



ACO Marine

*Advanced wastewater solutions for the marine
and offshore market*







A strong global partner

ACO products represent ongoing professional development, design and operation of advanced wastewater system solutions and management. The 3500 members of the international ACO family, based in over 40 countries, with 26 production sites, generate a turnover in excess of 1 billion USD. Optimism is high, as the ACO Group is extremely well positioned as a quality and innovation leader in the growth markets of the 21st century.

ACO at a glance.

- 1946 Company founded by Josef Severin Ahlmann
- More than 3500 employees in over 40 countries (Europe, America, Asia, Australia)
- 26 production sites in 14 countries
- Turnover 2013: 1 billion USD

Not all our products are as eye-catching as our luxury yacht polished scuppers.

ACO products are developed and designed to function reliably, year after year, even though their presence goes largely unnoticed.

At ACO Marine, we strive for perfection in every detail. After all, even products of the highest quality can always be improved. Our engineers operate ongoing research and development programmes striving for innovation and enhancements to all aspects of projects - no matter how large or small.

ACO Marine environmental solutions for the marine and offshore market

ACO Marine is a member of the international ACO Group with a sales and service network world-wide. Their unique environmental solutions are used primarily in wastewater technology, wastewater management and drainage systems. The wide range of products includes advanced membrane bioreactor systems, conventional extended aeration with 'bio-sword' filtration sewage treatment plants, push-fit pipe systems in both stainless and galvanised steel and fully automated high capacity grease separators.

ACO Marine develops in-house solutions from its ISO 9001 accredited production facilities, all of which are located entirely within the EU.

The main features of the ACO Marine product range are:

- Environmental system concepts
- High performance standard according to the very latest standards and legislation
- Reliability
- Quality Management are certified to ISO 9001:2009 / ISO 9001:2008 & EC MED Module D
- Innovative technologies
- Flexible and adaptive approach to bespoke solutions
- Recognised technologies, certified and installed worldwide on all vessel types

As a reliable partner, ACO Marine provides competence, quality and a high level of effectiveness in environmental shipbuilding worldwide - from initial design through to final handover and through-life support of the product.





ACO Marine products

Advanced wastewater solutions

ACO Maripur NF - Membrane Bio Reactor (MBR)

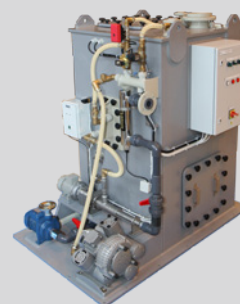
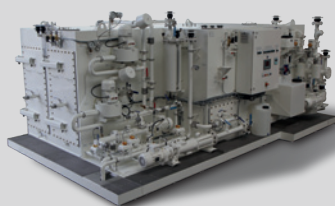
- Type Approved to IMO MEPC 159(55) and MED Module B. Offered as IMO MEPC 227(64) [including §4.2] 'ready' prior to receipt of full BV certification in January 2015.
- Bespoke solutions with complete ship system integration.
- Compact process enabling limited space on ships and other marine structures to be used more efficiently.
- A combination of a biological process with ACO patented Bio-Sword technology – without the need for final clarification or additional disinfection.
- AISI 316 L/Ti stainless steel construction throughout.
- Extremely simple automated operation compared to 'conventional' MBR solutions
- Compatible with both gravity and vacuum collection systems.
- Modularisation - wastewater transfer pumps and vacuum collecting systems can be shelf mounted onto ACO Maripur NF to reduce installation complexity and footprint size.
- Designed to treat all wastewaters (black and grey water) in one reactor reducing the need for more costly, heavier and larger alternative solutions.
- Retrofit options. ACO Maripur NF is available, on a project-by-project basis, in modular sections to allow easier access.

ACO LIPATOR and ACO LIPATOMAT Grease Separation Systems

- Galley water treatment unaffected by vessel movement and vibration.
- The ACO patented internal design ensures effective separation of grease and sediments even during peak load periods.
- Grease and sediment removal is fully automated on the Lipatomat range (manual on the Lipator).
- Grease and sediment removal occurs without interrupting separator operation.
- The separation technology ensures the greases and sediments are highly concentrated, only grease and sediments are disposed of with minimum surplus water.
- Heating and short residence time ensures grease is not deposited on the chamber walls.
- Internal maintenance and cleaning is therefore reduced to an annual inspection only.

