

DAMEN

FAST CREW SUPPLIER 2610

TWIN AXE

Executive Summary



DAMEN

FAST CREW SUPPLIER 2610

TWIN AXE

FAST CREW SUPPLIER RANGE



FCS 1204



FCS 2008



FCS 4008



FCS 1605



FCS 2610



FCS 5009



FCS 1905



FCS 6511





“TWIN AXE” WORKBOAT FOR WINDFARM MAINTENANCE

Twin Axe hull shape

- Excellent seakeeping
 - Large wet deck clearance
 - Round tunnel shape
 - Cut-out in foredeck
- Low resistance

Deck lay-out

- Large work deck with cargo carrying capacity
- Superstructure aft for crew comfort



TYPICAL APPLICATIONS

- High speed transport
- Stable platform
- Large deck area
- Comfortable accommodation





TWIN AXE TECHNOLOGY

Based on “Damen Sea Axe”

- Five years research with:
 - Delft University
 - Royal Netherlands Navy
 - Maritime Research Institute
 - US Coast Guard
- Compared to conventional ships:
 - Peak accelerations 50% to 75% less
 - Flat water resistance 10-15% less
 - Added resistance in waves 60% less
- “Sea Axe” ships:
 - > 100 in service
 - ± 40 under construction

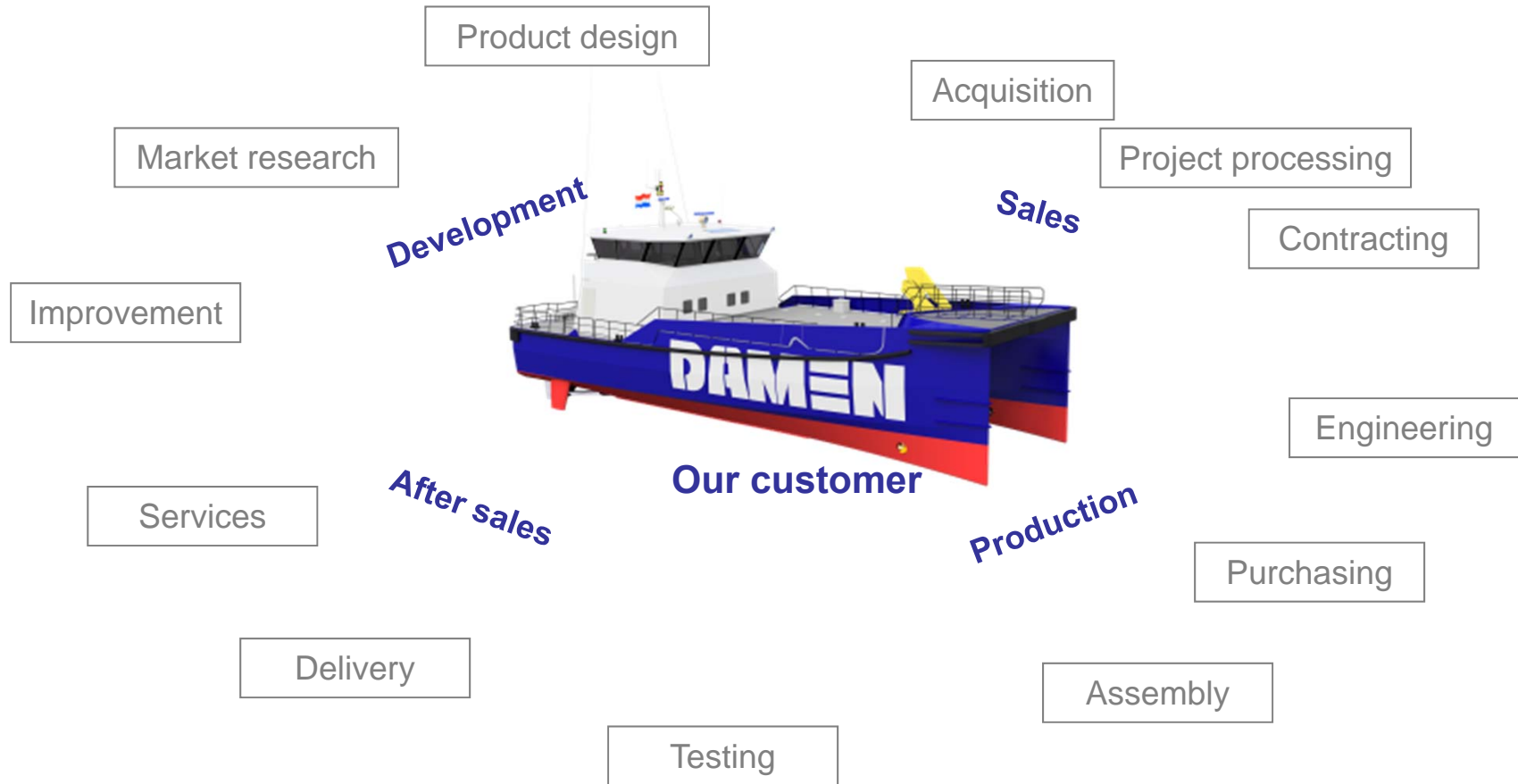
Twin Axe = Catamaran Sea Axe

- Research carried out with Delft University
- Similar improvements over conventional catamarans as found for monohulls



