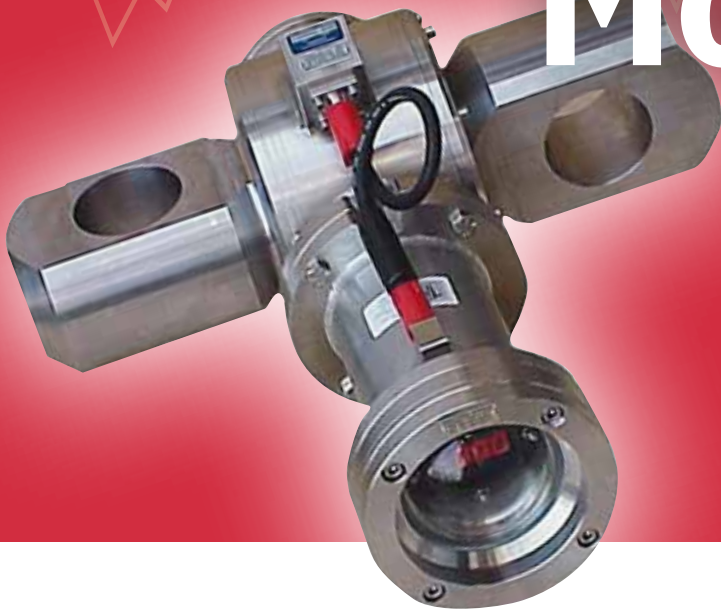


masters in objective reality



Diagnosis + Monitoring



*A unique combination of know-how,
experience, insight and vision!*

The **world** of **Techno Fysica**



Marine, offshore & industry

Our primary field of operations is the maritime sector. You can see that as soon as we step on board, but our work doesn't stop there. You'll come face to face with an engineer who immediately understands what's going on, speaks the same language as the owners and users and provides solutions. Decades of experience enable us to contribute constructive ideas on the most diverse issues. And that also includes innovative applications.

Monitoring AND diagnosis.

Our strength lies in this unique combination

As a company specializing in technical measurement, we can monitor, analyze and diagnose. In other words, we investigate problems and prevent them. Thanks to our continuous presence in the field, we're more than just a supplier. We know the market, the applications and the problems – and we can respond to them. Together, this makes a unique combination:

Techno Fysica.



What's the cause of the cause?

If you ask a question, you'll get a precise answer. But is that really what you want? For example, let's suppose a support breaks off. The precise diagnosis is metal fatigue. So that's the cause. But our added value is that we always look a bit further. Is the material the right one? Is the construction right? Is the impact force too high? Is resonance involved? If you wish, we can supplement our conclusion with a recommendation as to how things can be done better or how the problem can be investigated in more detail.

We don't sit around waiting for innovations

We're a step ahead of them. In fact, our measurement and monitoring systems are designed to accommodate innovations quickly and efficiently. And that's the order of the day in the maritime sector. So our measurement solutions are geared to the constructions concerned and not vice versa. This is custom building that works. We're talking about short-term static and dynamic measurements for diagnosis and long-term solutions in all possible forms of monitoring.

Precise and objective

Nothing stays hidden from us. Our diagnoses always reveal a relevant cause. Techno Fysica

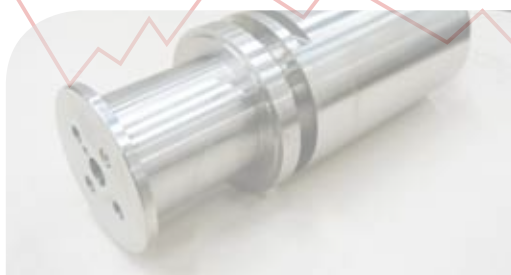
measures every vibration and just about every mechanical parameter that can occur in an installation. Our measuring equipment and systems are state-of-the-art and accurate to the highest possible level. We constantly optimize our software. And once we have analyzed the data, we provide you with recommendations for resolving your problem proficiently.

