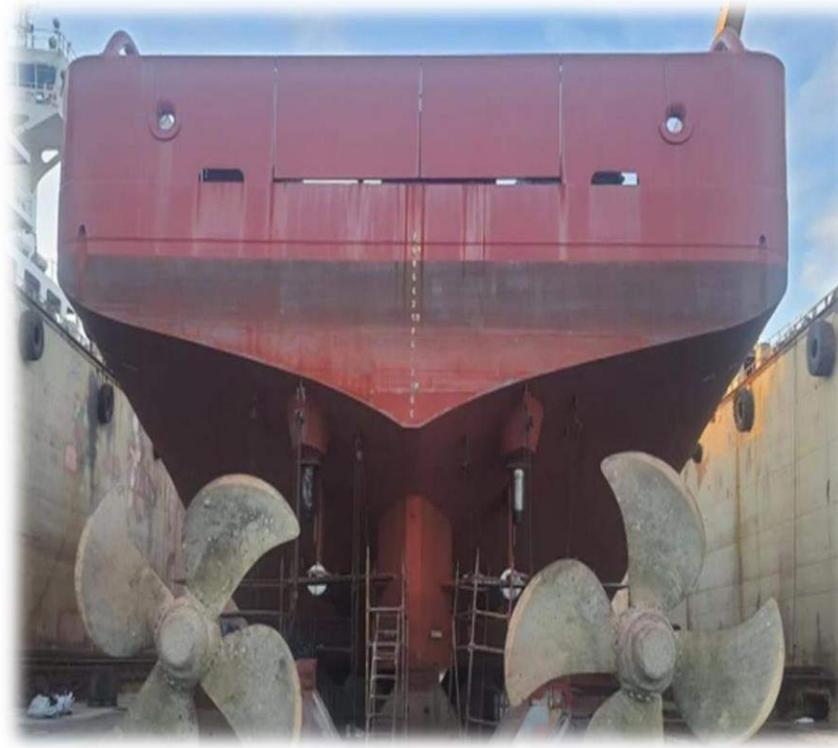
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- SECTORS

