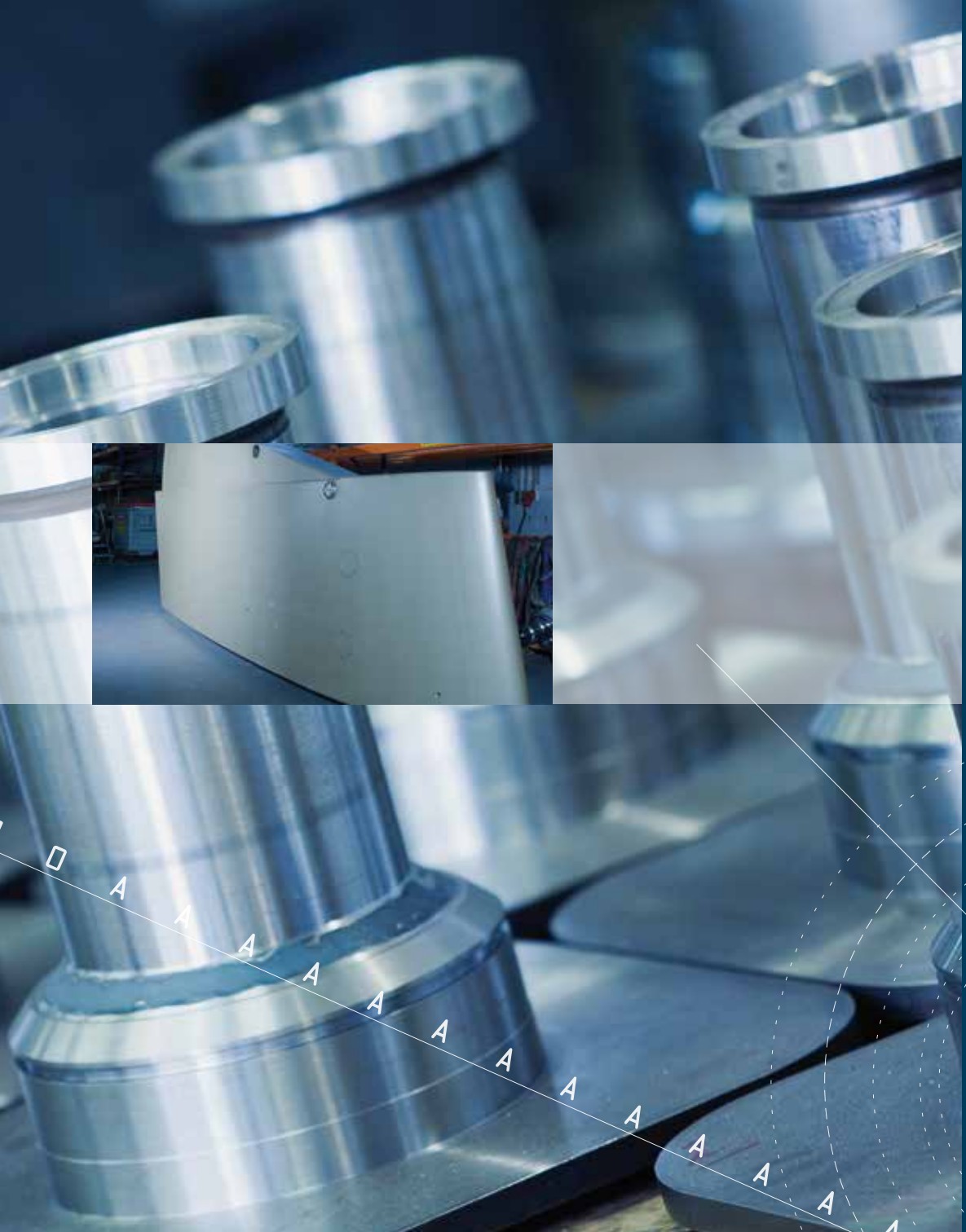
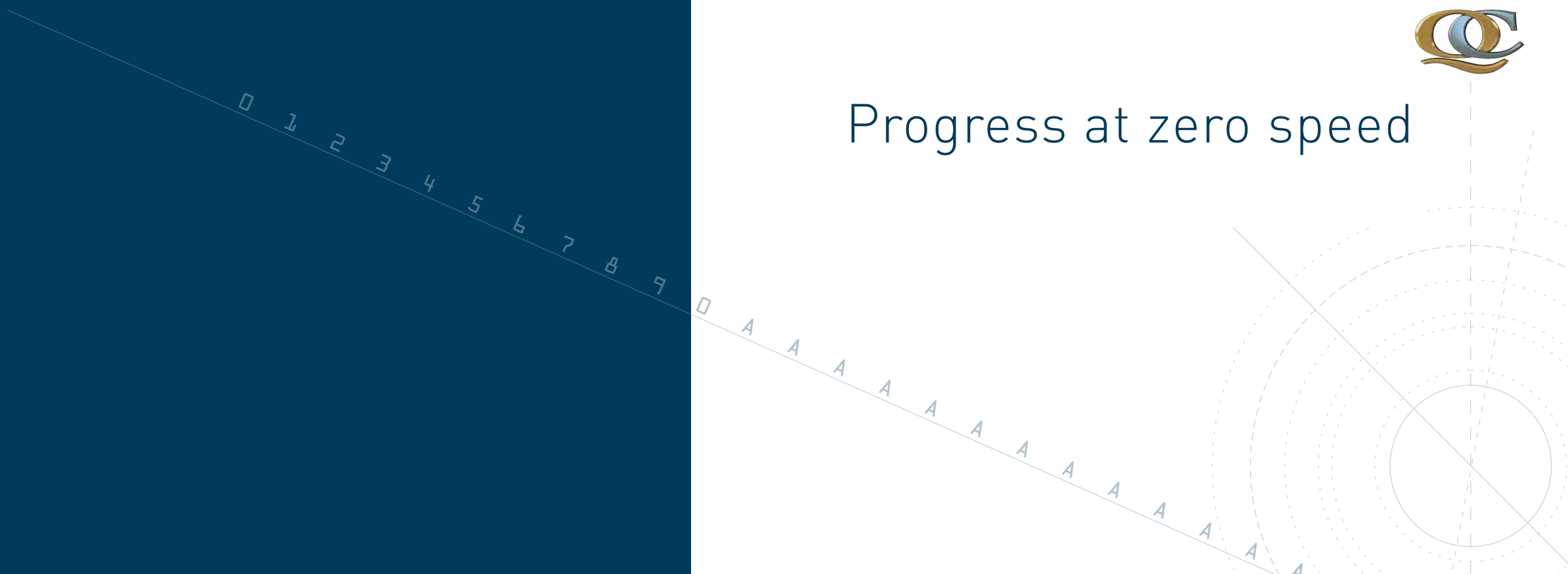