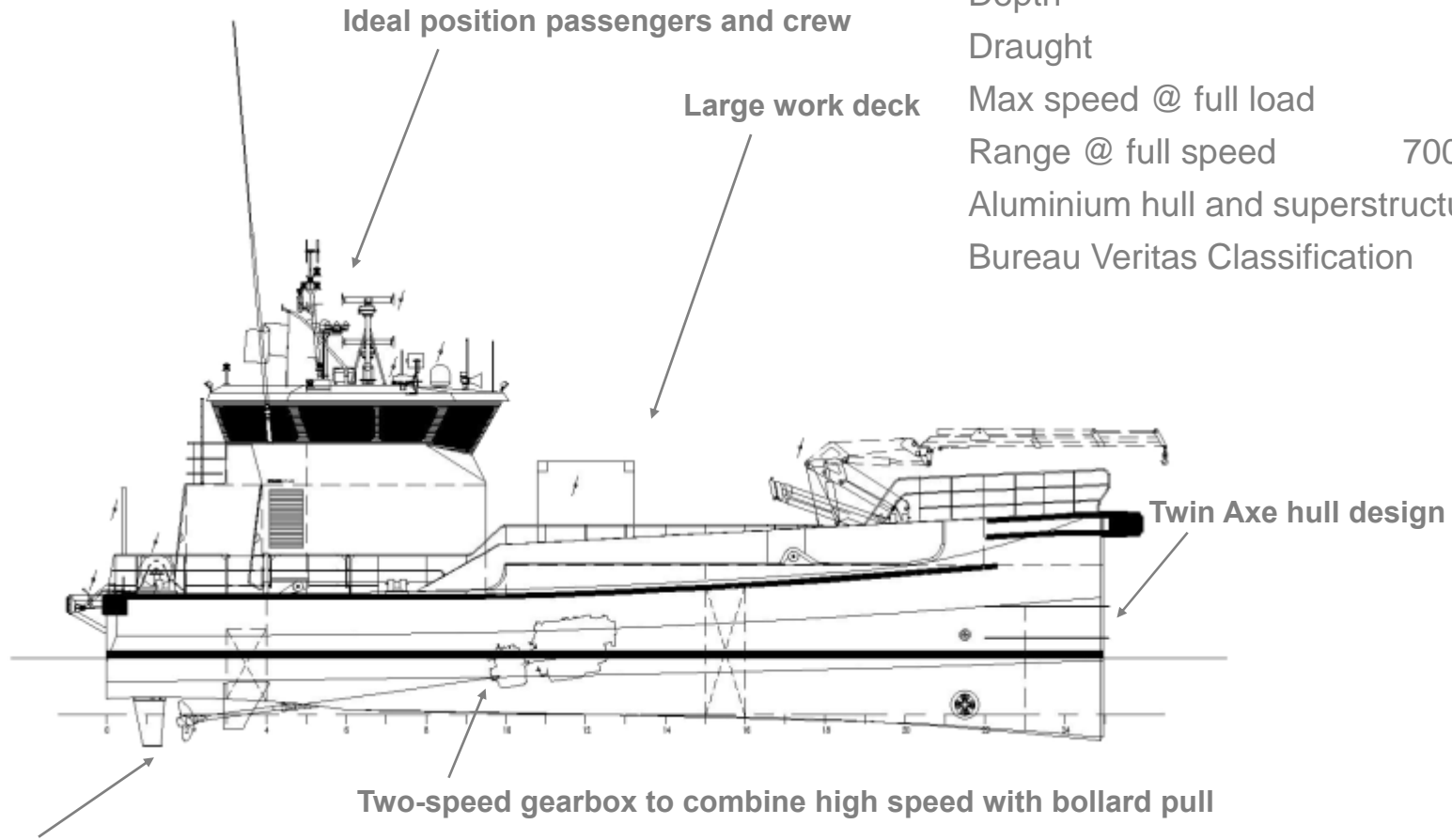


PROVEN DESIGN



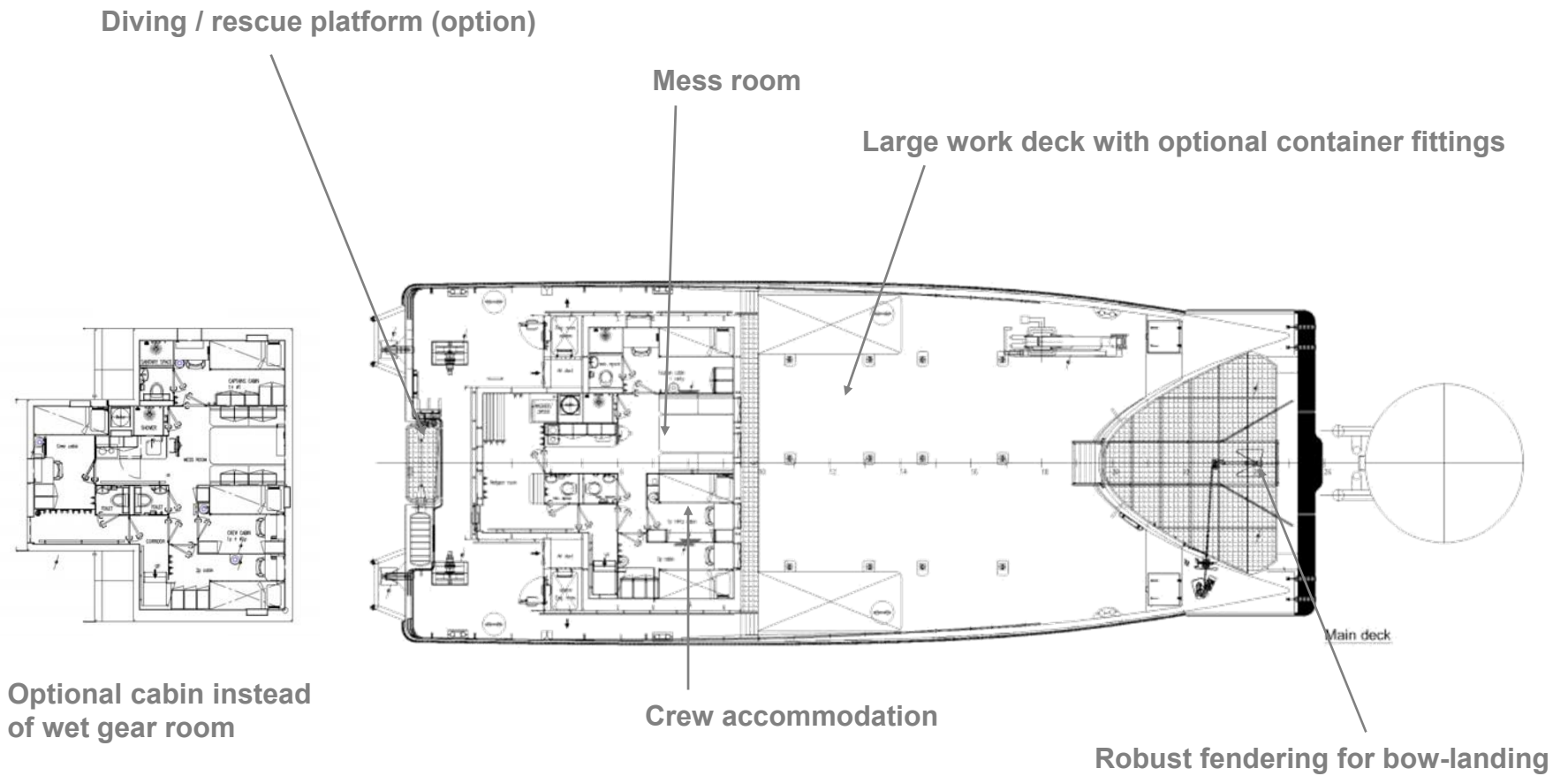
TECHNICAL SPECIFICATION - GENERAL

Length o.a.	25.75 m
Beam	10.27 m
Depth	3.74 m
Draught	2.40 m
Max speed @ full load	20 - 25 kts
Range @ full speed	700 - 1200 nm
Aluminium hull and superstructure	
Bureau Veritas Classification	