MAINTENANCE-REPAIR, INSPECTION, CONSULTANCY



- ENERGY SOLUTIONS



- MARINE ENGINEERING AND SOLUTIONS



- RENEWABLE ENERGY SYSTEMS

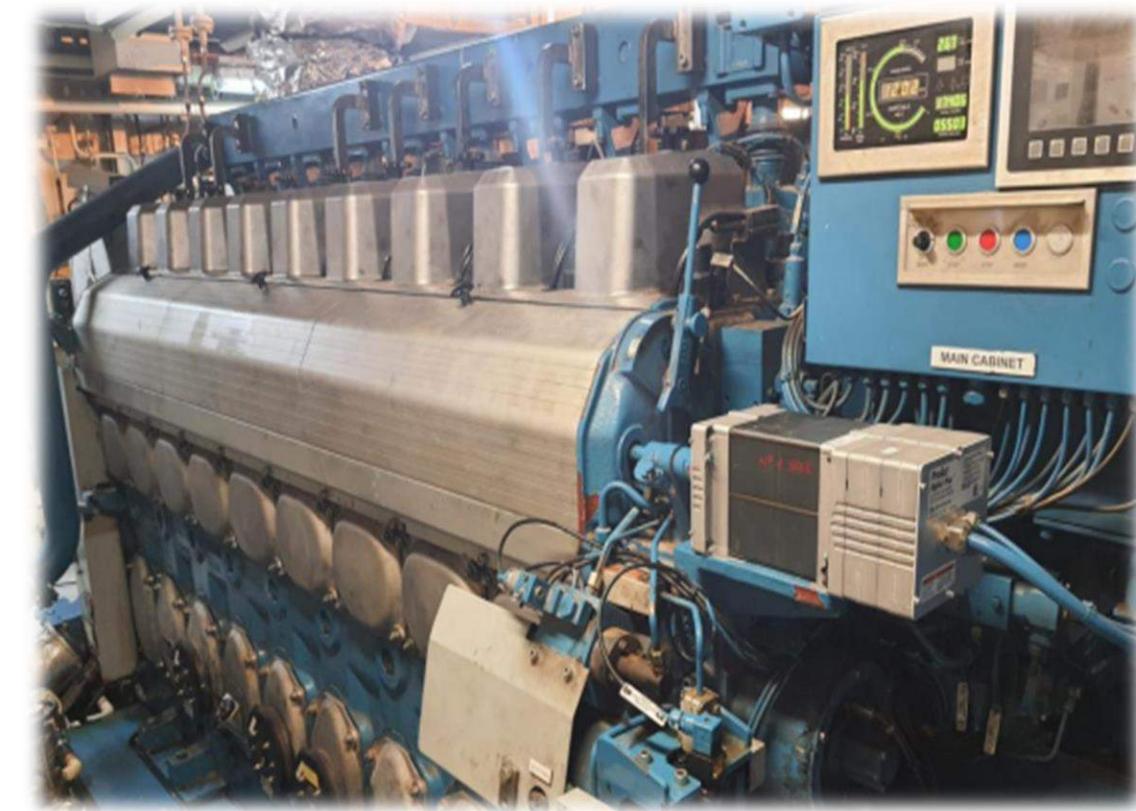
Thrust y(our)² Energy

- SECTORS



- ENERGY SOLUTIONS

Energy Power Plants, Co-/Tri-generation Systems and Energy Systems



EFS Enerji has extensive experience in GAS, BIO FUEL, DUAL FUEL, DIESEL and HFO-fired power plants, with specialization in Wärtsilä, MAN, Caterpillar, YANMAR, DAIHATSU, MAK and similar engine platforms. Services include:

- Major overhauls of generating sets and engines
- Crankcase, bearing, connecting rod inspections
- Cylinder head, piston, liner refurbishment
- Turbocharger & fuel injection system servicing
- Auxiliary system maintenance
- Laser alignment, Borescope inspections & vibration checks
- Detailed reporting according to OEM standards

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- SECTORS

- ENERGY SOLUTIONS

Energy Power Plants, Co-/Tri-generation Systems and Energy Systems



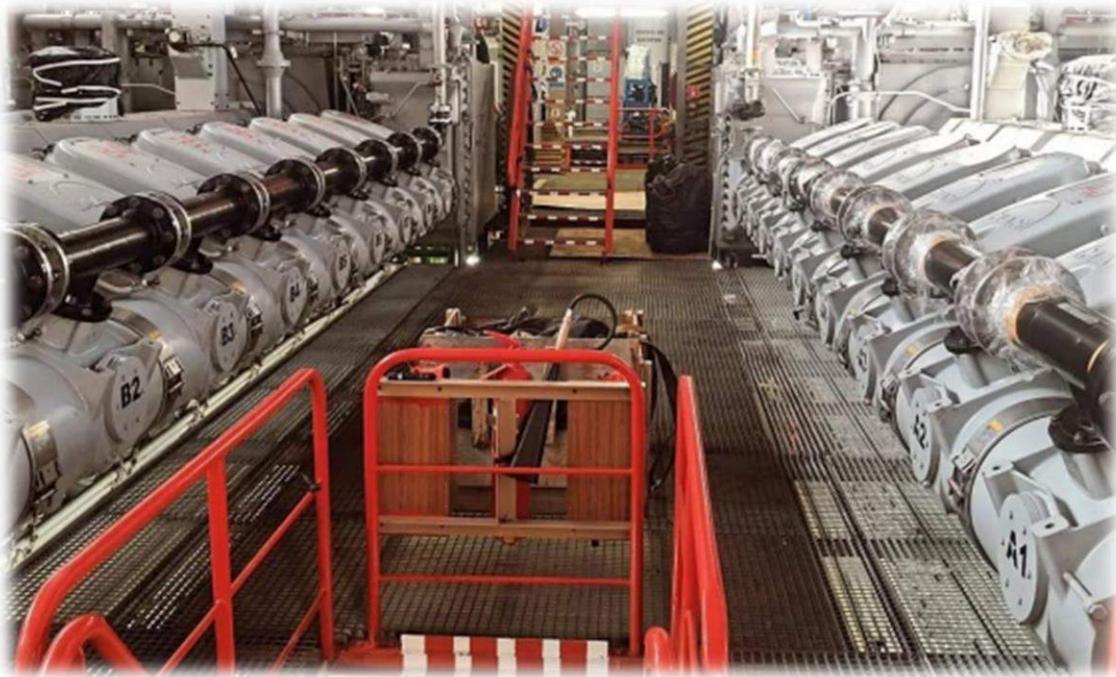
EFS Enerji provides on-site mechanical services in Turkiye and abroad. Capabilities:

