LOA:	102' 0" (31.09m)
Beam:	20' 0" (6.10m)
Max Draft:	5' 6" (1.68m)
Hull Material:	Aluminum
Hull Config:	
Speed	Cruising 16 knots Max 20 knots
Location:	Florida United States

Year:	Mfg-2016 Model-2016
Builder:	ARES CUSTOM YACHTS
Model:	
Type:	Motor Yacht Semi-Displacement
Guests SR/S:	4/8
Crew R/B/S:	2/4/4
Engines	1000 HP, Twin, Inboard, Diesel/Electric, Caterpillar

Additional Specifications For ARES 102:

LOA:	102' 0" (31.09m)	**Year:**	Mfg-2016 Model-2016
Beam:	20' 0" (6.10m)	**Builder:**	ARES CUSTOM YACHTS
Max Draft:	5' 6" (1.68m)	**Model:**	
Hull Material:	Aluminum	**Type:**	Motor Yacht Semi-Displacement
Hull Config:			
Hull Designer:		**Top:**	
Deck Material:		**Speed:**	Cruising 16 knots
Tonnage:			Max 20 knots
Range:		**Engines:**	1000 HP, Twin, Inboard, Diesel/Electric, C-12.9 ACERT, Caterpillar
Int Designer:			
Ext Designer:	Persak & Wurmfeld, Inc.	**Staterooms:**	4
		Sleeps:	8
Fuel Capacity:	6,275 g (23,753 l)	**Heads:**	5
Water Capacity:	2,100 g (7,949 l)	**Crew Quarters:**	2
Holding Tank:	400 g (1,514 l)		
Flag:	n/a	**Crew Berths:**	4
Location:	Ft. Lauderdale, Florida United States	**Captain Cabin:**	No
		Classifications:	
Price:	Price On Application	**MCA:** No	**ISM:** No

PRINCIPAL CHARACTERISTICS

Length Overall:	102'-0"
Length Waterline:	89'-6"
Beam, maximum:	20'-0"
Displacement:	196,180 lbs lightship / 257,580 lbs full load
Speed – Hybrid Electric:	12 knots cruise / max
Speed – Hybrid Diesel Electric:	16 knots cruise / 20 knots max
Main Engine:	(2) x Caterpillar C12.9 ACERT Diesels, 1000 BHP E-rated
Electric motors:	(2) x 335 HP UQM PP250HV
Fuel Oil:	6,275 US gal
Fresh Water:	2,100 US gal
Black Water:	400 US gal
Gray Water:	400 US gal

ACCOMMODATIONS

The proposed layout can be modified to suit an owner's specific requirements and various options exist for the different spaces. The current layout calls for 2 identical, full -beam master staterooms plus 2 island queen VIP staterooms, plus separate crew.

PROJECT OVERVIEW

A great opportunity to own a fully custom, hybrid diesel electric, aluminum yacht, with modern systems in 20 months by utilizing an existing hull and superstructrure. Extensive engineering, naval architecture, weight studies have been completed. The proposed layout can be modified to suit an owner's specific requirement and various options exist for the different spaces.

Located in Fort Lauderdale, Ares Marine, has assembled a world class team of experts in their field, to assemble a fully custom, high quality motoryacht, featuring two identical, full beam master staterooms, plus two island queen VIP staterooms plus separate crew.

DEFINITION

Electric propulsion has been around for over 100 years. What is new is the sophisticated electronic monitoring and distribution systems that properly manage electrical demands and efficient battery charging coupled with more efficient and lighter battery banks. With today's technology you can now receive the benefits hybrid propulsion has to offer, including increased fuel efficiency, minimal generator run times and a nearly silent cruising experience, devoid of diesel engine rumble and smell.