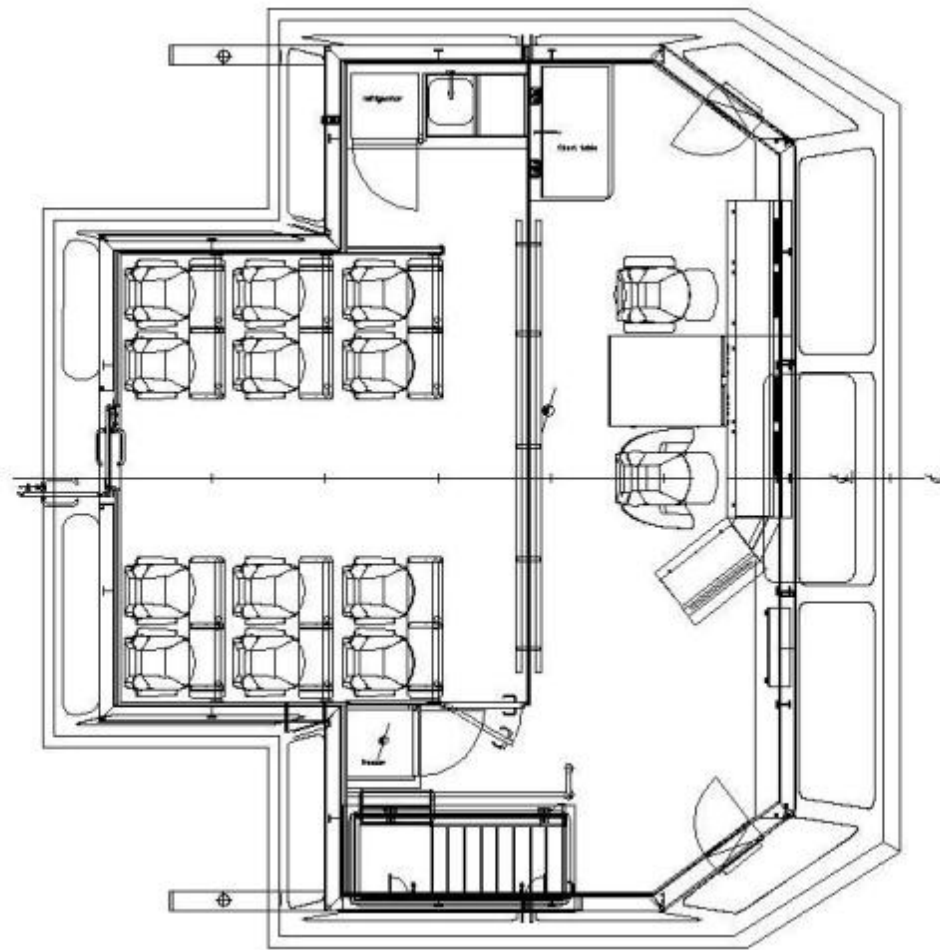


Fixed propellers for efficiency, traction and robustness

TECHNICAL SPECIFICATION – MAIN DECK



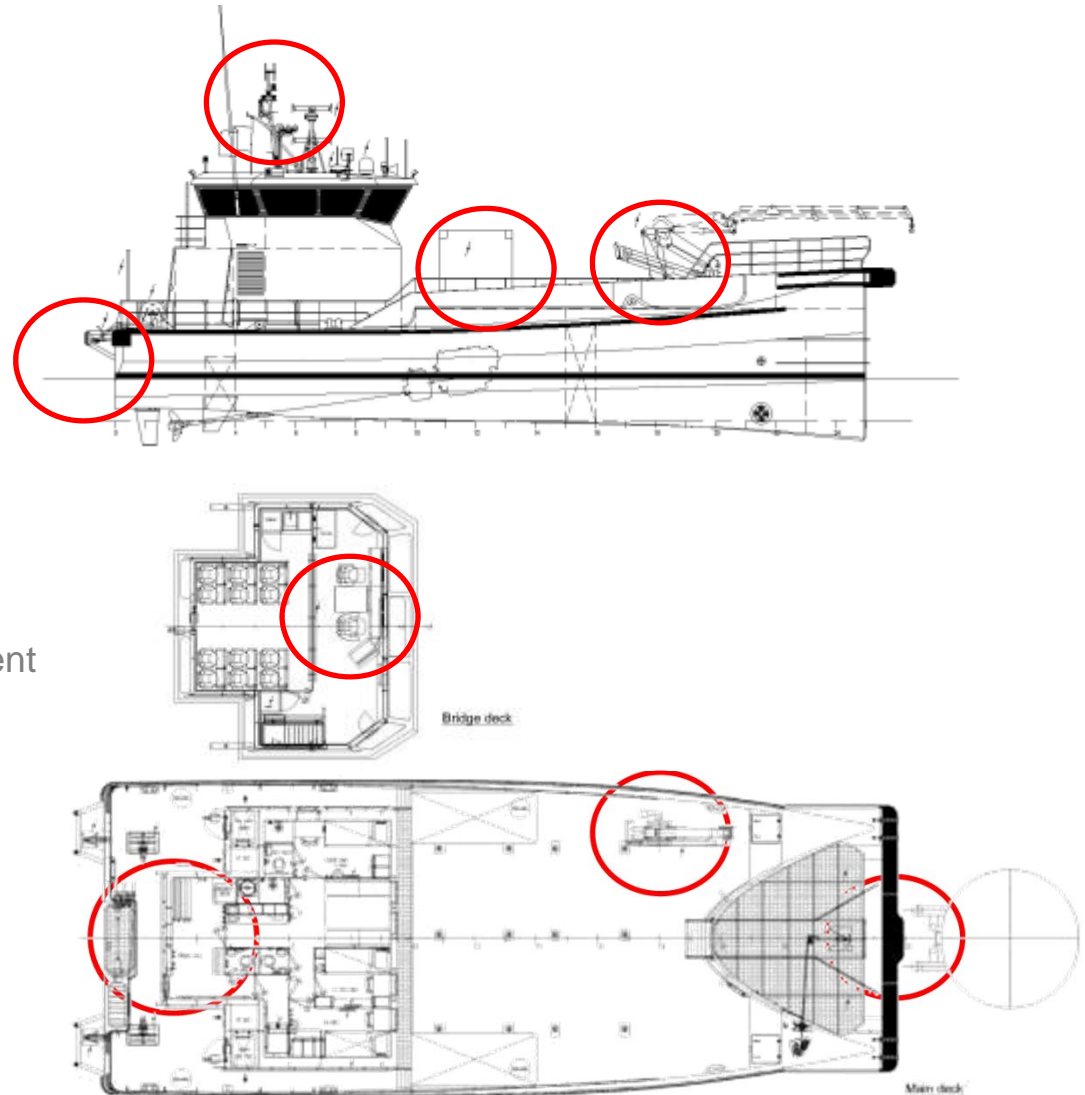
TECHNICAL SPECIFICATION - WHEELHOUSE



Bridge deck

TECHNICAL SPECIFICATION - OPTIONS

- Deck equipment
 - crane
 - container fittings
 - mooring equipment
- Diving / rescue platform
- Tank configuration (trim tanks)
- Superstructure arrangement
- Choice of navigational / nautical equipment
- Other engine brands on request
- Type of fendering
- Wet gear room