- On-site major overhauls of generating sets and engines
- Rapid mobilization for breakdowns
- Commissioning support for newly installed engines
- Multi-brand expertise: Wärtsilä, MAN, CAT, MWM, YANMAR, JENBACHER, MAK, CUMMINS
- Owner's engineer & supervisory support
- Troubleshooting, diagnostics & root cause analysis

- SECTORS

- MARINE ENGINEERING AND SOLUTIONS

Marine Yachts, Commercial Vessels, Shipyards, Maritime Security Equipment, Ship Recycling Yard Services, and Spare Parts



Leveraging strong marine engineering background, EFS Enerji provides comprehensive services for vessels and shipyards. Marine service scope:

- Main & auxiliary engine overhauls (2 & 4 stroke engines)
- Auxiliary Equipment maintenance and overhauls
- Crankshaft & bearing inspection
- Turbocharger and governor maintenance and inspections
- Fuel system calibration, adjustments and inspections
- On-board troubleshooting & commissioning jobs

- SECTORS

- RENEWABLE ENERGY SYSTEMS

Wind Energy Services – Mechanical, Drive Train & Blade Work



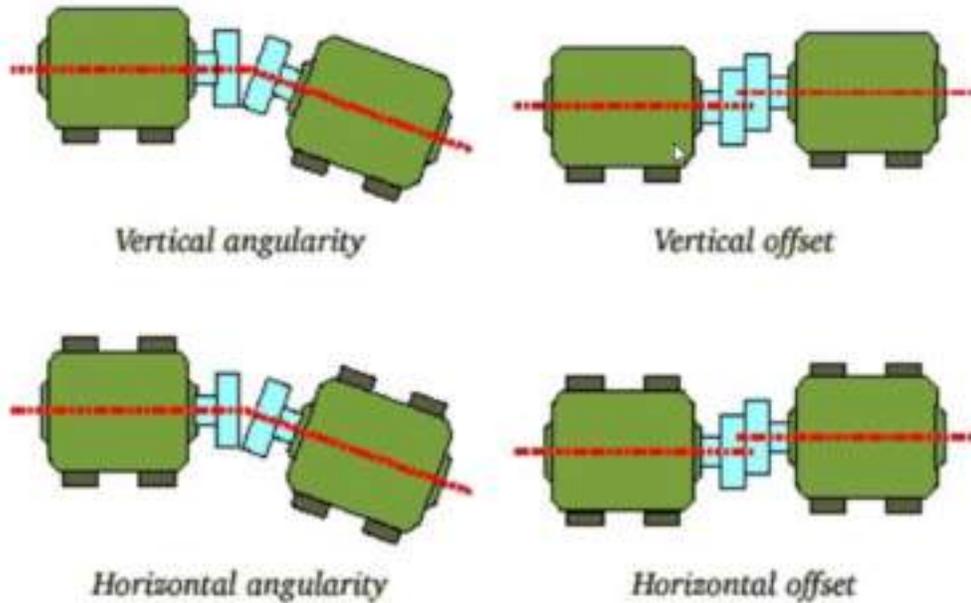
EFS Enerji supports OEMs and wind farm operators with both ground-level and up-tower mechanical capabilities.

Wind services include:

- Yaw & pitch gear maintenance
- Brake caliper, lubrication unit & cooling system maintenance
- Main bearing & drive train mechanical inspections
- Blade inspections & composite repair and support
- NDT operations on blades and towers
- Rope access teams for difficult areas