The key to maximizing these benefits lies in the large bank of batteries that accompanies the diesel electric system. It is this tremendous reserve of power that allows you to operate the vessel under DC power alone, eliminating the operation of the diesel. Likewise, with such massive amp-hours at your disposal, powerful inverters can easily run the ship's air-conditioning and domestic systems for periods of a time without the need of A.C. power from the generators. Charging of the battery bank can be done quickly and by various systems, allowing for a more peaceful cruising, anchoring and live-aboard experience.

How a hybrid diesel electric system works:

A diesel engine, be it a main or generator, spins a large stator hooked up to the flywheel. This stator turns the mechanical power into electrical power in the form of high direct current (DC) voltage with minimal efficiency loss. This large amount of power passes through a distribution block that is managed by an Energy Management Computer (EMC) control board. The EMC board is responsible for system operation, optimization and distribution, sending power to where it is needed whether that is battery charging or propulsion demands. Assuming the vessel is underway, the bulk of the power is directed to the electrical motors connected to the shafts. Electric propulsion is extremely efficient and can deliver maximum torque ratings at all speeds.

EXPLANATION & RATIONALE FOR THE 102'

Fuel efficiency, low cost of maintenance and operations in tandem with low noise, vibration and minimal heat and exhaust smells, where the basic criteria for the design of this user friendly long range motoryacht.

Following is an overview of specifications, systems, layout and interior décor possibilities for this vessel, which in the early stages, may be adapted to meet the particular requirements of the owner.

OVERVIEW: TWO DRIVELINE OPTIONS

We have designed two drivelines, depending on the end users cruising criteria: the capability of cruising up to 17kts, with a top speed of about 20kts, utilizing main diesel engines in tandem with the electric motors OR 12kts continuous cruise*, maximizing range and simplifying systems and maintenance.

OPTION 1: Parallel Hybrid Diesel Electric System

For the owner who wishes to have all the advantages of a hybrid electric system: long range economical cruising and the ability to cruise or anchor "quite ship" (batteries only -no engines running), however also wants the ability to cruise at higher speeds (above 12kts) when the need arises. Using this option the vessel is capable of cruising from 12-17kts, with a top anticipated speed of 20kts.

For speeds up to 12kts cruise, the vessel will utilize the generators and battery banks coupled to 2 x 250kW peak (335HP) electric motors, one to each shaft. For speeds in excess of 12kts, this system will then be married to a standard main engine propulsion system, using C12.9 - Caterpillar Acert engines (1000 HP) each and a standard ZF transmission. This allows for the engine to be engaged or disengaged from the electric drive system, depending on performance required by the operator.

OPTION 2: Serial Hybrid Electric

A simpler, lower weight, more livable space system than Option 1, with less mechanical systems, less maintenance and less expense! Designed for economical long-distance cruising at a continuous cruise speed of 12kts*. It is built as an Eco-friendly, live-aboard, and long range vessel. This system is SIMILAR for the first part of Option 1 above, but without the main diesel engines. So the following equipment and systems will be applicable for either system, with the exception of the generator set-up (more later).

The Generators or shore-power will be charging a large 600 Volt battery bank which will supply all ships power, including propulsion.

Propulsion: The vessel is defined as a Serial Twin Hybrid Electric, with main propulsion being provided by two U.S. made UQM PP250HV, high efficiency brushless permanent magnet motors/generators, each providing 250 kW (335HP), connected directly to the drive shaft, without the use of inefficient, heavy, costly, and wear prone marine transmissions! This allows turning large and efficient propellers at low speeds due to its constant torque line - unlike standard combustion engines!

Battery bank: Two Lloyds approved Marine Lithium 52.5 kWh battery banks (see separate battery overview) for a total of 105 kWh. This allows: Redundancy and ease of maintenance should a module require attention. Both the driveline and house systems ca n be fully operational with only one of the two batteries online (with slightly reduced efficiency). The Battery Management systems allows the Energy Management Computer (EMC) to monitor individual cell temperature/voltage and regulate balancing and equalization, something that has always been an issue with large lead based battery banks in the past.

