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Integrally-Geared Centrifugal Compressors

Advanced Compressor Solutions
For Your Critical demands

HYTC 400 - 600
HYTB 700 - 900
HYTA 1000 - 1500



—
Tomorrow needs Innovation.
—



*Tomorrow
needs Innovation.*



HAVAYAR
Tomorrow Needs Innovation.



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*The Innovation you
need, to win.*

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Havayar as a pioneer in the design and manufacture of rotary equipment, with more than 20 years' experience in the Iranian industry market has a strategy to develop the products and services market, in a method that the quality of the product promotes simultaneously. Honesty, respect, security and order are the Havayar's organizational codes of behavior. We also make our best efforts by doing our social responsibilities to turn into a good sample in the country. Our machines in continuous operation anywhere with full 100% service and high efficiency.

We strive to be your partner of choice to maximize your operating performance—and we have all the tools, technologies, and expertise needed to deliver the solution that's best for your situation. Through robust capabilities we are committed to providing you with a flexible and tailored solution that results in the highest availability, reliability, and efficiency for the entire life of your equipment.



HAVAYAR

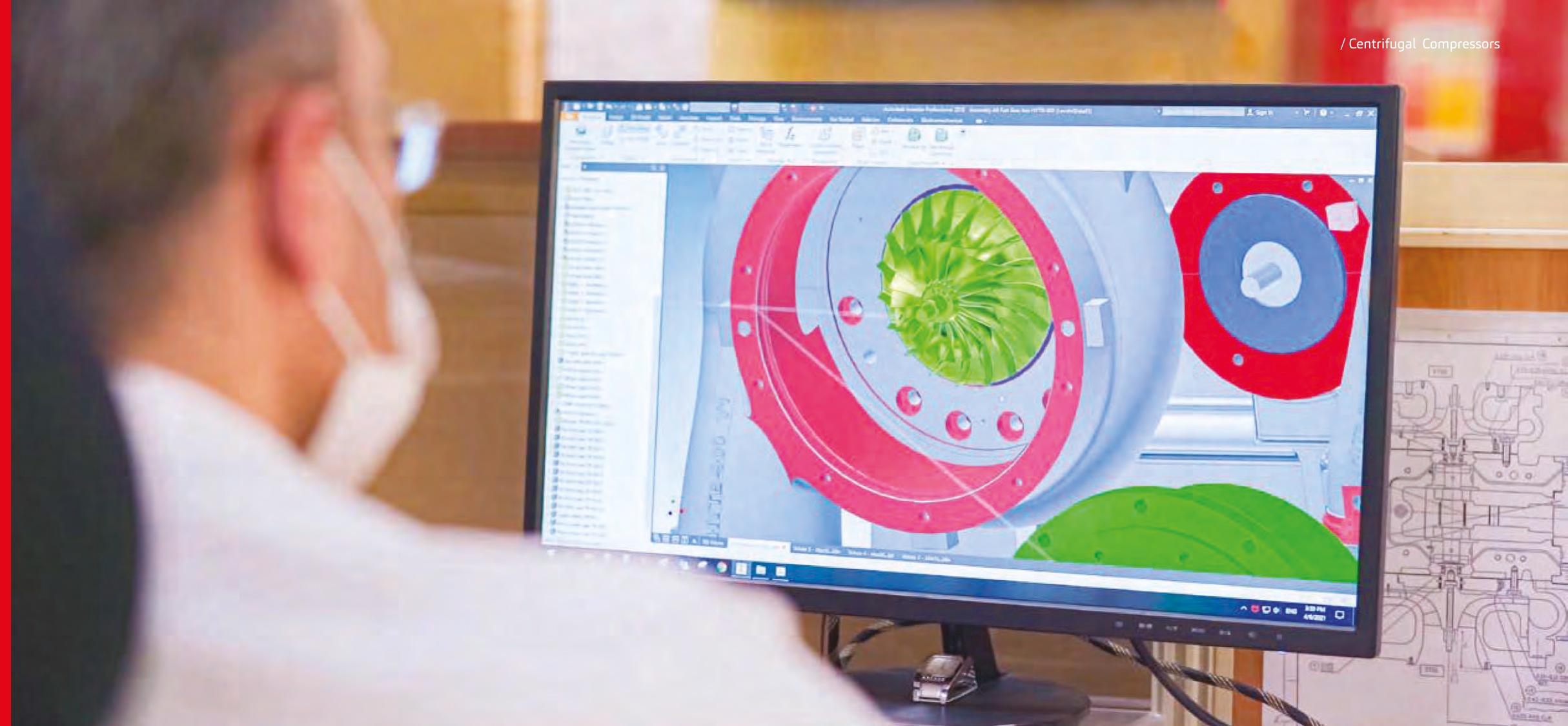
Our goal is to provide the best solution by considering the special condition of different industries focusing on Oil and Gas, Glass, Power Plant, Steel, Mineral, Automotive Industries.