- TECHNICAL CAPABILITIES

- LASER ALIGNMENT & CHECKS



PROBLEMS DUE TO THE MISALIGNMENT

- Energy Loss
- Wear on engine equipments
- Low efficiency

Production loss and delay

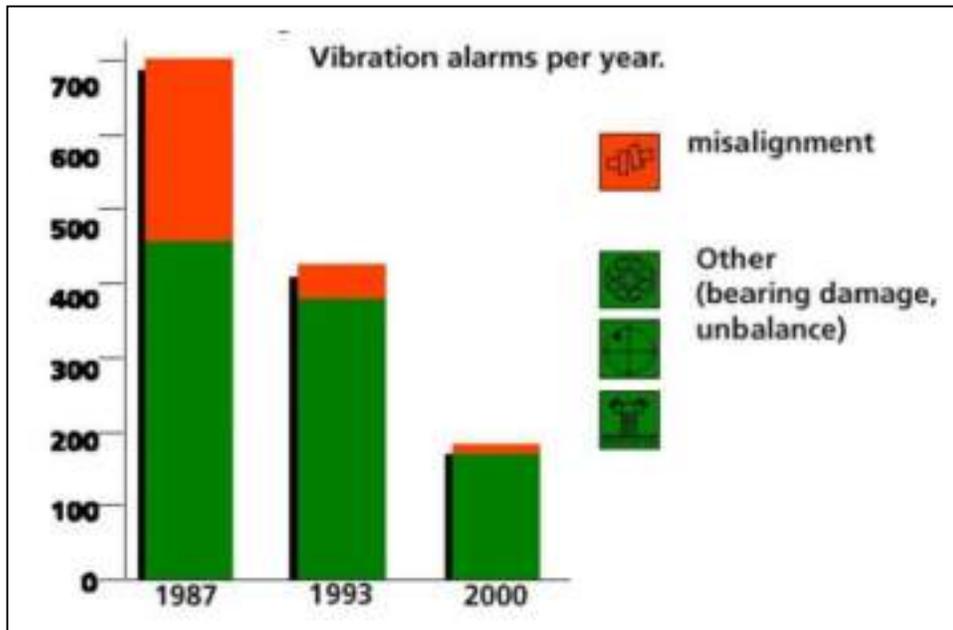
Correct alignment of the equipment is very important when assembling. So well-aligned equipment will last long. In addition, energy consumption is saved in well-aligned equipment.

• TECHNICAL CAPABILITIES

• LASER ALIGNMENT & CHECKS

MISALIGNMENT & EFFECTS

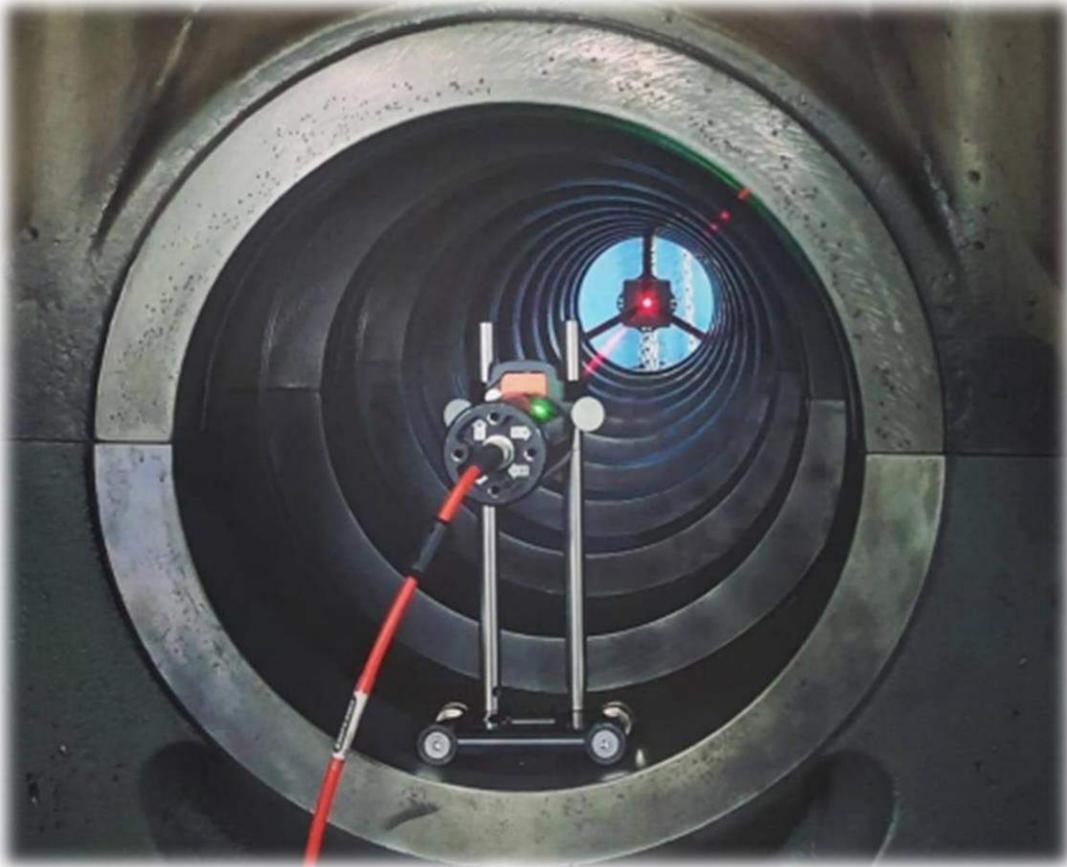
- In a refinery in England, the alignment tolerance range was reduced step by step from 1987 until 2000. At this stage, the number of vibration alarms was recorded and the following data were obtained. (Source: Prüftechnik)
- As can be seen, vibration elevations due to misalignment have decreased as well as other faults.



