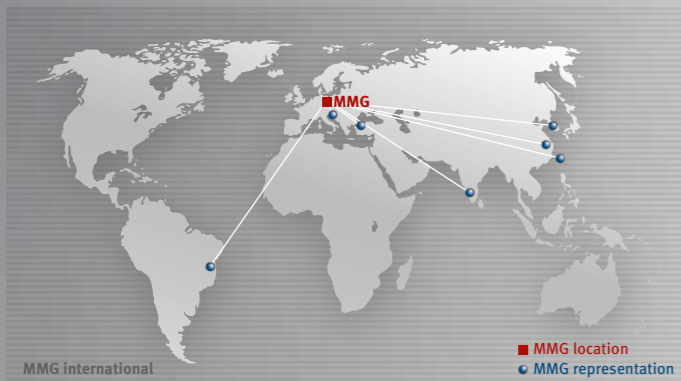




# The new definition of flexibility



## Customer Excellence

MMG focuses on a complete and constant fulfilment of all customer requirements which is our primary goal.

We combine our extensive experience and customer ideas in order to create specific and flexible solutions. As an international operating company MMG offers a tailor made integrated concept in cooperation with competent specialists for more efficient and innovative solutions.

In collaboration with our professional agents MMG provides full service – at all times and worldwide.





## The new definition of flexibility

Ship propellers from MMG have been setting the benchmark for decades in terms of design, size, quality and efficiency. The key to our success are individually designed propellers which are in perfect alignment with the vessel type, hull, engine and operating profile.

MMG offers highest flexibility throughout the entire manufacturing process starting from the design phase up to the after sales service. Highly qualified employees, best design, longstanding experience with different moulding methods, various furnaces and versatile machining centres provide highest flexibility to fulfil all customer requirements.

As customer excellence is our primary goal, MMG offers a competent 24/7 support.

MMG provides a competent and full service package from a single source. Concentrated at one location, MMG supports projects from the initial concept up to the ship operation including noon data evaluation.

The flexibility of MMG is based on an extensive experience, modern production lines, a close contact to our customers and constant focus on the future. MMG is continually researching new technologies and methods. By using innovative technologies we guarantee design quality and production accuracy for products that are unique worldwide.





## MMG-Engineering

Experienced and competent engineers support projects from the initial concept up to the final design - always in close cooperation with the customer.

- Multidata Design Concept (MDC)
- Numerical Propulsion Simulation (NPS) with state of the art CFD-Software
- Simulation based prediction of propeller noise and cavitation
- On-going research for innovative and sustainable solutions



## MMG-Moulding

MMG has longstanding experience with different moulding methods to guarantee highest casting quality.

- total 22 moulding pits for castings up to 12m length and max. 200 t
- Separate moulding and casting area for smaller products up to 7 tons
- Longstanding experience with different moulding methods
- Usage of environmental friendly moulding sands





## MMG-Casting

Proven quality from the early beginning: each product is checked by casting and solidification simulation.

Various furnaces with capacities between 5 tons and 80 tons provide highest flexibility in view of different alloys and sizes of castings.

- 9 separate furnaces with different capacities
- Largest inductive furnace for copper alloys worldwide

Total melting capacity 200 tons at one time



## MMG-Processing

From large to small castings MMG manufactures every kind of product with highest accuracy.

- Computer controlled five axis milling machines
- Versatile and high end machining centres
- Machining relies on Laser and Numerical Controlled Processing (NCP)