At Havayar, We Offer Customers The Unique Combination Of Technical Know-How And Manufacturing Expertise Needed To Transform Every Challenge Into A Success.

Integral Gear Technology Offers You:

1. Customization options that improve your process
2. Shorter installation and commissioning times
3. Maximum compressor efficiency
4. Maximum reliability
5. Power savings
6. Compact and lean design



Driving Centrifugal Compressor Technology

Based on over 22 years of accumulated experience in Compressor manufacturing and precision machine industry, now Havayar Industrial Group is the first manufacturer of integrally geared centrifugal compressors in Iran.

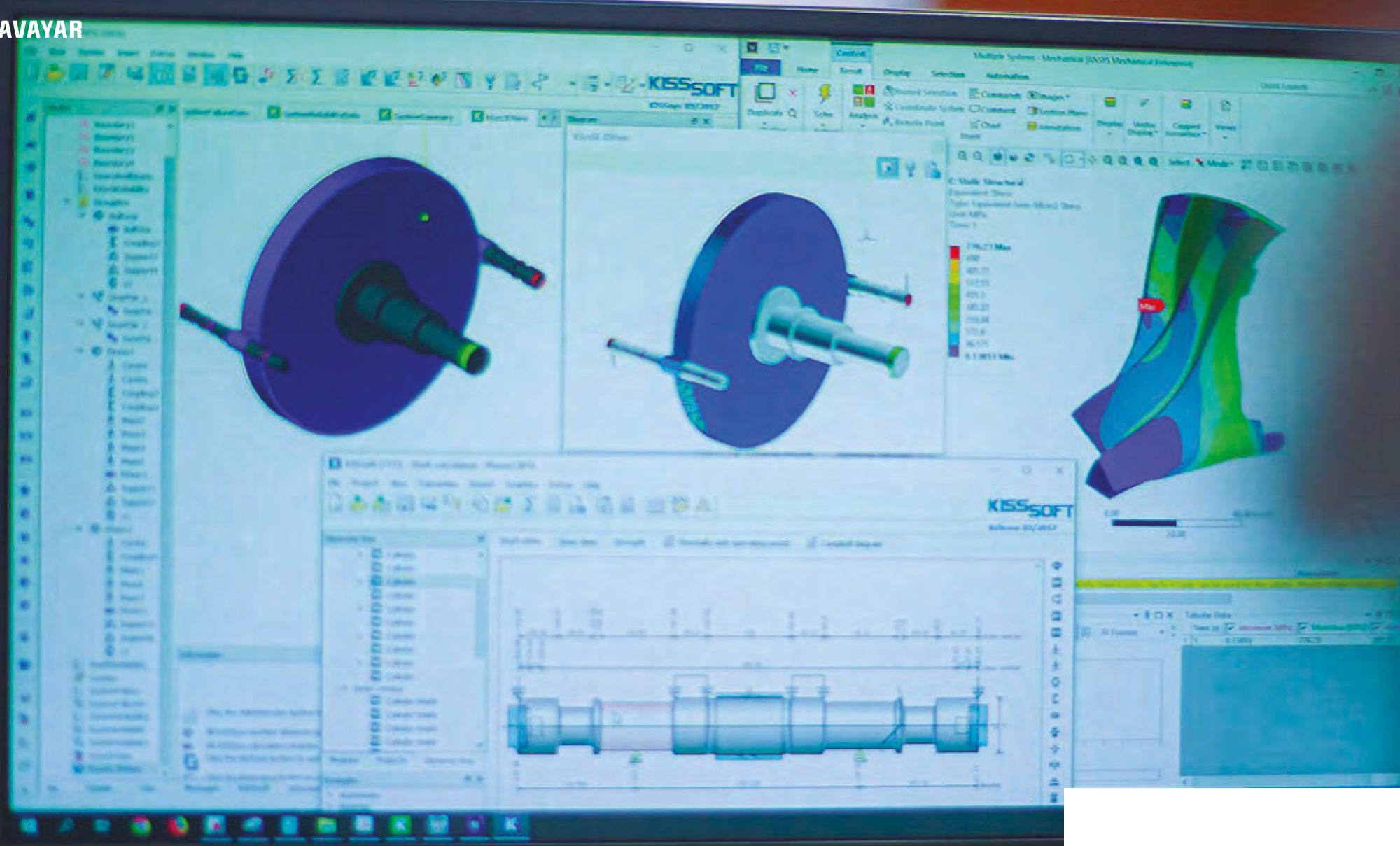
The Entire Range of Solutions

Integral Gear Technology is the forward-looking expertise that makes our turbo compressors first-in-class. It's a market-leading innovation and the result of decades of development.

A uniquely versatile and cost-efficient solution, this technology allows for multi-staging, enabling up to four stages to be included on one gearbox.

