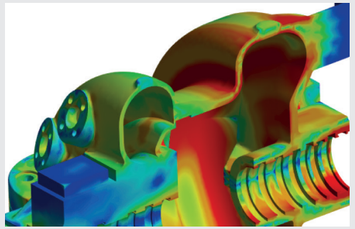
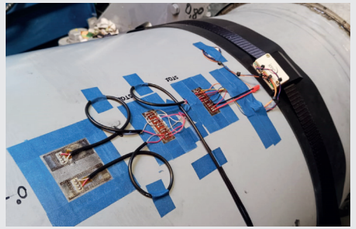
WE OFFER A BROAD PORTFOLIO OF SOLUTIONS DIVIDED IN 2 LINES OF WORK



Integrity Engineering Advanced Engineering

- Finite element analysis (FEA) using ANSYS.
- Design by analysis.
- Computational fluid dynamic (CFD).
- Fitness-for-service (FFS): local and general metal loss, dents and gouges, brittle fracture, fatigue, SCC, CUI, among others.
- Pipe flexibility using CAESAR II software.
- Structural Analysis and Design.
- Design, calculation and analysis of buoyancy and stability of floating roofs for oil tanks by computer simulation.



Integrity Engineering RBI and Inspection

- Preparation of inspection plan.
- Reconstitution of technical documentation and asset databooks.
- Modification and Repair Projects.
- Advice and implementation of the RBI (Risk Based Inspection) program.
- Design, installation and operation of SHM (Structural Health Monitoring) systems for damage prediction and monitoring.
- Consulting services in inspection engineering by certified professionals according to API 510 (vessels), API 570 (piping), API 571 (damage mechanisms), API 580 (risk-based inspection) and API 653 (tanks) standards.

ENGINEERING OF CRITICAL ASSETS

- Consulting, advising, analysis and integrity assessment by API certified professionals (including damage mechanisms and inspection plans).
- SHM (Structural Health Monitoring) systems for early detection and monitoring of damage, employing a wide range of sensors and data acquisition equipment using German technology and reliability.
- Application of the RBI (Risk-Based Inspection) methodology to prepare inspection plans and manage the mechanical integrity of critical assets.

WHO WE ARE

For over 40 years, the Priner Group excels in industrial maintenance engineering services and infrastructure. Priner offers safe and efficient solutions in access, industrial painting, thermal insulation, integrity engineering and inspection, pressurized habitat and structural restoration, combining safety, high productivity and technical excellence.

Operating throughout the Brazilian territory, Priner provides services across foundational industries (petrochemical, steelmaking, oil exploration and production, paper and pulp, naval, mining, sugar-energy, and metalworking) and infrastructure (railway and road viaducts and bridges, piers, ports, dams, WTP&WWTP, wind farms, and special works of art).

- A company listed on B3 (the Brazilian stock exchange).
- 12 offices distributed throughout Brazil.
- API, ASNT and ISO 9712 certified inspectors.
- Ansys, Star CCM+, PV Elite, TWI RiskWise, Caesar II and other major engineering softwares.

GRUPO Priner

Integrity and Inspection Engineering Unit

POLIEND BRITO&KERCHE TRESCA LABTESTE SEMAR WELDING

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Integrity Engineering and Inspection

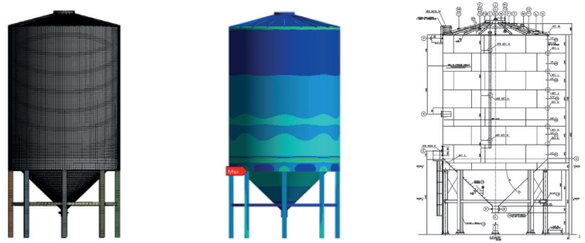
ADVANCED ENGINEERING

Regardless of the complexity, we provide excellent engineering services, ensuring the safety and reliability of your assets.

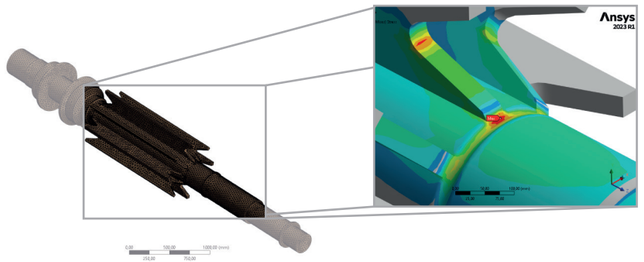
GRUPO Priner

FINITE ELEMENT ANALYSIS
FEA

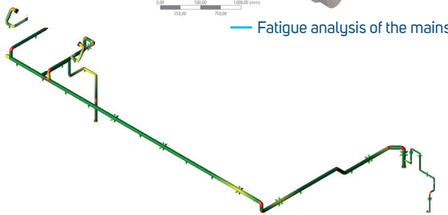
- Fitness for service – API 579.
- Design by analysis – ASME Sec. VIII.
- Asset life extension.
- Repair design using FEA.
- Piping flexibility.
- Structural steel design and calculation.



