

Detlef Schlichting

“Presentation of a Shipyard The Friedrich Luerssen Shipyard”

The founder of the shipyard, Friedrich Luerssen, couldn't know back in 1875 that his company would later develop into a globally successful shipyard group which employs more than 1,200 staff and which is still in the family's possession, the Friedrich and Peter Luerssen families. How did this become possible?

In all the years, Luerssen was never lacking in open-mindedness for new, innovative things and concepts, in commercial and technical vision of the future, and solid hanseatic spirit – the basis for the worldwide presence of the Luerssen Group.

Aside from new construction, repair, and maintenance of ships, the spectrum now includes also the total field of logistic services as well as the know-how and technology transfer. The technical systems and installations and the equipment in all locations are first class and the skills of the workforce are exemplary. But most of all it is the spirit and acumen that are behind this enterprise.

Products from Germany

The construction of fast boats and ships became the trademark of the Luerssen Shipyard: fast patrol boats for the navies of the world and fast motor yachts for the civilian market. Luerssen acquired relatively early a solid technical knowledge in the construction of these fast and sophisticated ships which were optimized for an employment under harsh conditions at sea. And Luerssen developed the capabilities, structures, and systems that allow to successfully handling the complex orders from the Navy and the discriminating orders of yachts.

The “Made in Germany” seal of quality received a refinement in this segment: “Very fast boats and ships from the ‘Unterweser’”. Ambitious skilled personnel are the guarantors for successful development, construction, and production. Reliability and durability and resistance are the outstanding features of the results of the construction division: more than 200 engineers and naval architects work on the drafts and designs for complex and technically mature naval vessels and yachts of enormous elegance and beauty.

Partnership with Germany

The role of the German Navy as “Parent Navy” is of particular importance for a successful presence in the global competition. Procurement projects of the Navy are frequently also subject to politico-strategic interests. A poten-



Illustration of a Corvette K-130 in the Arabic Waters.

Grafic: Luerssen



Vice Admiral (GE N) Nolting, Chief of Staff German Navy in Kenya. Picture: PIZ German Navy

tial customer observes very meticulously whether the shipyards offer support to the German Navy and the Federal Ministry of Defence (FMoD) for trial and training and whether the supplier has already delivered similar ships to the German Navy.

Also highly important as collateral, supporting measures by the Parent Navy are the training of foreign officers at the Bundeswehr Command and Staff College as well as the instruction and schooling of naval attachés. However, for reasons of capacity alone it is not always possible to offer the same extent of training support by the German Navy for each and every partner navy.

Luerssen Production Facilities

Luerssen has production plants at Lemworder, Bremen-Aumund, Bardenfleth, Wilhelmshaven, and Rendsburg (all in Germany). These shipyards are fitted out with sheltered docks and covered floating docks, which allows weather-independent construction or the maintenance and overhaul of ships up to frigate sizes. In addition to the five production plants there are service stations all over the world.

Certified Quality

Customer satisfaction and quality have been the objectives set by Luerssen from the very be-



Production Facilities on the Weser River.

Picture: Luerssen

gining. It goes without saying that the certification according to DIN EN ISO 9001:2000 was granted in 1994 already.

Cooperation

Today, cooperation with foreign contractors and shipyards is indispensable for being able to successfully survive in the market. Luerksen is capable of entering into cooperation with partners all over the world. These are selected in relation to the projects. As Luerksen is not part of a large trust it is possible to guarantee high-grade flexibility for the benefit of the product. On the basis of cooperation contracts Luerksen manufactured prototypes for more than 100 naval vessels, which are constructed under license by contract partners – partly with Luerksen material packages from Germany. Fully equipped workshops, simulators and training facilities are set up with foreign customers based on the strong and qualified support by Luerksen.

Coastguard Service

Luerksen has well-tested ship designs for fast patrol boats with different employment profiles. They are well suited to fulfill the special requirements of customs authorities, coastguards, river/lake police or other government agencies.



Patrol Boat for the Bulgarian Coastguard.

Picture: Luerksen

These boats are optimized for sea surveillance, control, and patrol tasks in territorial waters and in the Exclusive Economic Zone (EEZ). The main features of the tested ship designs are the high to very high quality and endurance, high speeds, outstanding seagoing abilities and maneuverability characteristics on the one hand and economic speed with long operating ranges on the other hand.

German Navy

The German navies have been placing orders for the construction of most different boats and ships with Luerksen for one century already. The development of the German fast patrol boats is closely connected with the name Luerksen, as Luerksen was a leader in the con-



S-78 Fast Patrol Boat of the Coast of Lebanon Employed with UNIFIL.