Compact Design, Efficient Operation

Our centrifugal compressors feature a very compact design. This greatly reduces your on-site footprint. By providing a range of customization possibilities, we can also focus on your precise needs. Our options include diverse impeller designs, to name just a few. Energy efficiency – with a focus on power optimization – is a key area we emphasize. The goal: to ensure an optimum process for you.



Integral Gear Technology Offers You:

1. Improved efficiency
2. Compact design
3. Multi-speed capability for optimal speed in each stage
4. Easy inspection and maintenance
5. Combined service operation

The Extra Edge for Your Process: Integral Gear Technology

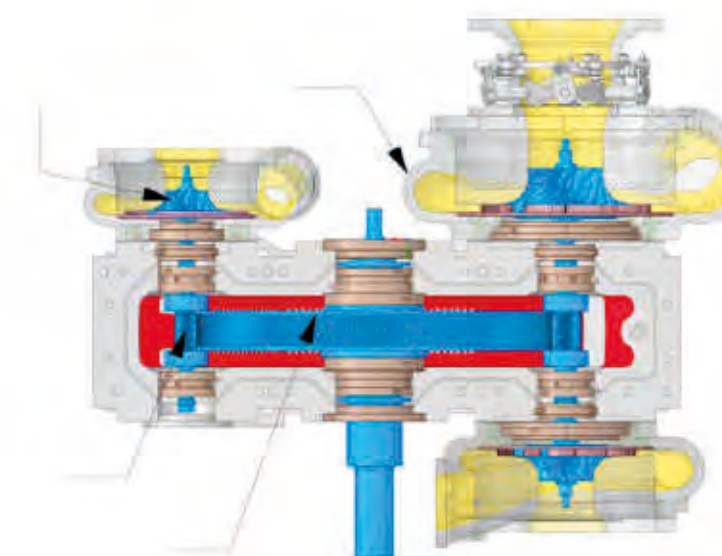
Based on decades of process-oriented and engineering know-how, Integral Gear Technology is an innovative approach well-suited to each customer's equipment requirements.

Developed in constant interaction with our customers, Integral Gear Technology provides long-term answers to today's application challenges. Even better, it does so in one compact, customizable package.

To give just one example:

The rotor is an integral part of the gearbox, meaning the impeller is mounted on the high-speed pinion.

This allows the impeller to run at its specific optimum speed with the best efficiency



How it works: an inside look at the integral gear concept

The goal :
To Ensure An Optimum Process For You

Our Centrifugal Compressors Feature A Very Compact Design, This Greatly Reduces Your On-Site Footprint. By Providing A Range Of Customization Possibilities, We Can Also Focus On Your Precise Needs.

Integral Gear Technology provides answers to today's application challenges in one compact, customizable package.

Inside the technology

HAVAYAR integral speed-increasing gears are driven by high-quality helical gearing with precise mesh geometry.

This ensures:

- Reliable performance
- Smooth operation
- High mechanical efficiency

The technology's design offers a number of key advantages. First, its multiple-speed capability allows each stage to run at optimum pace, resulting in the highest-possible efficiencies.

In addition, thrust collars or axial bearings in the pinion gear ensures a high level of efficiency. This decreases losses while increasing mechanical rotor stability and reliability.

Tilting-pad bearings are used on the high-speed shaft, while sleeve bearings are used on the low-speed shaft.