When, on average, all misalignments will cause 0.75% more electricity consumption, when the instantaneous consumption of rotating equipment is calculated as 30MW and the cost of the excess electricity consumed as USD;

$$30.000 \text{ kW} \times 0,75\% \times 0,105 = 23,625 \text{ USD/hour or } 198.450 \text{ USD/year}$$

• TECHNICAL CAPABILITIES



EFS Enerji combines mechanical overhaul expertise with advanced inspection technology.

Capabilities:

- Precision measurement tools
- Laser alignment systems
- Borescope inspections
- Infrared thermography (IRT)
- NDT (UT, MT, PT, VT) with Level III oversight
- On-site diagnostics & condition evaluation
- Full reporting in line with international standards

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- TECHNICAL CAPABILITIES

- LASER ALIGNMENT SYSTEMS

ROTALIGN touch is the first Cloud-enabled shaft alignment system featuring touchscreen display, intelligent sensor technology and built-in mobile connectivity.

Application:

- Alignment of horizontal, vertical and flange-mounted rotating machines.
- Coupled, uncoupled and non-rotatable shafts.



- TECHNICAL CAPABILITIES

- LASER ALIGNMENT SYSTEMS

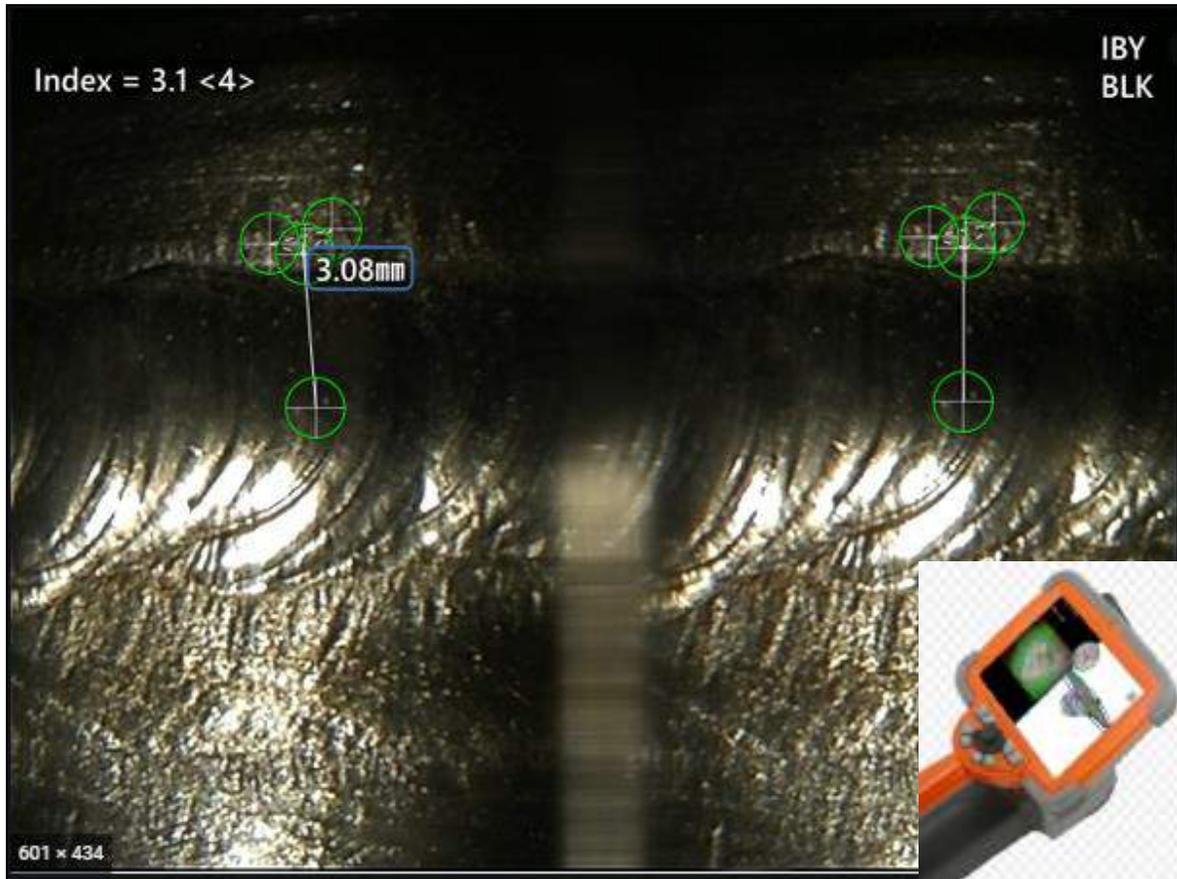


Features:

- sensALIGN 7 sensor with IntellSWEEP technology
- Intelligent measurement modes such as the uncoupled mode methods IntellPASS and IntelPOINT
- Multi-Coupling simultaneous Live Move with acoustic assistance
- Capacitive touchscreen
- Measurement table showing the different alignment jobs
- Customized tolerances (including asymmetric)
- Interactive real 3-D format for machines
- Multi-Coupling Live Trend
- Communication using WiFi, Bluetooth and RFID
- Built in camera

- TECHNICAL CAPABILITIES

- BORESCOPE INSPECTIONS



This Technologies' Video Borescopes and Video Probe collection give you the highest image quality and measurement capability on your visual inspection device so you can be confident your inspections are thorough and accurate.

Our Mentor Visual IQ Detect videoscope models give you industry-leading image quality, for the highest probability of detection (POD). With technologies like True Sight™ imaging, our Mentor Visual IQ model will give you the sharpest HD video and image quality, even from increased distances. For more advanced analysis, Real3D measurement technology provides a fully surfaced point cloud for measurement cursor accuracy.