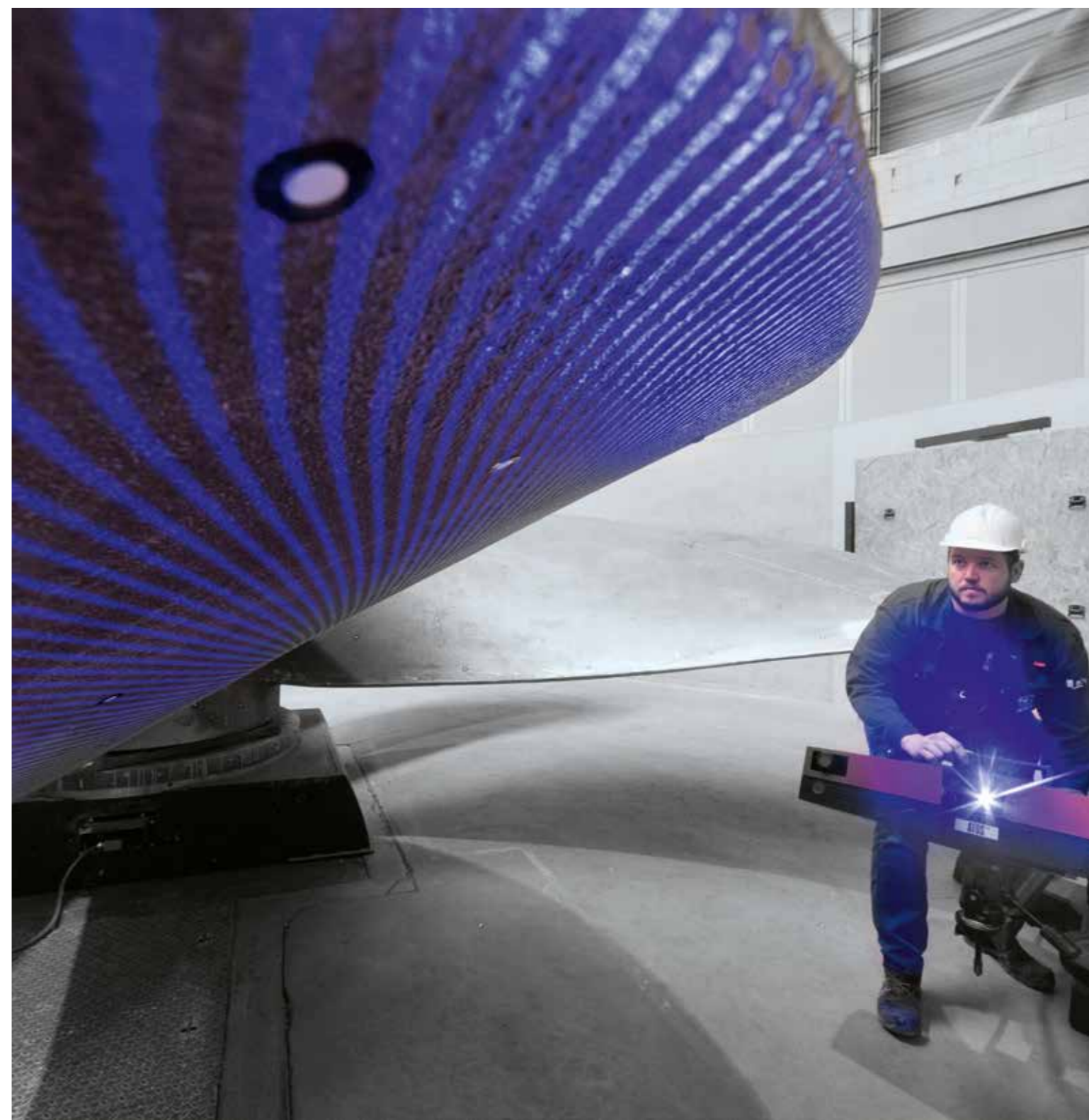




## MMG-Finishing

Qualified and experienced employees ensure highest quality in every detail.

- Decades of extensive experience
- Highly qualified employees paying the utmost attention to detail
- Path-breaking precision during the finishing process



## MMG-Optical Precision Measurement (OPM)

Comprehensive measurement for maximum geometrical accuracy from pattern equipment over green cast approval till the final acceptance test MMG guarantees the highest design accuracy in all dimensions.

- Overall surface for each product can be scanned with an accuracy of up to 1/100 mm
- Guarantee that final product is in perfect alignment with the design
- Basis for Virtual Contact Test (VCT) – state of the art procedure approved by classification societies: DNV-GL; LR; ABS; BV in order to replace conventional blue fit test with male gauge or propeller shaft





## MMG-Quality

Latest test technology and equipment combined with a modern production line guarantee highest quality. All quality standards are based on a consistent quality management as a part of an integrated management system (IMS).

- In-house laboratory to check chemical composition and mechanical properties
- Ultra sonic testing
- Optical Precision Measurement (OPM) for the overall surface of our products
- IMS includes all aspects of environmental protection, health & safety, products and services as well as energy efficiency
- Certification: ISO 14001:2009, ISO 18001:2007, ISO 9001:2008



## MMG-Consulting

Customer excellence is our primary goal. MMG offers competent 24/7 support.

- Life cycle management applies for the entire service life of our products
- Fast response and best support for our costumers
- Noon data evaluation regarding propeller propulsion behaviour
- World-wide repair service