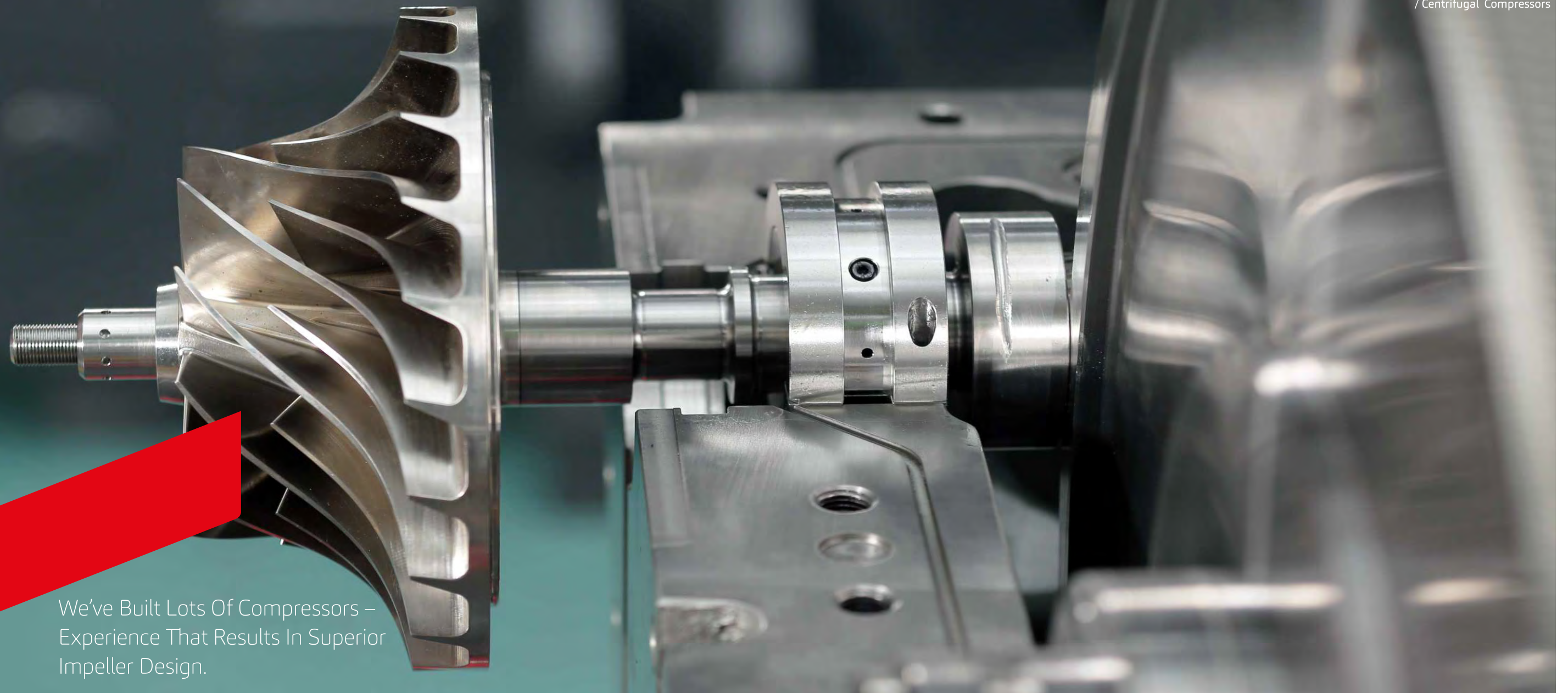
Split horizontally, the gearbox design also facilitates easy inspection and maintenance of gears and bearings, without the need to disconnect the system's piping.

Finally, to ensure optimum efficiency, sensing probes can be mounted on the pinions to monitor shaft vibration. In addition, sensors are installed in the bearings to keep track of temperature changes and shaft vibration.



Sleeve Bearings

Tilting-Pad Bearings

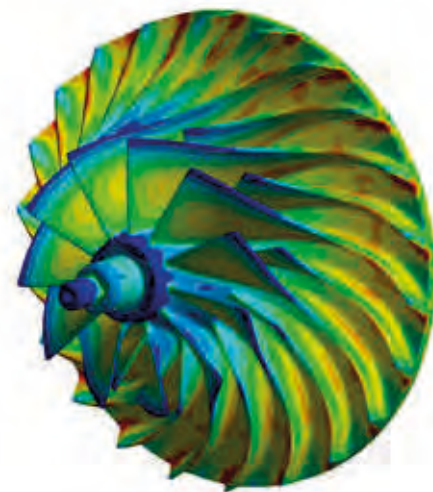


We've Built Lots Of Compressors – Experience That Results In Superior Impeller Design.

Inside The Technology

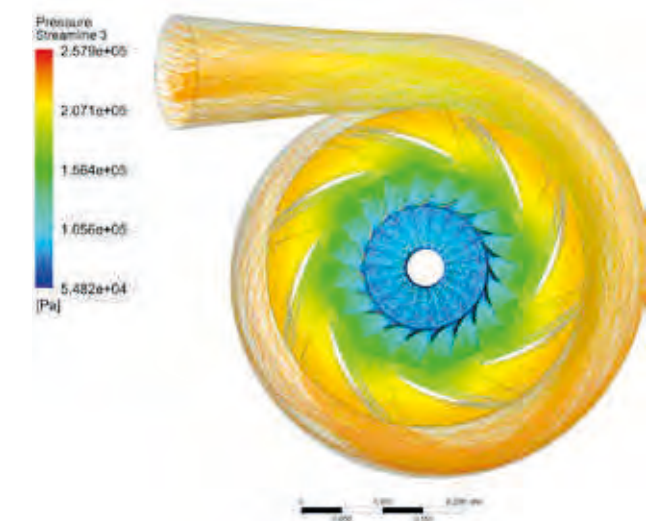
When selecting impellers, we use software that calculates the design optimally reflecting your process.

Thanks to the unique flow coefficients of each impeller group, our turbocompressors can meet a range of diverse requirements.



