

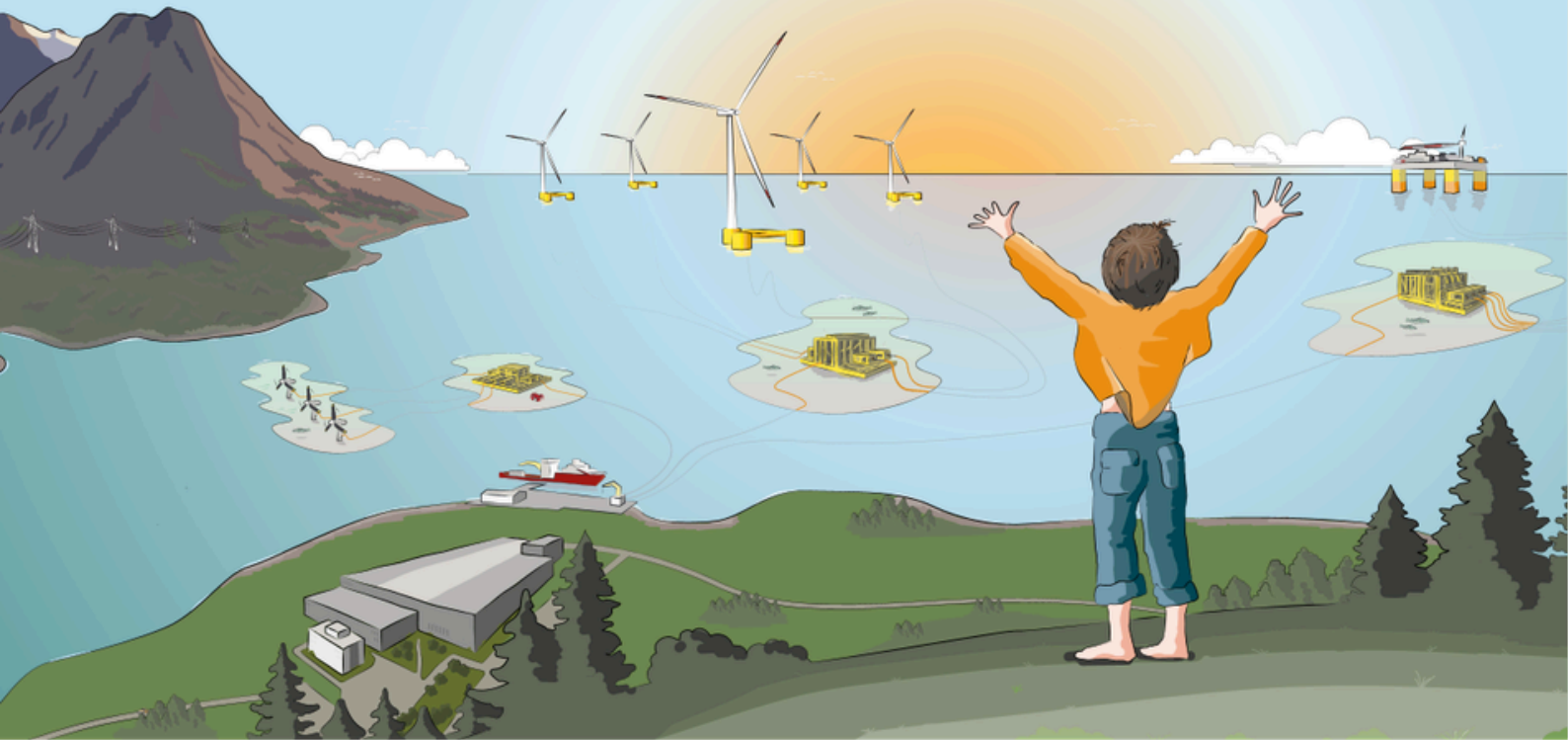


Aker
Solutions



Tranby Technology Centre

We solve global energy challenges for future generations



Aker Solutions

Tranby Technology Centre

Tranby Technology Centre – Aker Solutions’ most sophisticated production and service centre – is strategically located at Tranby in Lier municipality, a short distance from the port of Drammen.

With 24,000 m² workshop, office space for 650+ employees and first-class warehouse facilities, we are a world leader in engineering services, CNC machining, all types of welding, surface treatment, assembly and testing activities.

Aker Solutions provides integrated solutions, products and services to the global energy sector. We enable low-carbon oil and gas production and develop renewable solutions to meet the energy needs of the future.

Aker Solutions has approximately 11,000 employees in 15+ countries and 35+ locations globally.