This 105 kWh combined battery bank will easily be able to provide up to 2 hours of "engine free" silent "harbor cruising" (up to 6kts), or allow overnight anchoring with the use of all systems. It has the added advantage of allowing emergency "crash stop" power in forward and reverse without delay, allowing the vessel to be stopped in less than 2 boat lengths.

Generators: To power the vessels propulsion system and supply the house loads, the hybrid electric system will have 3 identical generators, rated at 150 kW continuous, and variable speed. The electrical units used for the generators are the same high efficiency US built motors used for the electrical propulsion units. The vessel is designed to cruise at 12kts (continuous) and supply the anticipated "normal" house loads with just two of the three generators. The third generator is to allow for maintenance and back-up in case of emergencies.

These variables speed permanent magnet DC generators when coupled with a hybrid battery are 70% more efficient than a standard fixed speed AC generator over their lifetimes. This equates to less than 18gph at 12 kts cruise* including house electrical supply and far greater savings at lower speeds or when at anchor. The generators will be enclosed in an efficient sound shield allowing good heat and sound control.

* Cruise speed is a function of prevailing conditions, including wind, current and condition of hull bottom and may vary in actuality.

THE EXPERTS

Ares Marine:

Builder & project management. Recently completed the transformation of 105' Windship motorsailor "Chardonnay" into "Miniskirt" which was nominated as a finalist in the 2011 International Superyacht Society "refit of the year" award and which was featured in the May 2011 issue of Showboats International. With dedicated skilled craftsmen, including metal and composite fabrication, mechanical, electrical, electronic/entertainment, plumbing, carpentry/joiner work, interior refinishing, and special effect paint capabilities from DuPont marine coatings. Ares Marine has transformed dozens of yachts; including a 120' Broward raised pilothouse to a tri-deck 135' mega yacht.

Persak & Wurmfeld:

An engineering and naval architect company, based in New York, who were intrinsically involved in the 286' Derecktor "Cakewalk" project, launched in 2010. Having worked with Ares Marine on several projects over the past 8 years, they have worked to compress time lines and deliver a superior product on time. www.persakwurmfeld.com