Key Benefits:

- All geometries are tested by R&D
- Impellers are mounted on the pinion shaft using shrink fit with tie shaft,
- Their design ensures easy assembly and high reliability



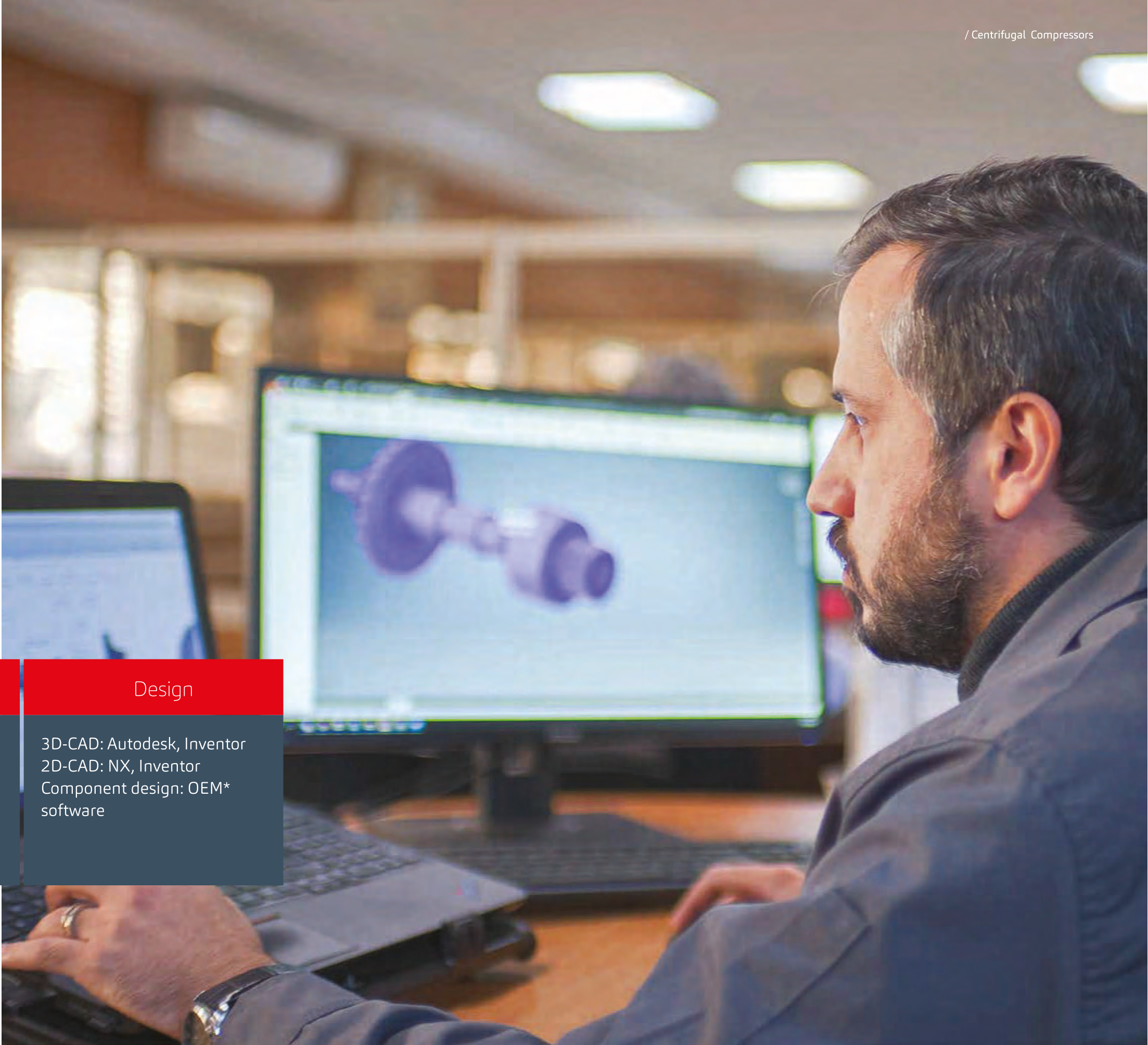
Proven Engineering Expertise

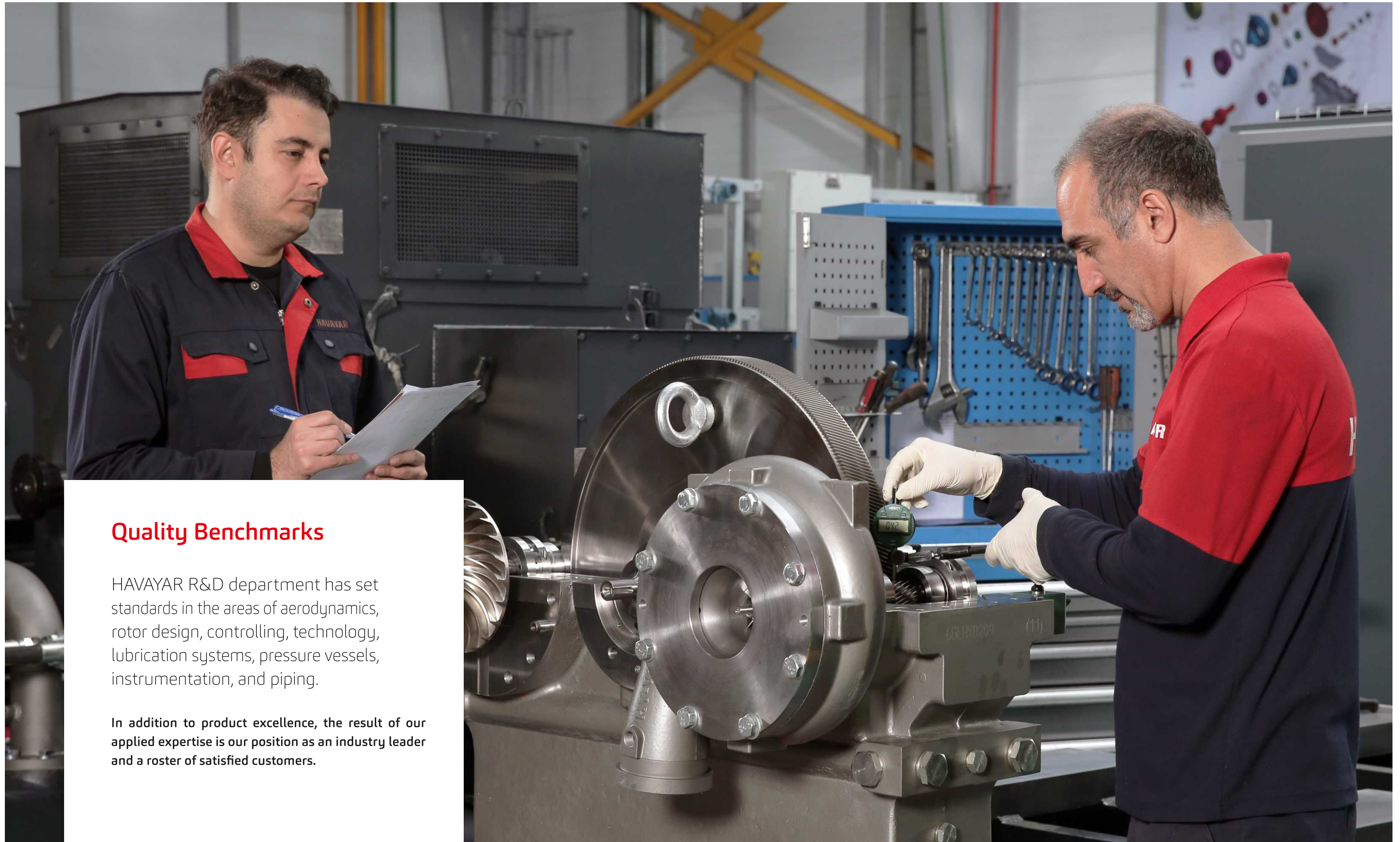
Extensive process know-how, automated workflows, integrated quality protocols – these are just some of the engineering resources we draw on to provide our customers with first-in-class products.

Our Tools for Boosting Your Productivity

Aerodynamics	Mechanics	Design
OEM* software Experimental measurements CFD analysis: ANSYS	OEM* software Rotor dynamics: DyRoBeS Rotor dynamics & bearings: DyRoBeS Torsional analysis: DyRoBeS FEA: ANSYS	3D-CAD: Autodesk, Inventor 2D-CAD: NX, Inventor Component design: OEM* software

* Original Equipment Manufacturer
Different programs for aero design and selection of compressor





Quality Benchmarks

HAVAYAR R&D department has set standards in the areas of aerodynamics, rotor design, controlling, technology, lubrication systems, pressure vessels, instrumentation, and piping.

In addition to product excellence, the result of our applied expertise is our position as an industry leader and a roster of satisfied customers.



Among Other Benefits, We Offer You:

- Local packaging, and local sourcing for peripheral components
- In-house packaging of key components ensures premium quality and delivery times

Key Components in Our Engineering Toolkit:

- State-of-the-art production machinery (Including milling, balancing and turning equipment)
- Constant product-performance review
- Strict quality assurance

Production Know-How

When manufacturing our products, we focus on one goal: helping our customers stay productive over the long term.

With our many years of experience in markets around the world, we have the in-house knowledge to make it happen.

Inside our Production Facilities

Working with the appropriate tools and processes, we use our extensive engineering know-how to create innovative, first-in-class products. Our skill set, moreover, is something we continue to invest in.



Testing Your Machine

At our testing facilities, your machine is thoroughly checked before leaving the plant. We have the ability to simulate all relevant operating conditions you are facing, so we know when your equipment is ready to deliver.

For example, as a standard quality-assurance measure, we perform mechanical test runs on your machine, with performance testing carried out when required.