Employees: **650+**

Office area: **10,000 m²**

Workshop area: **24,000 m²**

Other area: **16,000 m²**

Total property area: **135,000 m²**

Established: **1975**

ISO 9001, 14001, 45001, 3834-2



HSSE, quality and climate action

All accidents can be prevented

Our commitment to zero damage extends to personnel, material, and non-material assets.

The health of our employees is a priority, alongside the continuous improvement of the working environment.

Conducting business involves the efficient use of materials and energy, with a strong focus on minimizing waste and environmental damage.

Products and services are designed to be safe, energy-efficient, resource-conserving, and to minimize negative environmental impacts.

Our commitment to quality

Our goal is to understand and meet agreed internal and external customer requirements and expectations, through predictable delivery of projects, products, and services.

Taking personal and collective responsibility for thinking quality in everything we do is essential.

We actively work to reduce the number of intermediaries and streamline our processes through continuous improvement, aiming to increase value creation for the customer and consolidate our competitive advantage.

Climate action and sustainability

Sustainability at Aker Solutions means making responsible business decisions that create value while protecting the environment and contributing to the good of society.

At Tranby, we are working towards ISO 50001 certification by continuously seeking ways to reduce or eliminate emissions and energy consumption. We have also created a climate action plan to guide us in honoring our commitments.



**Health, Safety, Security
& Environment Policy**

[Read more](#)



**Quality and Continuous
Improvement Policy**

[Read more](#)



**Sustainability
Policy**

[Read more](#)

From an engaged organization to a satisfied customer

There are three important keywords for Tranby Technology Centre:

Customer, organization and value

Through our processes, our expertise, and our capabilities, we will ensure optimal value creation for the customer on competitive and sustainable terms.

Flexible resources and expertise

Our wide range of services and highly competent operators provide us with flexibility that is of great value.

The high productivity at Tranby Technology Centre is a result of modern and efficient production equipment, achieved through continuous and targeted investment. Our latest addition is a brand new, state-of-the-art workshop for the hydropower service market, featuring one of Northern Europe's largest and most sophisticated vertical mills (CNC Vertical Millturn Machine).

Versatile workshops

Tranby Technology Centre boasts 24,000 m² of production space across eight workshop halls, with crane capacities up to 100 tons and ceiling heights of 10 and 14 meters.

The machine shop is a multi-purpose facility with various machines handling components from 1 kg to 120 tonnes and up to 12 meters in diameter.

Our welding workshop meets various material qualities and certification requirements, offering expertise in orbital welding, automatic overlay welding, and manual impeller welding.

The assembly and test section is a multidisciplinary unit with highly qualified fitters, industrial mechanics, and test technicians.

In 2024, we introduced a dedicated **surface treatment department**, equipped for sandblasting, painting, and drying, ensuring efficient and fast handling of goods.



Machine shop

The machine shop covers approximately 2,000 m² and includes several CNC machines, a spark erosion machine, two CMM measuring machines, and multiple manual lathes. We are also a certified supplier of VAM TOP threads.

Our CNC operators are highly skilled, including two Norwegian champions, and we have extensive experience with tight tolerances, various material grades, and complex geometries from the oil and gas, hydropower, and defense industries.

Several overhead cranes, with capacities ranging from 16 to 100 tons and gates measuring 8 × 8 meters, enable us to perform a comprehensive range of machining work for our customers.



Burkhart & Weber MCR 1200

CNC Horizontal Heavy Duty Milling and Drilling
BW MCR 1200

Working range	X (mm)	2 400
	Y (mm)	1 800
	Z (mm)	1 800
	B (pos)	360
Workpiece swing diameter Ø × H	mm	2 800 × 2 100
Max workpiece weight	kg	8 000



AgieCharmillesForm 400

Spark Erosion Machine
Sinker spark erosion machines main specifications

X, Y, Z travel	900 × 700 × 500 mm
Axis resolution	0,1 µm
Workpiece and electrode	
Workpiece dimensions (W × D × H)	1 200 × 800 × 500 mm
Max electrode weight	100 kg
Max workpiece weight	3 000 kg
Bath level	0–650 mm
Dielectric unit	
Capacity	2 500 l
Number of filter elements	8
Generator	
Generator type	ISPG Integrated
Max machining current (option)	80 (140) A
Per formance	
Minimum surface roughness (Ra)	0.2 µm



We are a certified VAM TOP® thread supplier and can also carry out various types of plating, such as copper.