— Design by analysis of tank —



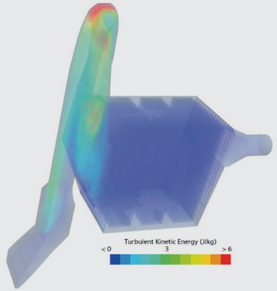
— Fatigue analysis of the mainshaft of a hydropower plant —



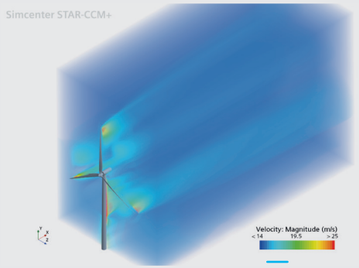
— Flexibility analysis of piping —

COMPUTATIONAL FLUID DYNAMICS
CFD

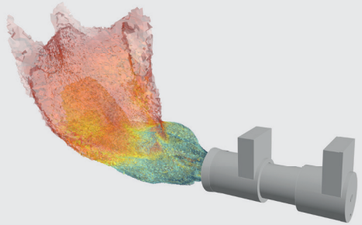
- Design of reactors and flow equipment.
- Solutions to reduce head loss and flow improvement in pipelines.
- Fluid-structure interaction.
- Wind turbines.
- DEM analysis for mining conveyor systems, grain handling, particule mixing.
- Reduction of pollutants and increase of combustion efficiency in boilers, furnaces and reactors.
- Acoustic emissions and reduction of NVH systems.
- Aerodynamic for optimization of land, sea and aeronautical vehicles.



— Electrostatic precipitator —



— Wind turbine generator —



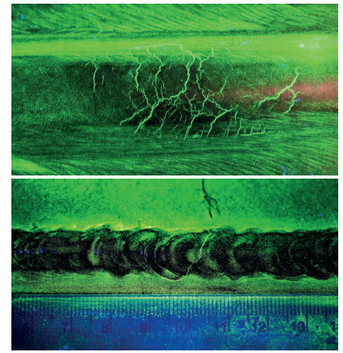
— Methanol burner —

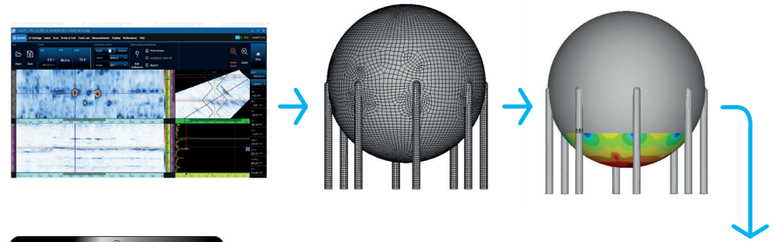
FRACTURE MECHANICS

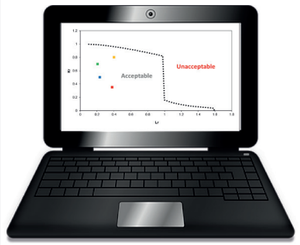
Lack of fusion, lack of penetration on weld, fatigue cracking, SCC, HTHA and other cracks/flaws detected on NDTs can be assessed and, in most cases, there is no need to repair.

They can be calculated using the fracture mechanics method following the criteria of Standards BS-7910:2019 and API-579/FFS-1 Ed. 2021 .

Your equipment can operate safely even with the presence of these cracks.







Flaw #	Kr	Lr	Length (mm)	Height (mm)	Maximum allowable height (mm)	Evaluation	Propagation rate (mm/cycle)	Fatigue average life (cycles)
3 e 4	0.213	0.204	14	5.0	8.4	Acceptable	7.1E-07	100 000
2 e 5	0.175	0.191	11	5.3	6.3	Acceptable	2.7E-07	100 000
2	0.259	0.366	19	4.0	7.0	Acceptable	9.3E-06	100 000
2	0.648	0.193	196	7.0	12.6	Acceptable	8.9E-06	100 000
6 x 7	0.610	0.200	772	6.0	10.3	Acceptable	7.3E-06	100 000