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REFERENCES

Besides ≥ 10 under construction for stock



Damen Services

- **Damen Field Service**
Certified engineers available at all times
- **Damen Parts**
Specialized department for the sales and supply of (spare) parts around the world
- **Damen Equipment, Project, Systems and Engineering**
DAMOS maintenance systems, training and services

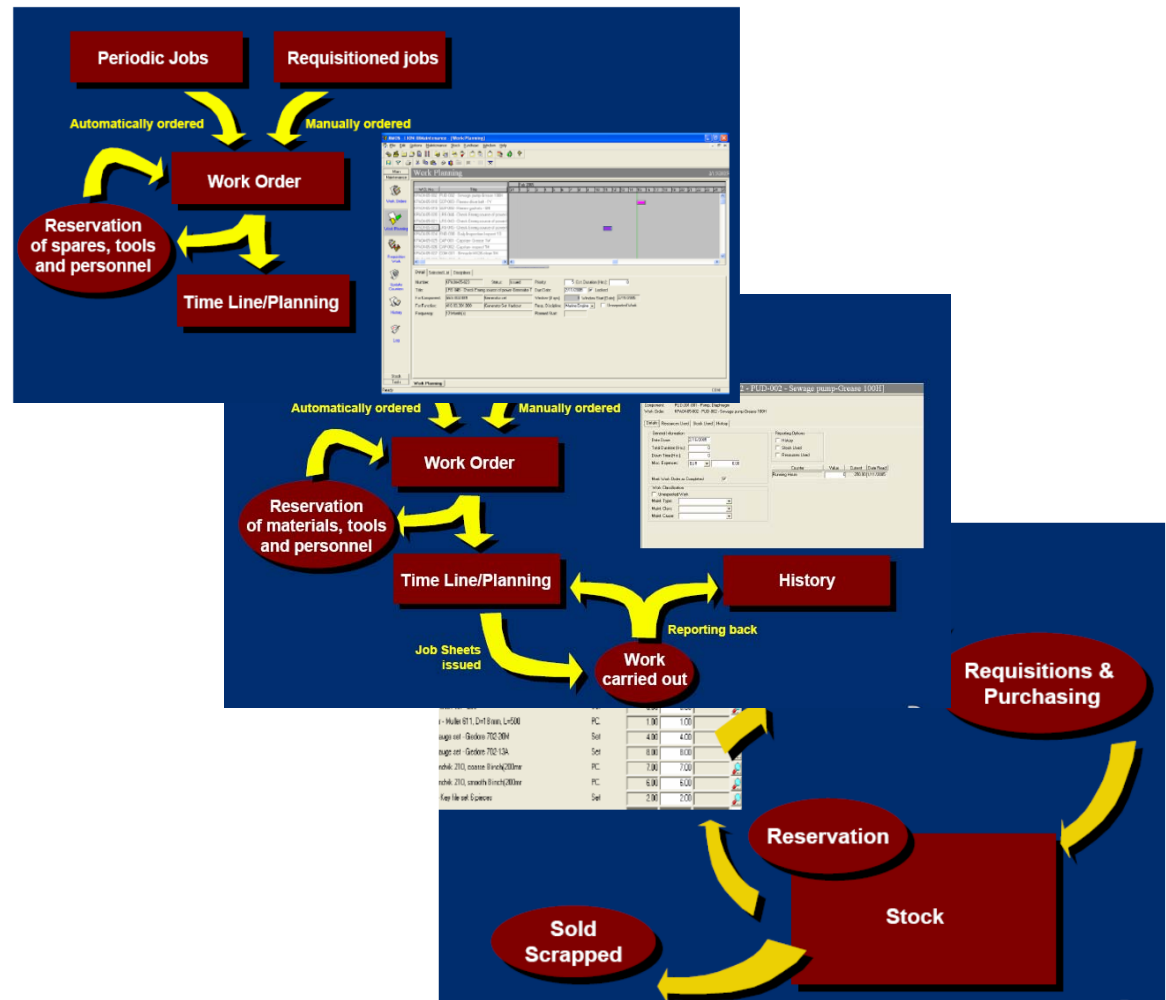
General

- Standard equipment will be used for main engines, gearboxes, waterjets, generators, electronics, etc. in order to guarantee short delivery times for parts
- All main suppliers have main components in stock