WFL M120 Millturn

WFL M120

Nominal centre distance	mm	5 000
Swing diameter over top slide	mm	1 140
Max turning diameter between centres	mm	1 150
Standard chuck diameter	mm	800
Positioning angle b-axis	degrees	-110°/+90°
Max workpiece weight	kg	10 000



WFL M65 Millturn

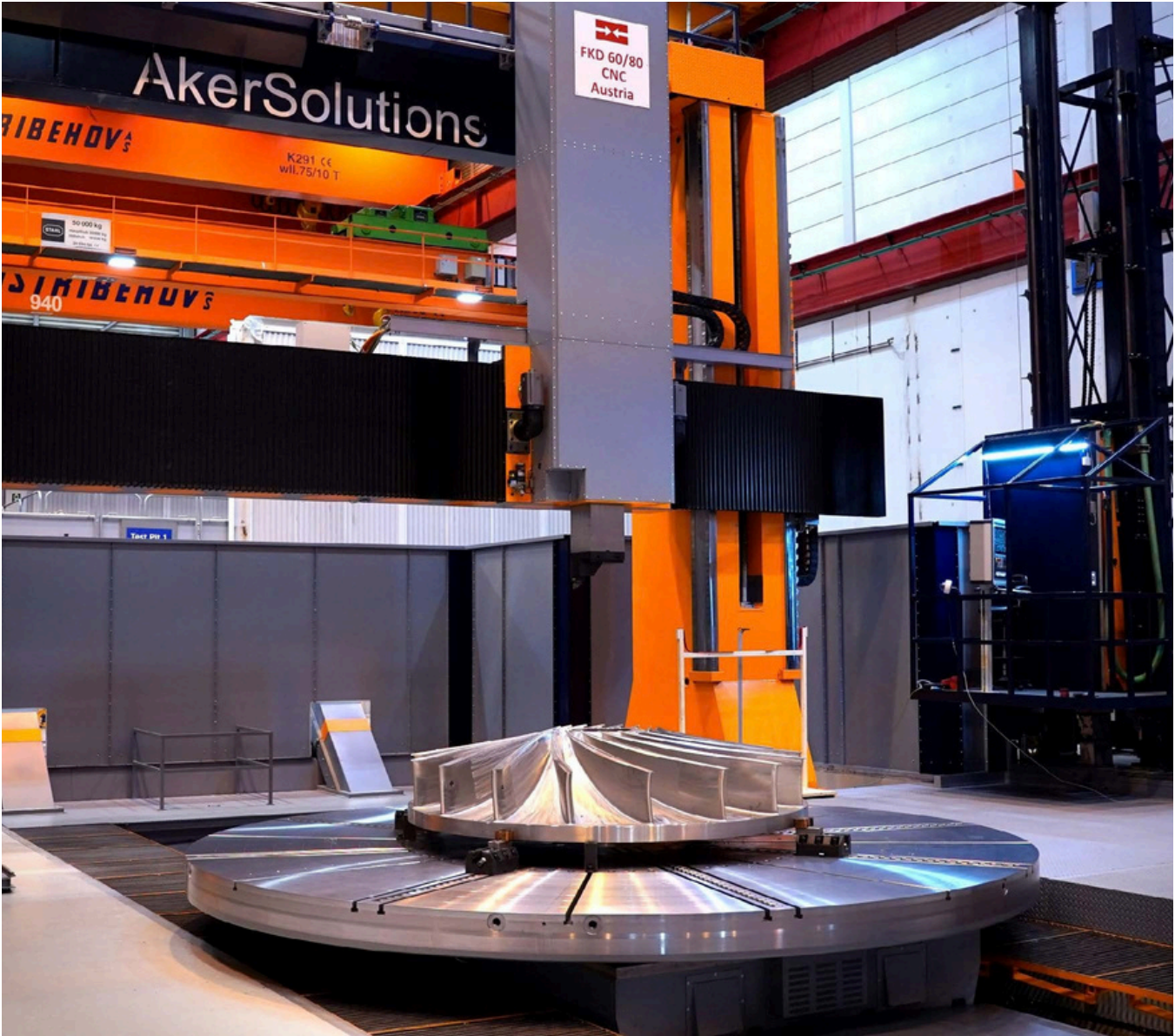
WFL M65

Nominal centre distance	mm	4 500
Swing diameter over top slide	mm	830
Max turning diameter between centres	mm	800
Standard chuck diameter	mm	630
Positioning angle b-axis	degrees	-110°/+90°
Max workpiece weight	kg	3 800

WFL M80 Millturn

WFL M80

Nominal centre distance	mm	4500
Swing diameter over top slide	mm	1 000
Max turning diameter between centres	mm	1 000
Standard chuck diameter	mm	630
Positioning angle B-axis	degrees	-110°/+90°
Max workpiece weight	kg	6 000



