



XERIC

INNOVATIVE CLIMATE-CONTROL SYSTEM TO EXTEND  
RANGE OF ELECTRIC VEHICLES AND IMPROVE COMFORT

**XERIC project:** -PS3: *On-board climate control system for boats based on the XERIC technology*

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*Every year more than 10.000 new boats in the range 12 m- 24 m, equipped with air-conditioning systems, are manufactured and sold all over the world.*

*In addition, the superyacht sector including boats in the range 24- 50 m produces about 1.000 boats per year.*





# Introduction to the boat market

*Sailing boats represent about 40% of the whole production. Here the energy balance is very critical due to the small size of power generators as well as the intensive use of the air-conditioning on board.*



*Charter Market: there are in the world thousands of charter bases. In the Caribbean in particular there are the largest fleets where yachts are rent weekly all over the year and the air-conditioning systems on board are exploited most of the time due to the very hot and wet climate.*



*The charter fleets, which consist mainly of sailing boats and catamarans, represent a very good opportunity for the suppliers of equipment, since the boats normally undergo renovation after 5 years, often involving the air-conditioning replacement. Then they are sold and replaced with new boats.*

*The air-conditioning system is designed based on the size and type of the boat as well as the climatic zones considered.*



*Typical thermo-hygrometric conditions considered for the yacht design are the following, for climatic zones:*

*A Mediterranean area;*

*B Tropical area;*

*C Gulf area.*

Environmental thermo-hygrometric conditions			
	A °C / RH	B °C / RH	C °C / RH
Summer - External	33 / 70	38 / 60	43 / 50
Summer - Internal	23	23	23
Summer - Sea water	<28	<32	<32

*Example of air-conditioning system for a sailing catamaran 58' in the Mediterranean area. Needed cooling capacity: 12 kW, average power consumption of the air-conditioning system: 4 kW*

*Air-conditioned day  
area (main deck)*

*Air-conditioned night  
area (lower deck)*

*Xeric could be applied to the boat air-conditioning in order to considerably increase the energy efficiency of the system.*

*Many benefits can be forecasted for the boating industry by coupling Xeric to the traditional VCC, such as:*

- *Reduction of electrical demand from air-conditioning by 30-40%;*
- *Downsizing of the power generator with reduction of dimensions and weight of equipment;*
- *Possibility to dehumidify the air using low power.*



*Xeric could be applied to the new boats as well as to the refitting boats. The following constraints however shall be considered for the new components to be coupled with the traditional VCC:*

- suitable to work in a salty atmosphere;*
- robust from a mechanical point of view and reliable over the time, considering the very high cost of after sale service;*
- suitable to be located in restricted spaces, that is very crucial on board, especially for small yachts;*
- light since the low weight of the air-conditioning system is strongly required, especially for sailing boats (the boat builders assign a value increment of 1.500 Euro for every kg of weight reduction).*

*Within the dissemination activity, Xeric project has been presented so far in important marine industry exhibitions:*

- *Shanghai Boat Show CIBS;*
- *Oslo Boat Show-NORSHIPPING;*
- *Amsterdam Show-METS.*

*The results are very encouraging as the visitors, which are professionals of the marine industry, are very interested to innovative solutions which increase the energy efficiency of the systems installed on board.*



# Xeric applied to boats air-conditioning

***THANK YOU FOR YOUR KIND ATTENTION!***



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