In order to maximize the efficiency and completeness of the inspection data capture workflow, all our video borescopes offer Menu Directed Inspection (MDI). This is an intuitive on-borescope application that guides users through the inspection process and automatically provides rich data capture that includes meta-data tags that provide asset and inspection component location, as well as asset health assessments for archive storage, analytics and reporting purposes.

- TECHNICAL CAPABILITIES

- INFRARED THERMOGRAPHY (IRT)



Thermal imaging, and thermal video are examples of infrared imaging science. Thermographic cameras usually detect radiation in the long-infrared range of the electromagnetic spectrum (roughly 9,000–14,000 nanometers or 9–14 μm) and produce images of that radiation, called thermograms. Since infrared radiation is emitted by all objects with a temperature above absolute zero according to the black body radiation law, thermography makes it possible to see one's environment with or without visible illumination. The amount of radiation emitted by an object increases with temperature; therefore, thermography allows one to see variations in temperature.

- TECHNICAL CAPABILITIES

- INFRARED THERMOGRAPHY (IRT)



Additional Benefits of Thermography in the Field; Many industries benefit from the advantages of using thermography in the field. Thermography is often used to find faults in electrical systems without having to stop power to the system itself. This can be extremely beneficial for companies without the capacity to shut down systems for days at a time while troubleshooting issues. The ability to analyze thermal patterns without having to open junction boxes or physically touch the system makes it significantly safer for electricians to solve problems. Similarly, there are many mechanical applications for thermography, such as analyzing the functionality of heat exchangers, valves, engines, tanks, piping systems, and air handling systems.

- TECHNICAL CAPABILITIES

- NDT (UT, MT, PT, VT) & UT (Ultrasonic test)



Ultrasonic testing (UT) is a family of non-destructive testing techniques based on the propagation of ultrasonic waves in the object or material tested. In most common UT applications, very short ultrasonic pulse-waves with center frequencies ranging from 0.1-15 MHz, and occasionally up to 50 MHz, are transmitted into materials to detect internal flaws or to characterize materials. A common example is ultrasonic thickness measurement, which tests the thickness of the test object, for example, to monitor pipe work corrosion.