Feichter

Technical data		FKD 60/80
Workspace		
Nominal turning diameter	mm	(in x-turning) 8 500
Turning diameter	mm	(with y-axis) 12 000
Maximum piece height	mm	5 000
Maximum machining distance of the stroke	mm	2 000
Z-axis		
Worktable		
Diameter of faceplate	mm	6 000
Maximum load	kg	120 000
Rated power of the 4 main-drive-motors	kW	4 × 45
Speed range (adjustable in 2 steps)		
Gear stage 1 – milling & turning process		0 – 20 U/min 246 000 Nm
Gear stage 2 – turning process		0 – 100 U/min 61 600 Nm
Year of manufacture		2024



Juaristi

CNN Horizontal heavy duty milling and drilling

Juaristi

Working range	X (mm)	10 000
	Y (mm)	3 000
	Z (mm)	1 000
	W (mm)	700
Workpiece swing diameter Ø × H	Mm	2 500 × 3 000
Max workpiece weight	kg	30 000

Giana

CNC Horizontal heavy lathe

Giana

Center height	mm	1 360
Swing over bed	mm	2 400
Center distance	mm	8 000
Max workpiece weight	kg	28 000
Chuck diameter	mm	1 800



Doosan

HM6300 Heavy duty precision horizontal machining centre

Doosan

Working range	X (mm)	1 000
	Y (mm)	800
	Z (mm)	850
Workpiece swing diameter Ø × H	Mm	1 000 × 1 000
Max workpiece weight	kg	1 200

Pensotti

CNC Vertical mill-turning lather

Pensotti

Center height	mm	2 100
Swing over bed	mm	2 450
Center distance	mm	2 300
Max workpiece weight	kg	8 000
Chuck diameter	mm	1 800



Advanced CNC machining

CNC machining centre for smaller diameter volume production. Ideal for large series of 1 000+ with diameters up to 550mm. A Puma 5100 LYB, an Okuma Genos L300E-M and a Gildemeister NEF support lathe working together for ideal efficiency, supported by a mobile Zeiss DuraMax CMM machine to enable swift coordinate measurements where required.

Puma 5100 LYB

Puma

Year	2025
Max turning diameter	ø 550 mm
Max turning length	ø 2 050 mm
Main spindle speed	1 500 r/min
Turret rotary tool	4 000 r/min
Length	5 980 mm
Height	2 885 mm
Width	2 522 mm
Weight	13 000 kg
Number of tools:	12



Okuma Genos L300E-M turning centre

Okuma

CNC Control model	Okuma OSP P200LA
Turning over in bed	520 mm
Diameter on cross slide	370 mm
Maximum working length	1 060 mm
Spindle speed	3 800 RPM
Machine weight	6 500 kg

Gildemeister NEF CNC support lathe

Gildemeister

Year	1991
Control	Eltropilot L-2, EPL-2
Turning diameter over bed	ø 600 mm
Turning diameter over slide	ø 360 mm
Working length	1 000 mm
Max load free end	200 kg
Max load between tips	2 000 kg
Number of tools	12

Coordinate measuring machines

Zeiss DuraMax CMM machine

Year	2025
Measuring volume	500 x 500 x 500 mm ³
Software	ZEISS CALYPSO
Tactile Sensor	VAST XXT TL 3
Stylus Length	radially up to 65 mm (star stylus)
Probe diameter	0,3 – 8 mm

Faro Gage portable CMM

1.2 m (4 ft.) spherical working volume
Accuracy up to 0.018 mm (0.0007 in.)

DEA Global Active

Weight	2 250 kg
X	1 200 mm
Y	2 200 mm
Z	1 000 mm
Accuracy (ISO 10360-2)	2,5 + L / 333

Non-destructive testing (NDT)

We have highly competent NDT inspectors (NDT Level 3) and perform all relevant NDT inspections, including:

- Visual Testing (VT)
- Penetrant Testing (PT)
- Magnetic Testing (MT)
- Radiographic Testing (RT)
- Ultrasonic Testing (UT)
- Positive Material Identification (PMI)
- Hardness Testing (HT)
- Measurement of Ferrite Content
- Thickness Measurement



Leitz PMM-G 40.20.12

Weight	10 000 kg
X	4 000 mm
Y	2 000 mm
Z	1 200 mm
Accuracy (ISO 10360-2)	2,4 + L / 400

Heat treatment

Furnace A - Preheating and post-weld heat treatment

Max holding temperature	700 °C
Load	10 000 kg
Inside dimensions	
Length	2 900 mm
Width	2 400 mm
Height	3 150 mm

Furnace B - Preheating and post-weld heat treatment

Max holding temperature	650 °C
Load	1 000 kg
Inside dimensions	
Length	1 500 mm
Width	1 000 mm
Height	1 000 mm

Welding and surface treatment

Our state-of-the-art production line for surface treatment, installed in 2024, was established alongside a new workshop for service work in hydropower. The facility includes a washing hall, sandblasting, painting, and drying areas, all designed for the most efficient handling of goods.