DAMOS system provides:

- Maintenance scheduling based on calendar, running hours, condition – or a combination
- Equipment control, dry docking, repair list
- Class survey reporting
- Stock control
- Reporting
- One office PC

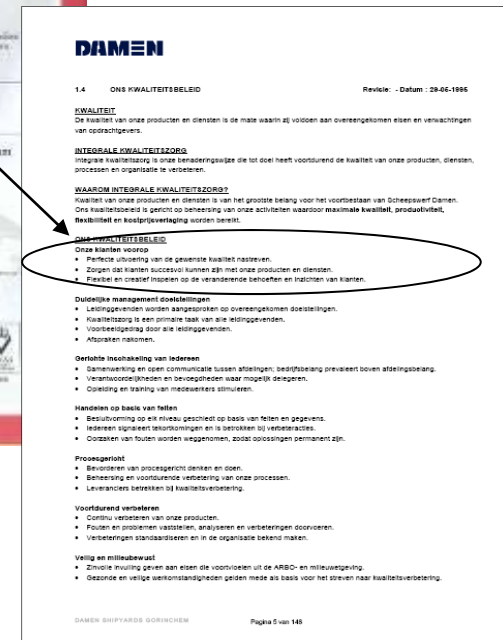




Quote from the Damen ISO-9001 Handbook:

Customers come first

- Pursue perfect execution of the demanded quality
- Ensure Customers can be successful with product and services
- Look for flexible and creative solutions to accommodate the changing demands and opinions of Customers



Sustainability – Through the entire lifecycle

The maritime industry is increasingly required to meet the stringent requirements of environmental management and Damen is proactive in developing sustainable and cost-effective vessels and services. Much of Damen's R&D efforts are looking into sustainability issues, both in terms of manufacturing processes and in terms of products. Reducing hull resistance using air lubrication, the impact of different hull forms on resistance and examining new fuel sources such as LNG are current projects.



AIR LUBRICATION SYSTEM

Damen is involved in the Dutch project PELS and the European 6th Framework Programme project SMOOTH which both examine air lubrication.

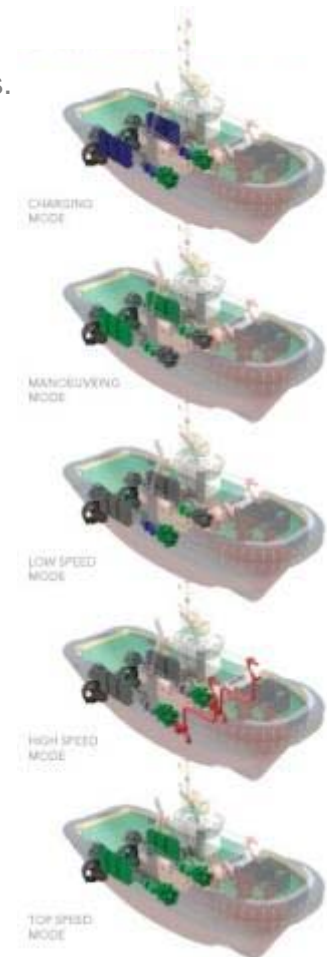
NOZZLE FLOW RESEARCH

Nozzle cooling facilitates a high velocity of seawater through a nozzle when the engines need to deliver the most power, resulting in a guaranteed, efficient cooling system.



E3 TUG PROJECT

Damen is playing a leading role in the E3 Tug initiative. The emissions during various operating modes have been measured for one Damen ASD Tug 2810 operating in the Port of Rotterdam. In order to reduce the environmental impact of such emissions, the ship's hybrid propulsion is being optimised in relation to its operational profile.



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