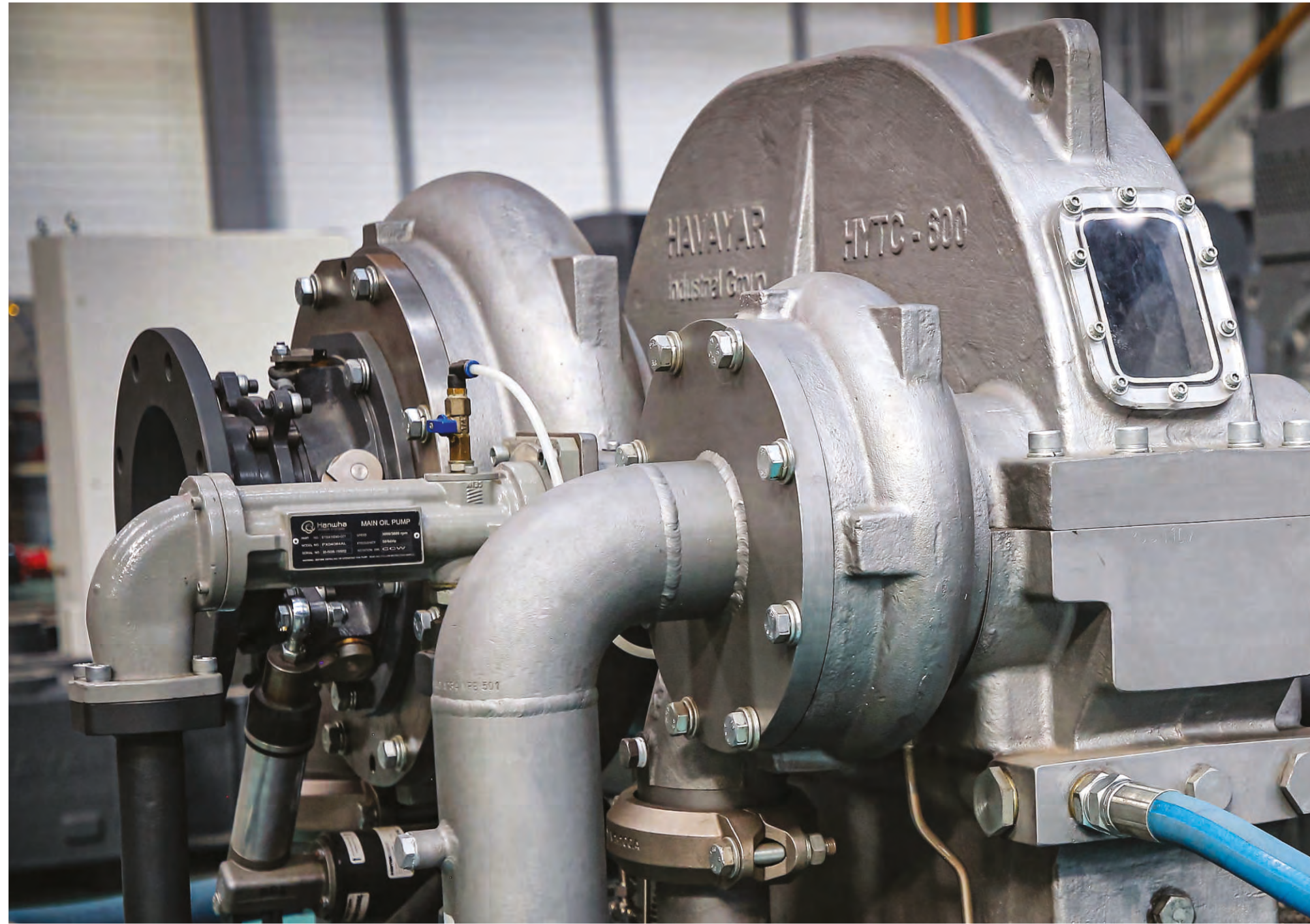
To ensure nothing is left to chance, our tests fully comply with all relevant standards, including ASME, PTC10 and API 617 / 672.

In testing the machines, we sell, we also work closely with our customers in order to achieve our final goal: delivering the best product possible.

Ultimately, it's about making sure you have the quality, efficiency, and sustainability you need to carry out your processes.



At our testing facilities, your machine is thoroughly checked before leaving the plant. We have the ability to simulate all relevant operating conditions you are facing, so we know when your equipment is ready to deliver.



Committed to Sustainable Quality

Our focus on quality means that all of our equipment is designed and constructed for a minimum service life of 20 years and at least three years of uninterrupted operation.

Because we’re active in numerous markets, we also adhere to a range of standards, including ISO, ASME and DIN.