Ultrasonic testing is often performed on steel and other metals and alloys, though it can also be used on concrete, wood and composites, albeit with less resolution. It is used in many industries including steel and aluminum construction, metallurgy, manufacturing, aerospace, automotive and other transportation sectors.

- **TECHNICAL CAPABILITIES**

- **NDT (UT, MT, PT, VT) - UT (Ultrasonic test)**



Crankshaft / Shafts : To detect faults on/under surface.

Other engine parts : Exhaust/inlet valves, cylinder heads, connecting rods, bearings, etc.

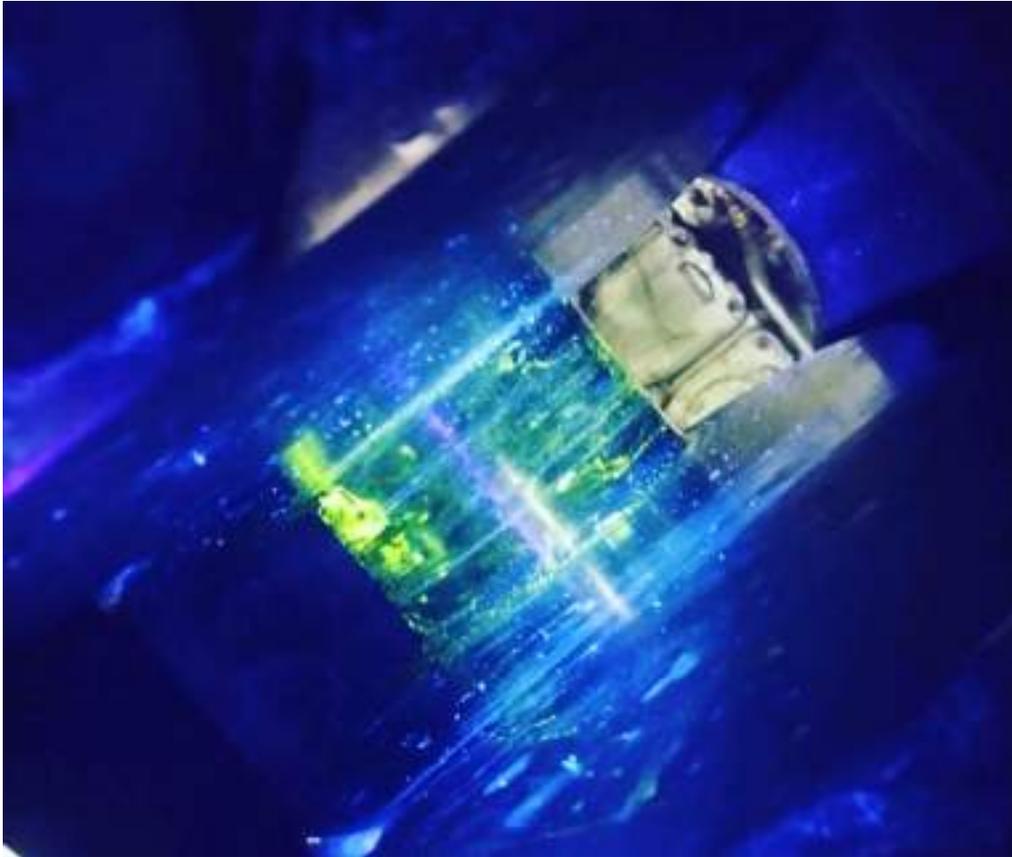
Wind Turbines : Blades, gear boxes, foundation, construction.

Welding : To check welding quality and fault dedection.

So we can do ultrasonic inspection by using phase array flaw dedection and conventional system. By certification of ISO 9712 UT Level 2

- TECHNICAL CAPABILITIES

- NDT (UT, MT, PT, VT) - UT (Ultrasonic test)