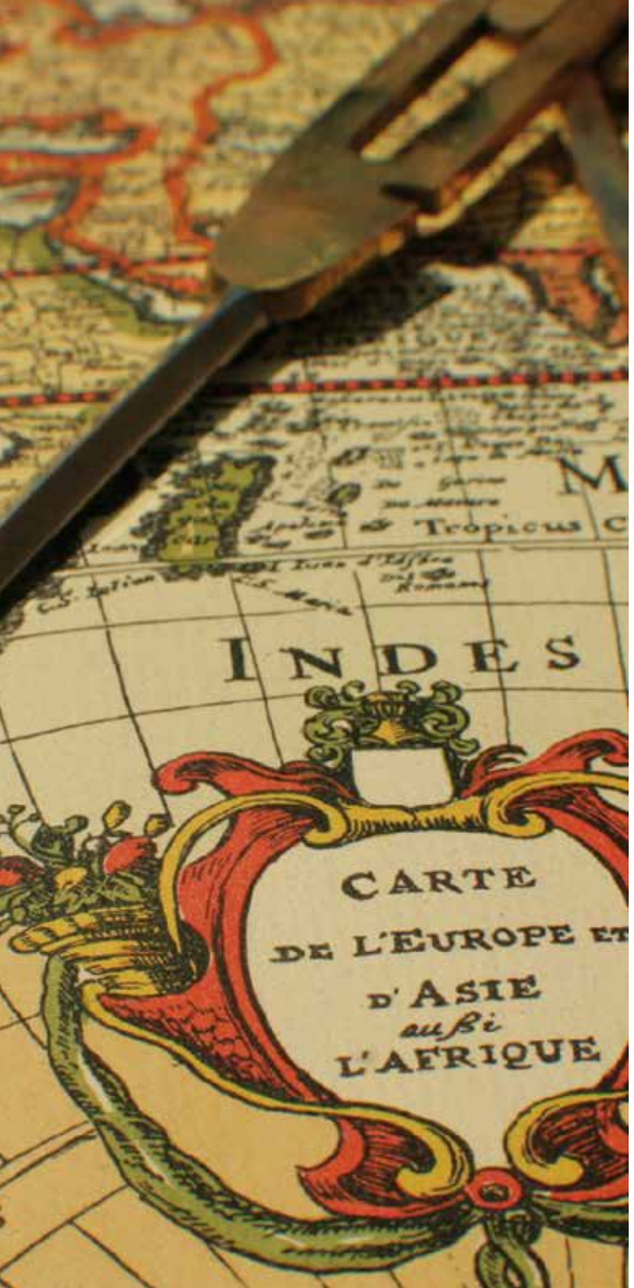