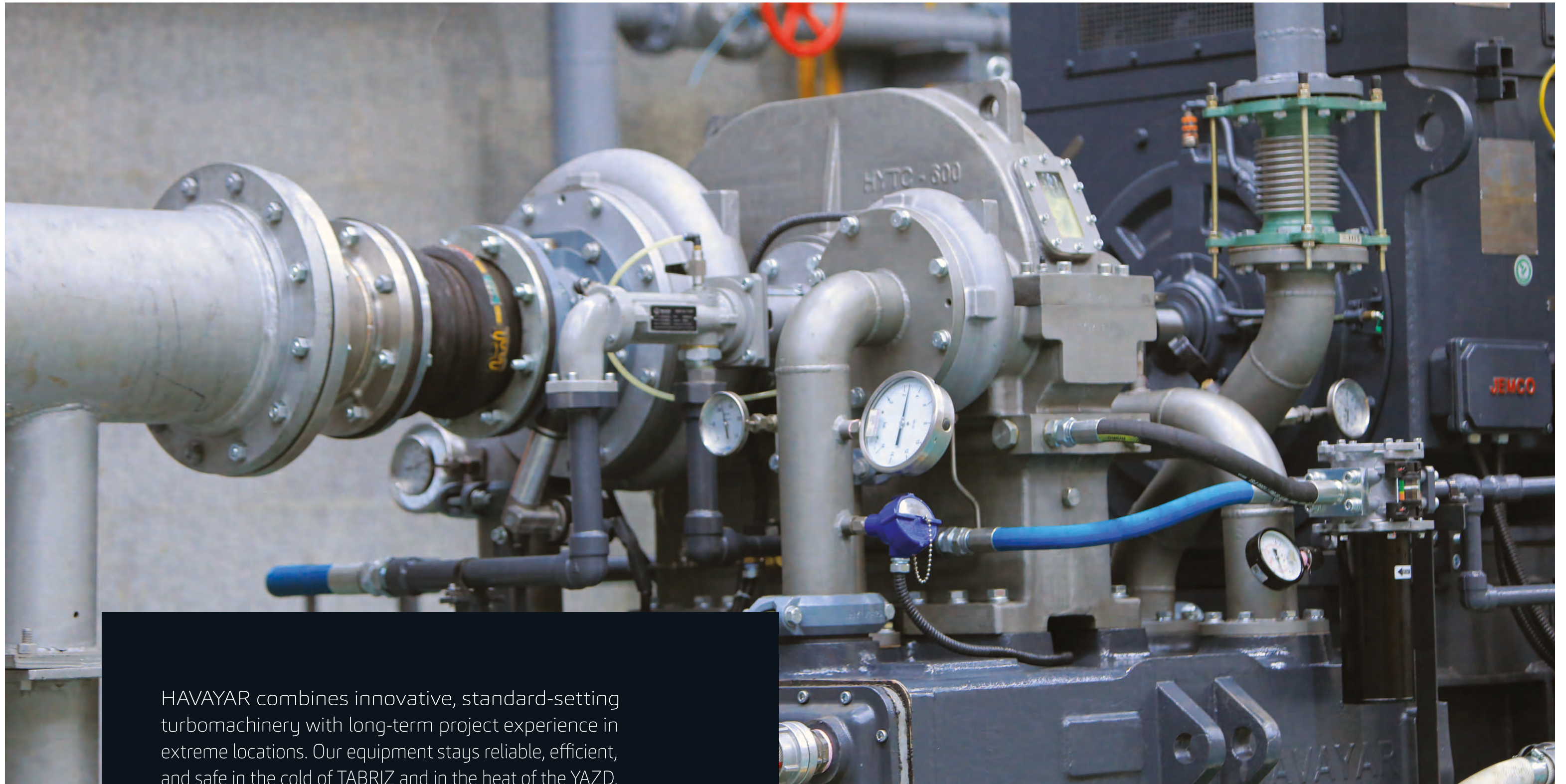
Our Quality Promise to You:

- A lifelong service-responsibility guarantee for your machine
- Adherence to the applicable standards
- Global quality management according to ISO 9001

Your Partner From Start to Finish – and Beyond

FEED	EPC	Order	Installation	Maintenance
Process optimization & equipment pre-selection	Customization & product specification	Project management and quality assurance		Aftermarket

By consistently producing high-quality products, HAVAYAR has established itself as an industry frontrunner. Our commitment to excellent quality has also earned us an outstanding reputation – and loyal customers.



HAVAYAR combines innovative, standard-setting turbomachinery with long-term project experience in extreme locations. Our equipment stays reliable, efficient, and safe in the cold of TABRIZ and in the heat of the YAZD.

After all, HAVAYAR engineers participated in the development of IPS for integrally geared compressor.

At HAVAYAR, We Build Our Integrally-Geared Compressors According To Recognized Industry Standards.

HYT Products Specification



Output Pressure and Intake Flow Rate



MODEL		HYT-SERIES							
		HYTC 400	HYTC 500	HYTC 600	HYTB 700	HYTB 800	HYTB 900	HYTA 1000	HYTA 1250
Motor	HP	300~1500							
	kW	224 ~ 1120							
Capacity	M3/hr	2200~10000							
Discharge Pressure	BarG	2.5~20							
Weight	Ton	4.5~12							