Washing hall

- Internal dimensions 8.0 × 7.0 × 4.5 m
- Gate 6 m width
- Double rails for transporting heavy goods

Sandblasting module

- Internal dimensions 9.0 × 7.0 × 4.3 m
- Acoustically insulated steel enclosure
- Machine for quick change of grinding media: sand-steel grit or corundum
- Double rails for transporting heavy goods

Coating module

- Internal dimensions 15.0 × 7.0 × 4.5 m
- Divided into two sections of 7.5 m length
- Heating and ventilation unit
- Typical grinding temperature 20 °C, drying 60 °C – 80 °C
- Double rails for transporting heavy goods

Welding and grinding

- Welding of acid-resistant and black steel
- Impellers, larger valves and sheet metal work
- Manipulators from 1 to 50 tons
- Manual and robotic welding and grinding

Rotating Torch Rig

Semi-automatic cladding

Technical Data

ETR-S/ ETR-S SPEEDCLAD

Mains voltage 50–60 Hz 3 x 400 V/N/PE
(power supply line for the whole system)

TRANSTIG 5000 JOB

Welding current 40 % / 100 % DC 500 A/ 350 A

TRANSTIG 2200 JOB

Welding current 40 % / 100 % DC 220 A/ 150 A

DIMENSIONS

Length	7 000 mm
Width	3 000 mm
Height	6 100 mm



Assembly and testing

Our assembly and testing departments are staffed with highly qualified fitters, industrial mechanics, and test technicians. We have extensive expertise in pressure testing, product development and pilot construction. Additionally, we have our own test station for hydraulics, electronics, and pumps.



Assembly of new products

- 5,000 m² with installation floor
- 200 m² area dedicated to CNC operated bending, testing and flushing of hydraulic pipes
- Crane capacity: 1 × 100 tons, 1 × 80 tons, 3 × 75 tons and more 10 – 50 tons
- Gates: 8 × 10 m plus 8 × 8 m

Product development (R&D)

- 2,000 m² of test facilities
- 8 testing bays plus 2 test pits (3 × 4 × 3 m)
- Temperature cycling
- Tension and bend rig
- Outdoor tank for liquid nitrogen and gas booster for gas pressure up to 1,379 bar
- Crane capacity: 50 T + 10 T
- Gates: 6 × 6 m



Test loop and assembly of pumps

- 2,500 m²
- Test pits: two (8 × 8 × 8 m) plus two (6 × 5 × 5 m)
- 60 m well for long-shaft pumps
- Test loop for multiphase pumps: water, air, nitrogen and various oils
- 75 m³ separator providing up to 63 bar suction pressure
- Flow in the loop from 20 to 1,500 m³/h
- 10 MW, 22 kV line in, 10 MVA frequency control
- Centralized hydraulic system for flushing and pressure testing up to 2,500 bar
- Storage tanks for liquid nitrogen and gas booster for gas pressure up to 1,035 bar
- Separate test loop for running full-scale CO₂ pumps
- Crane capacity: 80 T



Warehousing and logistics

Our warehouse and logistics department handles all activities related to the transport and storage of sub-components and customer deliveries.

We manage the entire process, from when the goods enter the gate, through internal transport to and from production, to packing and preparing the shipment.

With flexible storage options both indoors and outdoors, we are well-equipped to meet your warehousing and logistics needs.

Indoors – temperate

- 3,200 pallet spaces. Narrow-aisle truck for efficient handling
- 9,300 locations in Tornado cassette/small goods system