QUANTUM CONTROLS

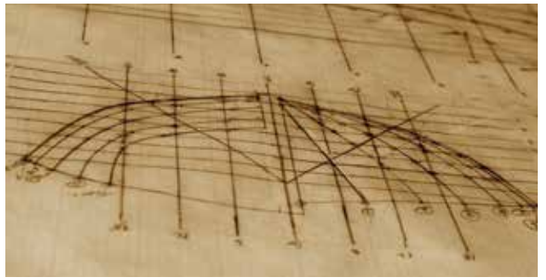
Progress at zero speed





Let's look back

Let's look back. The great power of the small Republic of the Netherlands in the 17th century was based largely on the strength of the Dutch shipbuilding industry. Thanks to the shipping trade, Amsterdam became the economic centre of the world in the 17th century. Ships set sail from the city for the most incredible destinations both within and outside the Dutch Republic. Around 1670, the Republic had around 15,000 ships, five times the size of the English fleet. This gave the Republic a virtual transport monopoly on the world's seas. The colonial trade in particular brought great wealth to the Netherlands.
Spices, pepper, silk and cotton textiles were imported from India, Bengal, Ceylon and Malacca, while trade between the west coast of Africa, Brazil, the Caribbean and Europe consisted mainly of plantation products, such as sugar, tobacco and brazilwood. The goods were stored in warehouses along Amsterdam's famous canals. The trade and transport were concentrated in the flourishing Dutch East India Company (VOC).



The Dutch

The Dutch were the cargo carriers of Europe, and Dutch ships could be found all over the world, because they transported cargo for so little money. The reason for this was that the Dutch were able to build large, high-quality and affordable ships. Many French and English merchants therefore preferred to buy ships from the Dutch Republic rather than from their own countries.
In 1697, Tsar Peter even set sail from Moscow heading west for Zaandam to learn about the latest developments in shipping technology. After touring a shipbuilding yard in Zaandam, Peter the Great really came into his own in Amsterdam where he was able to take his time looking around and working in the shipyard of the Dutch East India Company. They were glorious times, the Dutch as the shipbuilders of Europe. They brought a golden age to the Netherlands, and innovations in technology ensured that they maintained their edge for a long period of time.

Sawing

It wasn't only the ships themselves that shone through technological advances; innovation also occurred rapidly in ship production. For example, Cornelis Corneliszoon was granted a patent for his sawmill on 15 December 1593, and for his crankshaft four years later. Corneliszoon's invention was later improved to create an integrated construction, called a Paltrok mill. This type of sawmill played an important role in the construction of VOC ships, reducing personnel costs considerably and leading to a great reduction in production times.
In the 17th century, the Dutch succeeded in building complete wooden sailing vessels in about seven months. The shipyards provided a combination of innovative techniques and truly perfect organization.

Operation

The VOC used the famous square-stern ships (spiegelschepen), frigates and galleons as well as flyboats (fluyts) for its lucrative trade. The fluyts came into use in the 1620s and were extremely popular from 1660 to1690, during which time many fluyts were built at the VOC shipyards. At the same time, the VOC realized that operating costs were as important as the construction costs of the ships. Even back then the total costs of ownership counted. The VOC decided to introduce a high degree of standardization on its ships, making them cheaper to build and easier to maintain. This resulted in considerable savings, particularly because the ships could be used more frequently and for longer lengths of time.