We're never satisfied with the status quo

We are engineers with a constant ambition to extend our limits. Which is why we are always looking for improvements and new solutions. We think differently and we act differently. We are also open and honest, and we try to inspire you. Collaboration with you is a source of strength!

Quality matters

Quality comes at a price. And we're good. In the long-term, the results of our work will lead to considerable cost-savings or to preventing extra expenses. That's why an increasing number of clients are involving us in the design phase. But we're also ready to provide you with a second opinion, or to perform standard checks and routine work. And there too you'll probably say: "Good work and not expensive. Certainly not too expensive!"

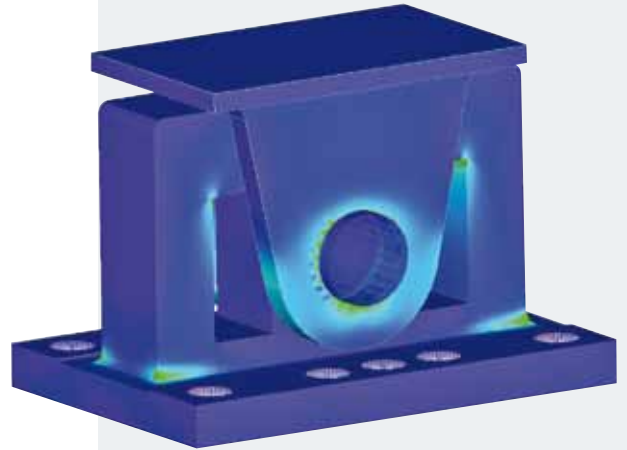


Techno Fysica

Be absolutely sure

Techno Fysica: **Diagnosis**

Diagnosis is one of the primary activities in engineering and solving all kinds of mechanical problems. For this we use our own measurement systems that are constantly being expanded. These systems can be deployed worldwide by our expert employees, even when certificates such as Opito and Nogepe are required. We can help you with the following services:



Measuring

- vibrations, displacements, sound and comfort
 - power and torsion vibrations
 - forces, stress or strain
 - pressure, pressure pulsations & flow
 - emissions (SO_x, NO_x)
 - thermography
 - condition monitoring
- and more*

Analyzing measurement data

- ODS & modal analyses
- vibrations (ISO 18436.2 cat. 3)
- torsional vibrations
- linked to finite element or failure analyses

Calculating

- torsional vibrations according to class rules
- finite elements (static & dynamic)
- fracture mechanics
- alignment & lateral vibration
- resilient mounts (6 DOF)

Failure analysis

- metallurgical investigation
- equipment, engines or structures
- root cause failure analysis

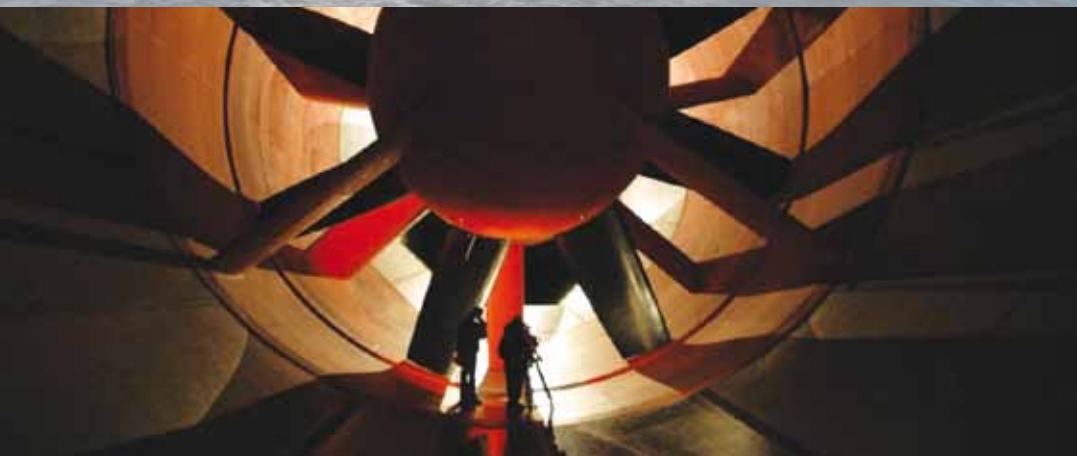
Consultancy

- static and dynamic behavior of (machine) structures
- during engineering, life and updates