Tent – not temperate with dehumidifier system

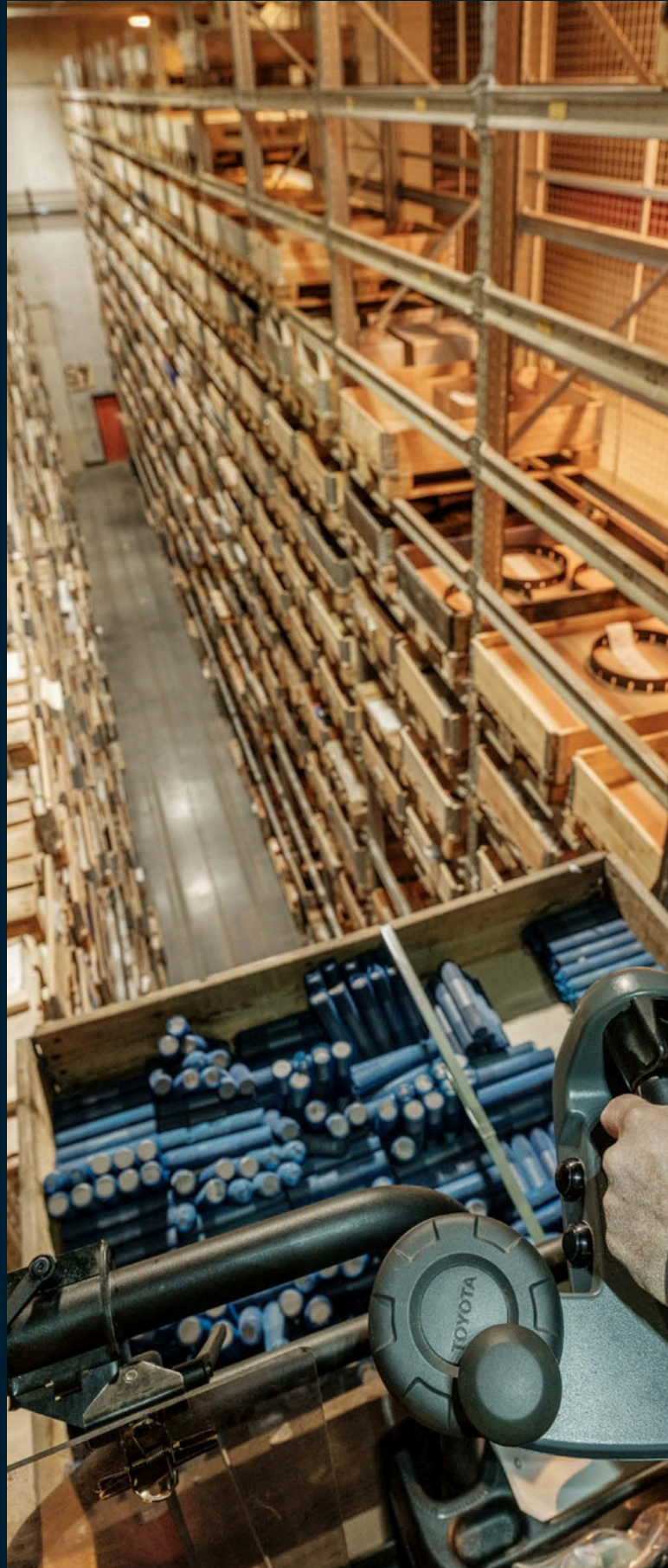
- 1,000 pallet spaces
- 3,000 m² of floor space for large goods

Outside-storage on field / flakes / trestles

- 12,500 m²

Otherservices

- Warehouse hotel
- Manage and coordinate shipments
- Carpentry workshop – manufactures all types of transport boxes, frames, etc. to measure
- ISPM.15 approved





Benestad Solutions: Innovation since 1973

Benestad Solutions was founded in 1973 and moved to Tranby TechnologyCentre in 2021 to improve production efficiency and facilitate further growth. Benestad chose Tranby to become part of an active production and technology environment.

Core

Our expertise

Benestad manufactures reliable connectors and penetrators for various applications, including subsea production systems, space technology, and the defense sector. Our products are characterized by high performance and robustness, ensuring efficient operations and maximum uptime for our customers. Reliability is essential in all segments where Benestad delivers products and solutions. Most products are designed for a lifespan of over 30 years, whether for continuous use or in the defense industry, where they are often intended for single use.

The core of Benestad's products is our customized glass-to-metal technology. This method allows us to create hermetic connections that can withstand extreme temperatures and pressures for more than 30 years, with glass acting as an effective electrical insulator.

Our Services

Benestad's team of developers, designers, engineers, test engineers, and production personnel provides a unique opportunity to assist our customers with specific glass-to-metal penetrations and further system integration when needed. We believe in close collaboration with our customers to find the best solutions, taking greater responsibility in the design process. We often achieve the best results when we are included early in the design phase. All our functions are consolidated at Tranby.

We are recognized as the sole supplier of specialized solutions and products, making many of our customers completely reliant on our deliveries. Our customers depend on us for exceptional performance and stability in their most critical applications. Over the years, we have established long-standing relationships with leading international companies in the industries we serve.