Picture: PIZ German Navy

struction of fast motor sport boats in Germany before the First World War already.

Fast Patrol Boats

As from 1956 Luerssen delivered 40 units of the JAGUAR and ZOBEL Class frigates for the buildup of the Federal Navy; they became an important backbone of the young German Navy.

The operationally improved boats of the ALBATROSS Class followed as downright successful advanced developments and, subsequent to them, 10 units of the GEPARD Class. These boats continue to be in service with the German Navy and have proven time and again their capabilities in the past years, e.g. during the mission within the framework of UNIFIL. At present, the Luerssen boats make up the 8th German contingent off the coasts of Lebanon.

Today, Luerssen has tested fast patrol boat designs of ships and maximum speeds of more than 40 knots that are individually tailored to the wishes of the customer.

Corvettes and Frigates

Procured in a first batch will be five units of the K-130 corvettes, which will be constructed by Luerssen in combine with TKMS and the K-130 consortium. With the takeover of the naval construction division of the “Bremer Vulkan” Shipyard, Luerssen succeeded in taking a leap to develop and construct modern frigates. The bow sections of the SACHSEN Class were built by the Luerssen yard.

Presently, Luerssen and TKMS are developing the new class of the F-125 frigates in the F-

125 consortium; four ships are to replace the Class-122 frigates as of 2014. Important design targets are long maintenance/service intervals in order to be able to conduct operations lasting up to two years with an average endurance of 5,000 hours per year at sea without calling at the homeport. As for major repairs/yard maintenance it is intended to reach an interval of 60 months. The frigates must be capable of operating under extreme climatic conditions.

Mine Counter Measure Vehicles (MCMVs)

To date, 125 MCMVs were built or converted for the German Navy. Of these, the Luerssen Group has delivered 67 boats: Minesweepers of the SCHUETZE, LINDAU, ARIADNE, and FRAUENLOB classes; conversions of the LINDAU class to mine hunting boats and drone control ships; 15 of the 22 new boats are of non-magnetically steel. Two of these units have meanwhile been handed over to the Navy of the United Arab Emirates.



Mine Hunter made of Nonmagnetic Steel.

Support Ships

Six tenders of the 404 Class were delivered in cooperation with the “FSG” shipyard in Flensburg/Germany; they increase the endurance (mission duration) and operability of the boat squadron. The new Type 702 combat support ships are the largest ships of the German Navy. They were built by Luerssen in combine with “FSG” and handed over in the years 2001/2002. The BERLIN and FRANKFURT AM MAIN serve to provide logistic and medical support to mixed task groups. A third ship is currently under construction.

Worldwide Customers

The list of foreign navies that cooperate with Luerssen gives proof of the confidence built up in foreign countries, too. After 1945, Sweden was the first country, which ordered again fast patrol boats from Luerssen. Long-standing ties exist with the Persian Gulf states, Turkey, and Indonesia. Built for Turkey were fast patrol



Training by Luerssen Logistics. Picture: Luerssen

boats, mine hunters, and corvettes. Fast patrol boats, corvettes and mine hunters constructed by Luerssen are also sailing with the navies in the Persian Gulf. Fast patrol boats from Bremen are also in service in

Argentina, Ecuador, and Peru. Navies in East Asia appreciate the high quality of the ships and boats built by Luerssen and are counted among the regular customers. After the changes in Europe, cooperation was also initiated with the Polish Navy and the navies of Bulgaria and Romania. On an international scale, Luerssen ships were built for navies in 26 countries.

Picture: Luerssen

Logistic Services

Life cycle support has always been one of the primary tasks of the Luerssen shipyard. In 1987, the logistic support staff was pooled under the “Luerssen Logistics” company. It has proved to be important to offer comprehensive service support – and this not only during the construction phase, but also during the entire life cycle of a ship. In the new construction phase the tasks of “Luerssen Logistics” lie with the preparation of the documentation, the training of future crews in its own training center, and the definition and provision of the necessary board/land spare and repair parts. After delivery, “Luerssen Logistics” supplies the ships with all necessary spare parts and carries out overhauls. With the yachts, “Luerssen Logistics” acts also as ship owner, ensures a permanent operational readiness, provides a capable crew and sees to a smooth realization of all wishes expressed by the customers.

Repairs

As a manufacturer of ships with sophisticated equipment and systems, Luerssen always offers its customers comprehensive and complete, all-inclusive maintenance, service, and repair concepts as well as individual and eco-

nomically overall solutions. A computer-assisted maintenance and monitoring system aboard the ships controls all ongoing processes, documents them, and makes fault diagnoses.