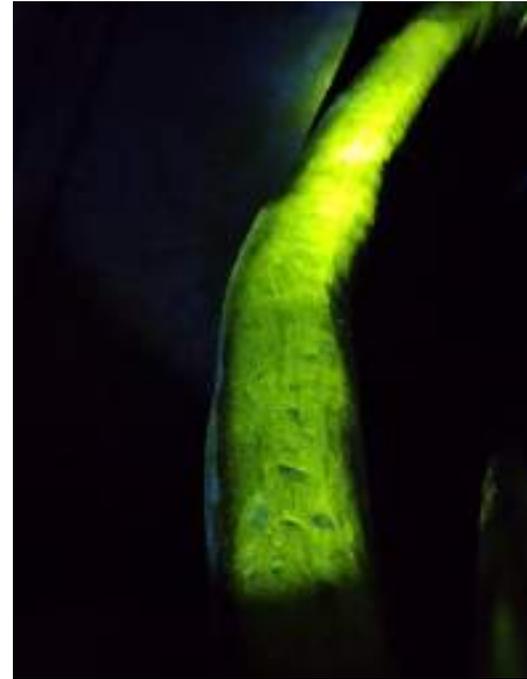
Magnetic particle inspection (often abbreviated MT or MPI) is a nondestructive inspection method that provides detection of linear flaws located at or near the surface of ferromagnetic materials. It is viewed primarily as a surface examination method.

Magnetic Particle Inspection (MPI) is a very effective method for location of surface breaking and slight sub-surface defects such as cracking, pores, cold lap, lack of sidewall fusion in welds etc in magnetic materials.

Magnetic Particle Inspection (MPI) provides very good defect resolution and is used extensively on: Welded fabrications in magnetic material, Castings, Locating fatigue cracks in items subject to cyclical stress

- TECHNICAL CAPABILITIES

- NDT (UT, MT, PT, VT) - PT (Penetrant test)



- TECHNICAL CAPABILITIES

- NDT (UT, MT, PT, VT) - VT (Visual test)



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- SALES AGENT & DISTRIBUTORSHIPS

- GlobeCore (Wind Turbine Maintenance Equipment)



We are authorized sales agency of GlobeCore GMBH in Turkiye. We are responsible from sales of Wind Turbine Maintenance Equipment and Transformer Oil Processing Equipment.

- SALES AGENT & DISTRIBUTORSHIPS



- 3S INDUSTRY



As EFS Enerji, we are the official distributor in Türkiye of 3S products, which have proven their performance on a global scale in the wind energy sector. The 3S product portfolio offers a broad range of solutions covering access, maintenance, and repair processes for wind turbines.

Within this scope, the portfolio stands out with platform solutions that (1) reduce time losses during maintenance operations, (2) positively impact downtime and operational efficiency, and (3) provide safe and effective support for blade repair and service activities.

In addition, products and solutions developed by 3S specifically for offshore wind applications are also included in our portfolio and are offered for evaluation in line with project-based requirements.

Leveraging our field experience in the maritime and energy sectors, we go beyond simply supplying 3S products; we deliver them to the Turkish market with a focus on correct implementation, the right use-case scenarios, and a sustainable value approach.

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• ENERGY SOLUTIONS



* In 2021, under the YEKDEM scheme in Çorum, the facility was commissioned following the installation of machinery operating on pyrolysis fuel produced from waste tires. Subsequently, a hybrid solar PV (GES) system was installed.

It carried out the installation and commissioning of facilities operating on tire-derived pyrolysis fuel in Çanakkale and also with biodiesel power plant in Ankara.

* Gas, Diesel, Dual Fuel and Bio fuel engines and auxiliary equipment commissioning, major overhauls and maintenance at power plants.

Some Referance Jobs;

UZBEKISTAN/TÜRKIYE - W50SG & W34SG: Major engine overhauls were performed.

- MARINE SOLUTIONS



* Maintenance, Services, Consultancy for Marine solutions and major overhauls and inspection services on board the ships (Powerships, Commercial Ships, LNGT, Yachts etc.)

* 2 and 4 stroke engines and auxiliary equipment services on board.

Some Reference Jobs;

SENEGAL – LNGT vessel: Major engine overhauls were performed.

ECUADOR – W50DF: Engine installation and commissioning activities were completed.

• WIND ENERGY



- 3S Equipment Suppliers and Services
- GlobeCore Wind Turbine Equipment Suppliers.
- Maintenance and overhaul of mechanical equipment (include hydraulic and pneumatic system).
- NDT Inspections (UT Level-3, MT Level-2, VT Level-2, PT Level-2).
- Composite equipment (blade and nacelle) inspection repair and maintenance.
- Paint inspections and operations on turbines.
- Borescope inspections.

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- OUR REFERANCE



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HOW CAN WE SUPPORT YOU?



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