ACO CLARIMAR MF as an advanced treatment system

- Type Approved to IMO MEPC 227(64) – excluding §4.2 - with EC MED Module B by Bureau Veritas.
- High performance ACO Composite PPFR GREY tank material with a life-time guarantee against corrosion.
- Designed to treat all waste water streams (black and grey water) in a single unit.
- Compatible with both gravity and vacuum collection systems.
- Self-cleaning 'Bio-Sword' with ACO-MF filtration technology. No settling stage requirement.
- UV sterilisation – no chlorination and de-chlorination dosing.
- Manufactured in the EU entirely from high performance composite materials which, unlike coated black steel, are completely corrosion resistant and light weight.
- Modular design concept for simple installation requiring only one power connection, even when a vacuum system is directly mounted.
- Lowest running costs of any sewage treatment plant on the market with minimal operator intervention.





ACO Marine products

Conventional wastewater solutions

ACO CLARIMAR as a conventional system

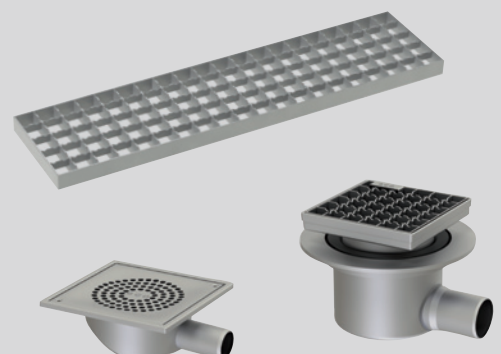
- Type Approved to IMO MEPC 159(55) and MED Module B.
- Compatible with both gravity and vacuum collection systems.
- Uses the activated sludge system which, with extended aeration, accelerates the natural biological processes.
- Automated liquid chemical disinfection and produces an effluent suitable for discharge at sea.
- UV sterilisation available as an option.
- Manufactured in the EU entirely from high performance composite materials which, unlike coated black steel, are completely corrosion resistant and light weight
- Modular design concept for simple installation requiring only one power connection, even when a vacuum system is directly mounted.
- Simple automated operation requires minimal operator intervention and maintenance.

ACO Push-Fit Pipe Systems

- The ACO Pipe system has a proven high resistance to aggressive media. A comprehensive catalogue of fittings offers, in connection with ACO drainage technologies (scuppers and channels), a truly versatile complete system solution.
- Simple assembly and installation provide a high level of savings for the installer when compared to conventional pipe systems. Excellent corrosion resistance makes the stainless steel ACO Pipe push-fit pipe system a much more cost efficient solution.
- Available with external epoxy coating and in 317 SS Grade for better resistance against chlorine.
- The ACO Marine GM-X push-fit pipe system is made from Galvanised steel and meets all the requirements of both the ship building and offshore industries and as such is recognised and approved by all leading maritime registers worldwide.

ACO Scuppers + Channels

- The ACO Marine EG150 range of scuppers is designed to provide hygienic, quick, simple and economic trapped drainage solutions for washrooms, toilets, 'wet' bathrooms, changing rooms, galleys, swimming pools, etc.
- Manufactured from austenitic 304 grade stainless steel as standard; excellent corrosion resistance is guaranteed. Optional 316 grade stainless steel for aggressive applications is available in all scuppers.
- Additional features include compact design, removable in-line foul air trap is fitted as standard, with a choice of vertical or horizontal spigot outlets, telescopic height adjustment and full rotational adjustment for tiles, wall or equipment alignment.
- ACO Marine provides a wide range of stainless steel channels and gratings.





ACO Marine products

Bespoke solutions

ACO Special Tanks

- ACO Marine can supply tailor made solutions for tanks suitable for most ship board requirements in both stainless and black steel construction. Tanks can, at present, be built up to capacities of 400 m³. ACO Marine may be able to offer larger tanks subject to final design and production approval and evaluation with the customer.
- ACO Marine offers a wide range of customised collection and/or mixing tanks, sludge tanks bioreactor process tanks, fresh water tanks and other tanks for similar applications. ACO Marine welcomes the opportunity to discuss all specialist customer requirements and to develop suitable project feasibility studies.