As to conversions of ships aimed at reaching an improvement of the product and fighting efficiency and an extension of the time in service, the Luerssen yard has many years of experience. The possibilities range from extensive refits in Germany up to technical upgrades in the country of the customer. The experts are ready to carry out the overhauls and tests of ship’s and weapon systems, for complete refits of the hull, for calibrations of sensors and systems. After the refit, the life expectancy, capacity and performance of the ship are again comparable to that of a new construction.

The White Fleet

With the construction of yachts in sizes of more than 150 m in length, Luerssen has evolved to a worldwide premier address for the construction and repair of mega yachts, which are specifically built and tailored to the wishes of the owner. Based on the wishes of the customers, Luerssen collaborates with the best designers in the whole world. They support the shipbuilders, engineers and naval architects with Luerssen in order to realize the most creative and best design solutions.



An 80m Yacht Cruising.

Picture: Luerssen

The amazing thing is that the construction of white and gray ships can have a mutually inspiring influence: The lines of a fast patrol boat hull can be used for a yacht and, vice versa, a yacht hull can be a model for a corvette design. Reduction of exhaust emissions, fuel cells, and economical operation are additional intersections that can be mentioned here.

A “Yacht Management Center” was established with the objective to ensure that the customer will get maximum use value and find joy with his ship by the operation of all systems. The “Yacht Management” communicates online with the crew in order to guarantee a high-value round-the-clock service.



Bridge Operations of a Navy Ship.

Picture: Luerssen

Requirements of the Navy – What does this mean?

Naval requirements are different and particularly higher than those in the construction of merchant vessels. The shipbuilding regulations of the Federal Office of Defence Technology and Procurement are much more elaborated and comprehensive than the specifications in other navies. In part, they exceed by far the class requirements. Shock, vibration, radar cross section (RCS), magnetism, electro-magnetic compatibility, magnetic self-protection, redundancies, operational and occupational safety precautions or environmental concerns may be particularly mentioned here. The new requirements of an intensive use with the F-125 also mean making risk analyses and studying models of working hour stress, from the sequence and process of operations to the determination of scheduled maintenance measures and periods. The aim of these measures is an optimization of the staff employment aboard the ships. Quality assurance, quality inspection and acceptance tests are very meticulous and expensive; the management vis-à-vis the acquisition authorities is much more demanding. As to the establishment of the logistic supportability it has meanwhile become a standard requirement that everything be delivered with a digitally “interactive electronic documentation” with the first ship already.

The shipyard is required to integrate “repositories”, furnished software components, in new units, which is a particularly demanding task for the integration experts of the yard.

Discrepancies exist between the high standards that have to be met for the German Navy and navies and coastguards of the international market where low-cost solutions are given preference. The shipyard assumes the risk of the repeat purchase guarantee with COTS (commercial off the shelf) products that are available on the market, called “Obsolescence Management”. A reserve for continued in-service operation must be maintained to extend

the service phase of a platform or to enable modernization. To be mentioned here as prominent examples are the conversions of the Classes 148, 143A, 332, 333, 343, and 352.

Since the introduction of the “Man on Board” Program, the efforts to achieve better living conditions for the crew have been steadily enhanced, which concerns accommodation, leisure, sports, and Internet communications.

Navies all over the world increasingly demand a substantial “transfer of technology”. As a response to these requirements, Luerssen has, for instance, trained personnel for the construction of naval vessels in Indonesia and Turkey. When ships are constructed locally in accordance with the Luerssen design, the naval architects, engineers and craftsmen will receive intensive support, because the vessel which is built in a foreign country takes ultimately advantage of the work and service of the design offices in Lemwerder/Germany as a basis and is to meet the excellent grade and claim of quality of the Luerssen yard.

Naval Technology

What does the naval architect of the Luerssen yard have to know and observe when he designs ships for the navies of the world? An abundance of special naval technology has developed over the years. It is necessary, however, to differentiate between the navies. The German Navy sets higher requirements than many other navies. The requirements with regard to signatures of ships destined for the export are often lower

than, for example, the “high-level” requirements for the F-125. Here, extreme requirements set as an aim for the engineers and naval architects are: Electro-magnetic compatibility, Acoustics, Infrared like Air condition and ventilation.

Efficient air condition systems have long been part of the key competence of Luerssen. Indonesia has been equipped with them since 1953 and almost all Persian Gulf states as of 1968. Requirements in the Persian Gulf in respect to an operational capability in 50° C air temperature and respective air humidity manifest the problem. With the air condition and ventilation there are many synergy effects between yachts and naval shipbuilding.