Rooted in history

So, as we can see, a great shipbuilding tradition developed in the Netherlands back in the 17th century. Even then, people were continually seeking innovations in every aspect of shipping and shipbuilding in order to maintain an edge on the competition. And, over three hundred years ago, the Dutch were already thinking about maximizing the usability of ships and minimizing the costs of operation. Quantum Controls is rooted in that tradition, which is noticeable in every detail. Today, Quantum continues to prove that innovation is an everyday necessity and that expertise is the basis for progress. We have given you a little piece of Dutch history here, knowing that Quantum is making history itself on its own scale.

Progress at zero speed

We would like to explain to you how we have made progress at Zero Speed. Located in the Dutch town of Nuth, Quantum Controls is the world's largest innovator in terms of roll stabilization for vessels at zero speed. With our unique combination of expertise and professional skill, we build the software and the hardware, including electronic controls, both analogue and digital, the specific algorithms and the mechanical and hydraulic components, such as fins, cylinders and manifold blocks. This has set a global standard, with the Quantum Group rapidly becoming a market leader in roll stabilization of vessels at zero speed, and that is no coincidence.

Here in Nuth we have chosen to focus completely on innovation and professional skill. Sales and service are provided by our Quantum Group partner QME in Fort Lauderdale, Florida. The two organizations concentrate entirely on their own specializations. This has enabled the Dutch company to quickly become a market leader in roll stabilization for yachts, professional vessels and marine ships. The 'Q' in Quantum stands for quality, which the company combines with dedication, innovation and the will to continually excel.

Although Quantum has only been active in the nautical market since 2000, the company's management has over forty years of experience, and that is producing great results. The company also shows what can be achieved with a keen focus on both technical possibilities and quality. Because Quantum builds systems that excel in terms of effectiveness as well as reliability.

The heart of the system

The heart of Quantum's system is the combination of measuring and control engineering, servo-hydraulics and mechanical expertise. In particular, we offer QC Adaptive Roll Control (ARC); an advanced system that analyzes every roll of the vessel and provides the appropriate counterreaction using fins or rotors. Quantum Controls applies advanced algorithms to automatically minimize the roll of the vessel. Because we carry out the design and production of the electronics ourselves, Quantum can ensure the highest possible quality and guarantee a flawless and maintenancefree heart for the roll stabilization system.

Famous fins and rotors

Quantum Controls designs and manufactures all fins in-house, focusing on vessels of approx. 30 to 180 metres in length. The design team has collaborated with universities and research institutes to find the most stabilizing fin shapes. Modern CAD programs and Advanced Non-Linear FEM computational modelling are used to construct the fins on the basis of 'fatigue' data, to ensure a long lifespan. The result is a range of fins with excellent effectiveness at the least hydrodynamic resistance. Quantum truly sets the standard with fins measuring less than 1.0 m^2 to 16 m^2, which can be applied in pairs or in sets of four. The innovations are continuing, and Quantum is now offering its patented XT fins with an ExTendable section to increase the surface area. This doubles the effectiveness of these fins at ZeroSpeed mode. The MagLift Magnus Effect stabilizers are another innovation. These patented, rotating cylinders can be retracted into the hull and are highly effective, both at ZeroSpeed and Underway.

Hydraulic control

The actual movement of the fins is achieved through a highly advanced hydraulic system. In order to provide a suitable system for any vessel, the Quantum Group has a range of eight different models, designed and built by QME. All are available as complete packages and can operate on a fully standalone basis. The Hydralogic control provides detailed information on all parameters and can be linked to the vessel's central alarm systems. Reliability of the hydraulic controls is of primary importance, and maintenance can be kept to a minimum.

History

The idea behind this booklet is clear: it starts out with a little history, followed by an impression of Quantum Controls' state-of-the-art engineering. While that may appear to be a contrast, we know that history will soon be written in the second part of the booklet too. Not just because the Quantum Group's systems will continue to establish a reputation in the market, but primarily because we will continue to innovate. In order to create even more comfort on luxurious yachts and professional vessels, the Dutch will keep investing in new technology. We will continue to seek further improvements, in close cooperation with scientists both within and outside the company.

A history that started with the VOC is being given a worthy sequel in the Dutch town of Nuth. Quantum Controls shows that great progress can be made at zero speed and zero speed can become quite a progression.

dim design and communication

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