Diverse product range

Benestad offers a wide range of products for different markets. Most of our products are used in the subsea production of oil and gas, but we also supply the aerospace, defense, and renewable energy sectors.

Robust penetrator systems

Whether you need integrated penetrator solutions with minimal leakage risk and design freedom, or small insert devices, Benestad adapts solutions to your needs. We combine compact design with advanced sealing techniques. Our penetrator systems are used for various signal types and voltage classes.

Igniters

We supply precision electric igniters to the defense industry, representing innovative solutions and state-of-the-art technology for advanced ammunition and missiles. Benestad combines pressure-resistant penetrators that can withstand high temperatures with thin-film surface treatment.

Multiphase sensors

We offer glass-to-metal sensors used in multiphase flow-metres, where the sensor is directly exposed to the well stream.

Leak sensors

Benestad has developed and patented capacitive sensors for the oil and gas industry. These include detectors to monitor oil or gas leaks underwater at subsea installations and wells, as well as detectors to check for water ingress into oil-filled chambers.



Power distribution

Since 1991, we have been developing glass/ceramic-to-metal sealed power penetrators. Our latest development, the 6/10 (12) kV Procyon™ penetrator system, sets the standard for power penetrators that can withstand pressure. The system delivers 630 amps and is qualified for 20 kpsi/1379 bar pressure.

At Benestad, we are advancing power distribution with our 66kV wet coupler system. This development is based on oil and gas industry standards and considers the operational requirements for offshore wind power and other renewable energy sources.

In 2023, we established a 1,500 m² High Voltage Lab to fully develop and industrialize products in power distribution. The site includes a cleanroom for high-voltage component assembly, a "Faraday" cage for combined pressure and high-voltage testing, and a high-voltage transformer with a capacity of up to 240kV to perform all required high-voltage testing through qualification and production of our 66 kV wet coupler system.





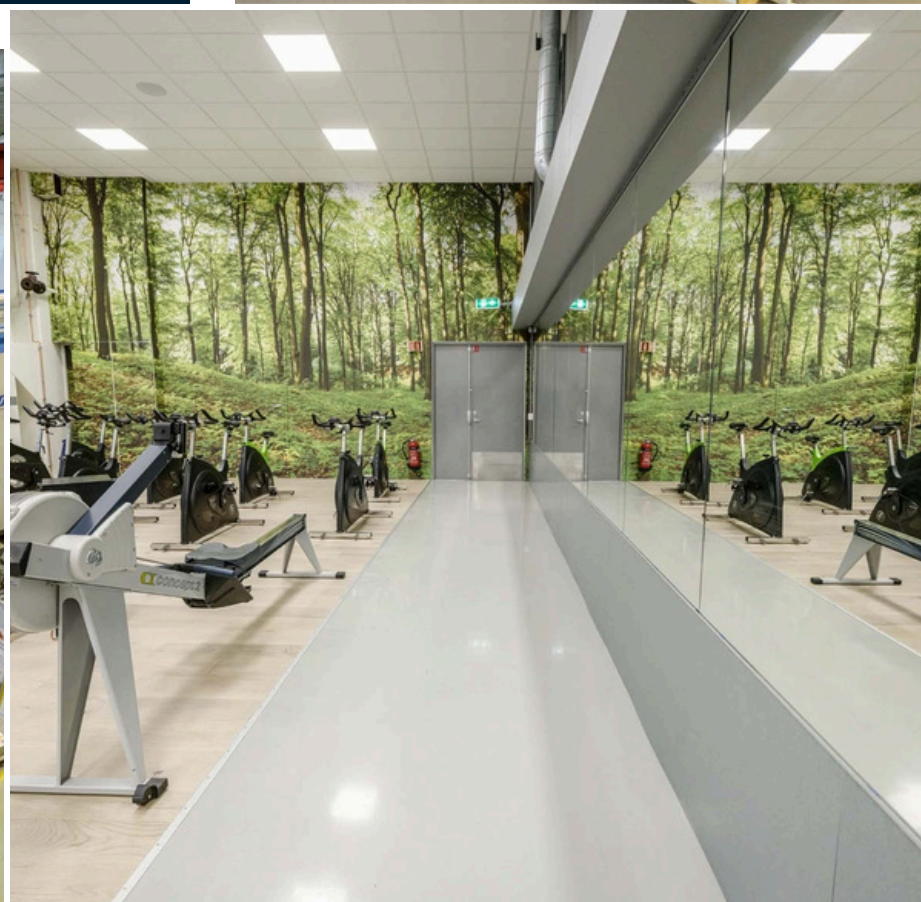
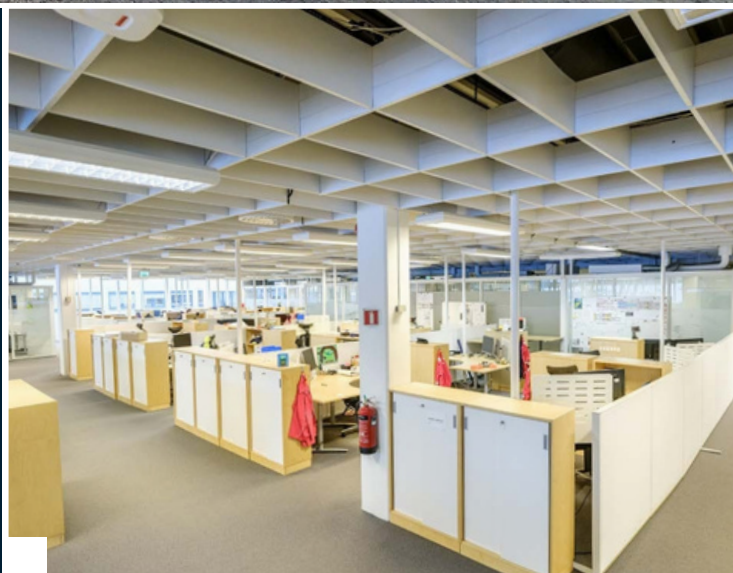
Office space for rent