The employment profiles have changed considerably, though: the ships stay longer on mission; the common maintenance cycles are not popular anymore. The trend is clear, systems must support longer times on mission; service, maintenance and repair must be possible with little expenditure. Here, the development of the F-125 is oriented to the future.

The fighting efficiency of such an expensive ship must be maintained over a long period of time; the seagoing endurance should be high and worldwide employment should also be possible. As to requirements for higher speeds, the customers are in best hands with Luerssen. More than 100 years of experience in the construction of fast ships are the traditional strength of the yard. The management of the large number of subcontractors and the resultant integration challenge with multifaceted interface problems require engineers and naval architects with broad expert knowledge.

In the past years, many subcontractors have reduced the own added value and purchased more and more services themselves. As a consequence, the reliability of the provision of services for the yards has suffered from that in the last years. Resulting from that is the fact



Quality is Decisive.

Picture: Luerssen

that Luerssen is now acquiring again more know-how itself in order to be able to successfully implement and supervise the integration.

David & Goliath

In the shipbuilding sector a concentration of yards is being observed for years now; a trend that will continue to progress. How can a family-run enterprise exist versus the concentrated power of big shipyards? To be considered here are two different worlds: share holder value vis-à-vis private owners who know how to manage and advance their business. Streamlined decision-making processes, lean structures, and a flat hierarchy lead to less coordination processes and to reduced management efforts. This means that there is more time available for the actual business. There is an open communication from the top down to the working level. Teamwork is in demand; hierarchy is not of central significance; the responsibility of the individual is greater – and thus also his satisfaction. The result is a 100 percent identification of the staff with the yard.



Fast Attack Craft for Exports. Picture: Luerssen

In a privately owned yard the mission-type tactics apply just as in the German Navy. The reaction times are shorter; if a suggestion is considered purposeful, it is quickly reacted on.

What is the company philosophy with Luerssen? It's quality! When possessing the physical quality of the ships and the quality of expert competence, one has an advantage over the competitor. The Luerssen spirit is developing in such an environment.

Processing of Projects and Orders

Different orders document the current business. The long-term partner Turkey is presently building fast patrol boats and mine hunters at its own yards under license with material packages, after the respectively first boat of the series was built in Bremen/Germany.

Coastguard boats with commercial standards have been contracted with Bulgaria according to the customer's requirements and within the



Carcass of a Yacht.

Picture: Luerssen

“design-to-cost” framework. The boats will be constructed at the “Unterweser” yard.

Smaller patrol boats (40 m) and offshore patrol vehicles (OPVs) (80 m) are being built in Germany for an Asian navy. The first boat will be handed over two years after the signing of the contract. The units concerned are ships that are particularly geared to operational tasks without having to meet full naval standards. The shipyard's task is to fulfill the operational requirement of the customer without being given a full naval budget. This modified procedure for the development of tailor-made ships may be forward-looking for future procurement projects of the Navy, especially for the increasingly important “patrolling” task.

The German K-130 corvette is an extremely sophisticated system, which is housed in a narrowly dimensioned space. The complexity of the system entails that small things in supposedly subordinate systems have enormous effects – an increased management effort with the general contractor is therefore indispensable. Luerssen is intensively working on this problem, which, for example, means an intensification of the quality management for additional purchase systems. The special requirements set for the F-125 frigate have already been stated: it must meet new and maximum requirements; its development and construction present a big challenge to the German yard industry.

The procurement of a third combat support ship was approved; it is to be commissioned in 2012. Basically, this combat support ship was planned as a design duplicate of the two predecessors, but was distinctly modified by new requirements, which also affected the commercial scope. The employment of the third ship will clearly show whether or not the changed requirements can improve the ship even more. Against the background of changing threats Luerssen is working out new concepts

for future anti-mine defence at the same time, even if no new ships will be procured in Germany at the moment.

Outlook

Luerssen is going to be a reliable and competent partner of the German and foreign navies and also of the civilian customers in future, too. The shipbuilding competence will be schooled and further enhanced. The development phases of the projects are intended to be clearly reduced. This will only be possible through an early cooperation of design and production with an optimization of the production process. An integrated approach of construction and design is planned for that purpose.

The range of products is going to be expanded in future. The inherited, experience-based product range will be retained, such as the mine warfare vessels, fast patrol boats, offshore patrol vehicles, corvettes, frigates (alone or with partners), support units like the combat support ship in this or other form and shape, and finally mega yachts of more than 150 m in length. ■

By Detlef Schlichting, Luerssen Defence, Sales Director, Naval Architect. The Article was published in MarineForum 10/09.



Multi-Role Light Frigate.

Picture: Luerssen