ACO Lift Stations

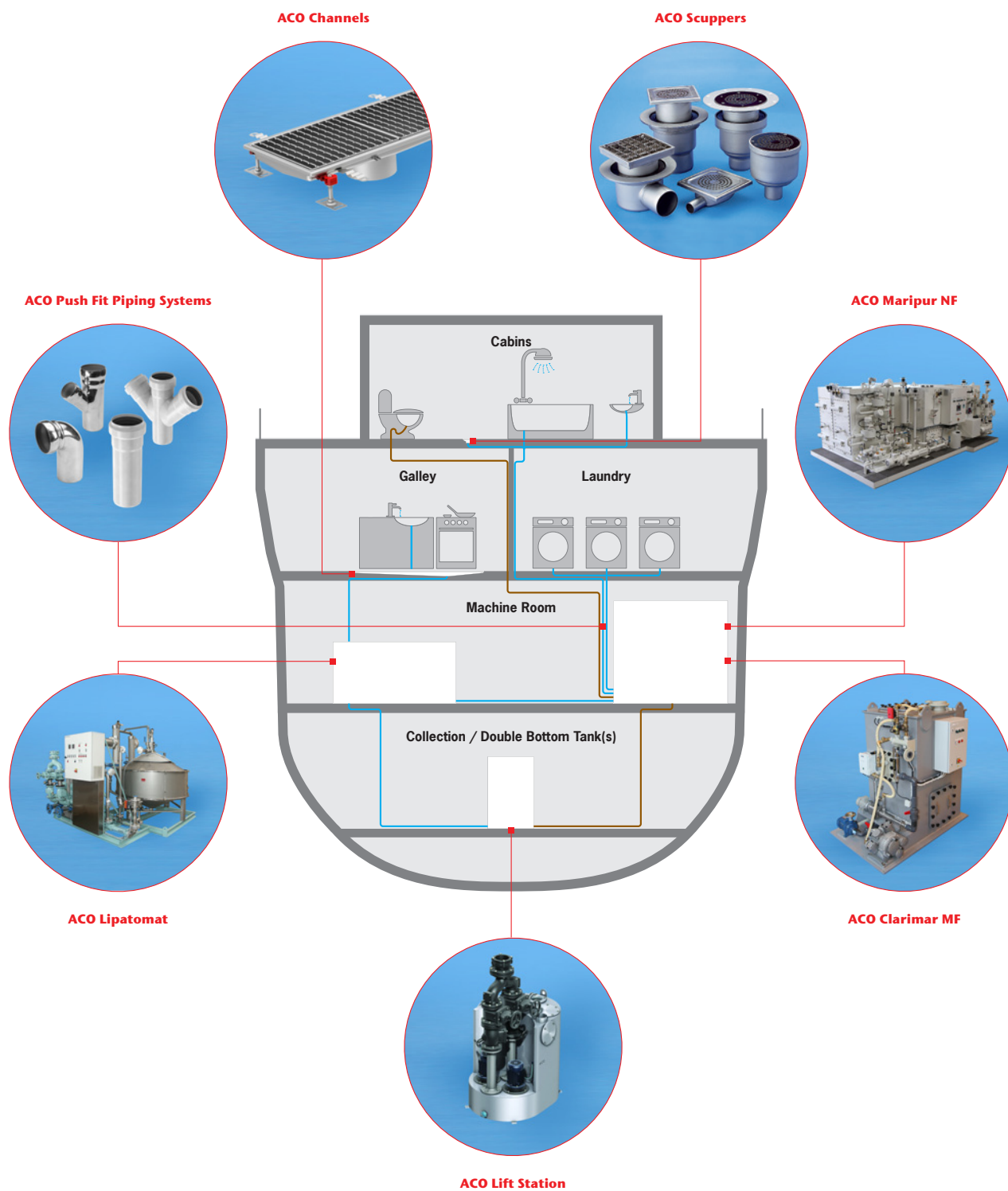
- ACO Marine offer an extensive range of lifting stations for a variety of sanitary and technical applications
- Sanitary grey water lifting stations are available to facilitate installation of low-level showers and/or wash basins that cannot be drained by conventional gravity means
- Galley grey water contains grease which needs to be separated before entering the sewage treatment plant. To allow effective separation in a grease trap or more efficient grease separator, ACO Marine Galley lifting stations are fitted with eccentric screw pumps to prevent emulsification of the grease during pumping
- Black water lifting stations are available specified with either centrifugal (flooded suction) or vacuum (suction lift) pumps. Primary requirement is to lift black water from low level gravity sources up into the treatment system
- Lifting station main tank bodies are available in either composite material or stainless steel
- Available in either single or dual (duty/stby) pump configuration
- Sinkamat 'Z' – special condensate lift station. Available in stainless steel only with internal submerged pump and level sensors suitable for installation in high visibility areas due to elegant self-contained box configuration.

ACO After Sales, Service & Support

- The Retrofit Maripur® NF advanced wastewater treatment plants are designed to reduce the cost of installing wastewater treatment equipment into existing vessels. Each standard Maripur® NF size in the range is available for adaptation to a bespoke retrofit requirement and all come fully certified to IMO MEPC 159(55) and IMO MEPC 227(64) 'ready'.
- ACO Marine is committed to provide full spares and service throughout the equipment lifecycle for our customers. We guarantee that our customers get the service they need – whatever, wherever and whenever they may need it.
- ACO Marine also guarantee full technical support during preliminary discussion (including compartment drawings, 3D modelling, structural analysis and detailed dimensional arrangements) as well as during complete project execution.



ACO Marine Wastewater management



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