Do you want to be part of an innovative environment, focused on solving future energy challenges?

We have high-quality office space available, both with and without direct work-shop access.

Also, we offer canteen services, changing rooms, showers, two fitness centers, a golf simulator, and top-notch conference rooms.

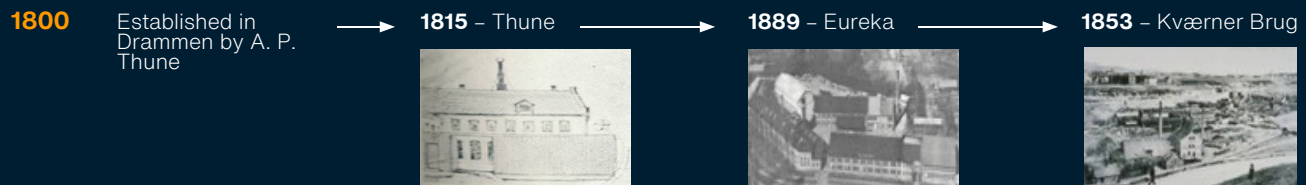
Contact us for a non-committal conversation.



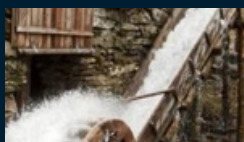
Tranby's history

Tranby -180years of diverse industrialhistory

We are adaptable and have a long history of **successful deliveries.**



1967 **1967** – Kværner Industrier



- Kværner Brug
- Egersund
- Moss
- Myren
- Mesna
- Thune
- Eureka
- Rosenberg
- Sørumsand

1975 **1975** – Tranby Thune Eureka → **1986** – Kværner Eureka →



- 680 employees**
- Paper
 - Pumps
 - Process systems
 - Defense



1990 **1991** – Kværner Booster Station

1994 – Framework agreement with Norsk Hydro

1995 – MLRS →



1997 – Assembly hall established for subsea production. First XMT delivered from Tranby



2000 **2000** – DEMO 2000 → **2001** – XMT No. 100 → **2002** → **2005** → **2008**



AKER KVÆRNER

MLRS program terminated

AkerSolutions

→ **2020** **Specialized subsea production workshop** → **Capacity 60XMTs/year**



- XMT
- Pumps
- WOS



- Vertical XMT

2020 → **Benestad Solutions AS** → **Oil & Gas** → **Hydropower** → **Specialized production**





- | | | |
|------------------------------------|---|--|
| 1. Assembly | 8. Test department office | 16. Offshore pumps assembly and test |
| 2. Assembly | 9. Test area | 17. Pump test loop |
| 3. Manual machines | 10. Cladding Area | 18. Hydropower service |
| 4. Power Lab | 11. Automation and switchboard assembly | 19. R&D and other industries |
| 5a. Office | 12. Vertical mill machining | 20. Warehousing and logistics |
| 5b. CMM and temperate tool bearing | 13. Assembly | 21. Office space |
| 6. Machining | 14. Assembly | 22. Gatekeeper |
| 7. Benestad | 15. Machining | 23. CO ₂ test loop with test well for pumps |

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