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Be absolutely sure



Photo: Heesen Yachts



Markets served

- merchant vessels (inland to Capesize)
- offshore, dredging & towing
- power generation & industry
- cruise, ferry & yachts
- navy



Diagnosis + Monitoring



info@technofysica.nl

Techno Fysica: **Monitoring**

Load Monitoring Solution Provider

This department is responsible for the:

- **design**
- **production**
- **commissioning**
- **maintenance of high-end measuring and monitoring installations**



Proven experience in designing force transducers for extreme applications, meeting the most demanding requirements of our customers in offshore, dredging and heavy industry.

Our expertise in Strain Gauge Technology applies to many areas, while our custom manufacturing ability focuses on the following industries:

Offshore & Deep-sea
Dredging
Research & Development
Defense & Civil Engineering
Heavy Industry
Traffic & Transport
Construction
Railways
Automotive
Material Handling

We offer you complete load sensor solutions from design conceptions to application. Whether you are looking for a standard product or require a custom-built sensor with related instruments and dedicated software, we provide the solution!

Advanced techniques are used to design our force transducers, such as the finite elements method to obtain the highest possible measuring accuracy combined with exceptional reliability and safety.

We test and calibrate every load cell we make. We have the ability to test all our transducers under (proof) loads up to a maximum of 3,000 tons. Our hydraulic testing capability has provided our various customers in the oil & gas and shipping industries with a valuable resource.

monitoring@technofysica.nl



Diagnosis + Monitoring





Applications

Our sensor products and components include the following features:

- design configurations for measuring forces from 1 kg to 7,000 tons
- multi-axis transducers (variety of force measurement combinations housed in one sensor)
- predictable repeatability
- special situations, extreme environments
- protected against accidental shock loads
- multi-scale, high precision
- smart sensor
- compact, stainless, hermetic design
- sub- and deepsea (down to 3,500 m)
- rugged durability
- data logging
- battery operated
- radio telemetry
- many other stringent application demands of manufacturing and testing

FULLY INTEGRATED load cell systems for

- crane barges
- tensioners and winches
- pipelay barges
- subsea trenchers and plows
- sheaves or pulleys
- shackles, load links
- hydraulic cylinders
- structural
- towing or pulling
- mooring and wireline tension

SYSTEM solutions

- controls and instrumentation for
 - reaction force and mooring load*
 - crane overload protection*
 - constant tension and fatigue*
 - safety equipment*
 - cumulative transshipment systems*
- process data recording & logging (historic, trend, etc.)
- system health and life-cycle monitoring
- wire line length and speed
- weighing

SERVICES and capabilities

- feasibility studies, concept and detailed engineering
- dedicated software development
- consulting, troubleshooting and failure analysis
- structural stress measurements
- load cell services, reconditioning and repair, all brands!
- testing, re-calibration up to 3,000 tons, certification
- system erection, field installation, commissioning
- weighing and COG determination
- equipment rental



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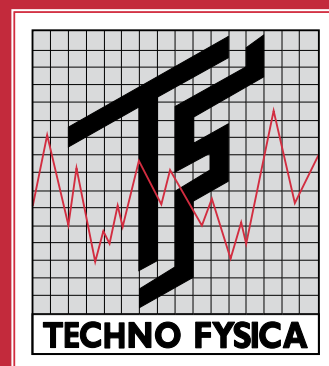
Extra services

Consultancy, advice and support

Feasibility studies

Product development

Expert witness / arbitration



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