Disclaimer


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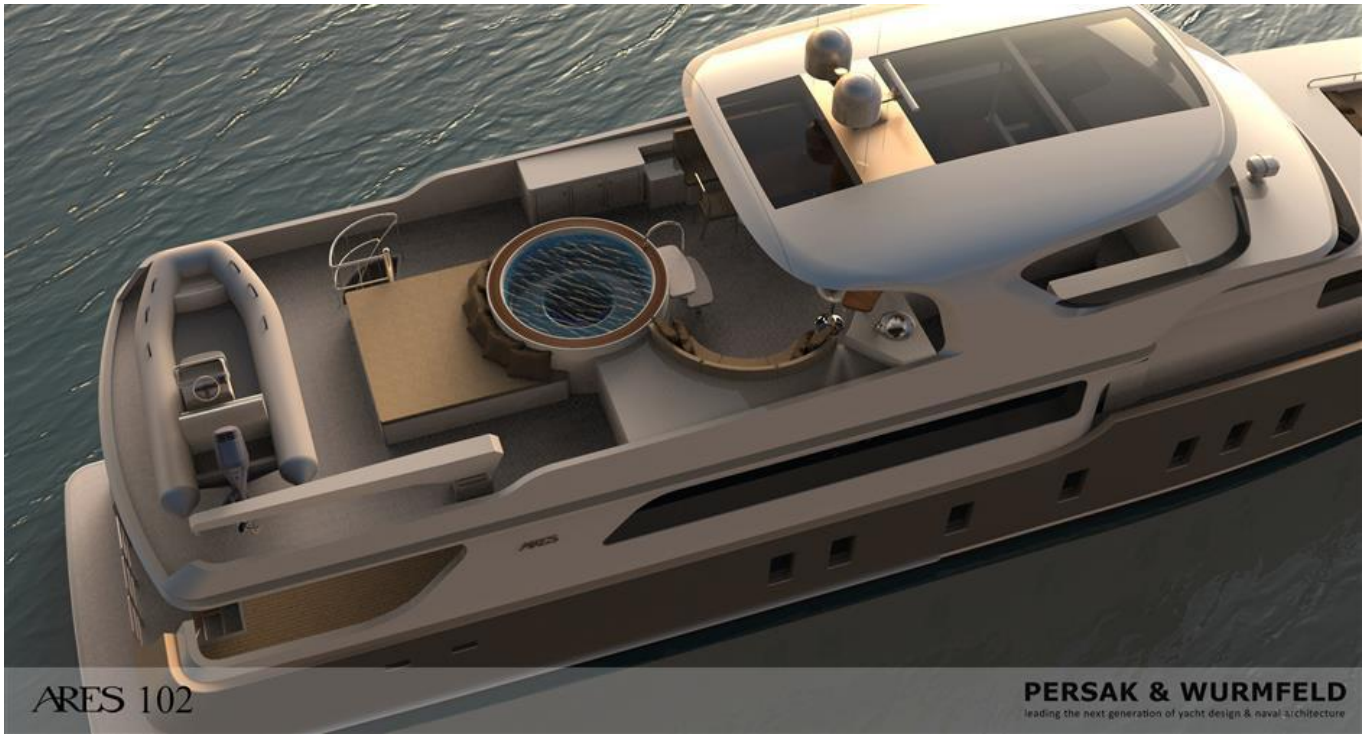
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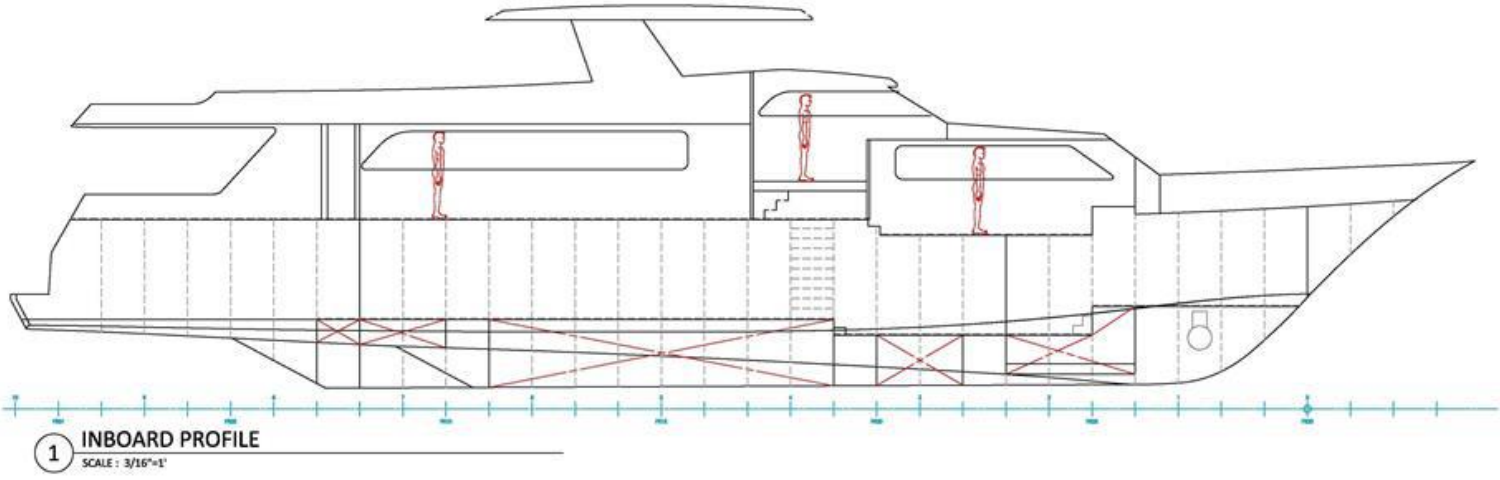
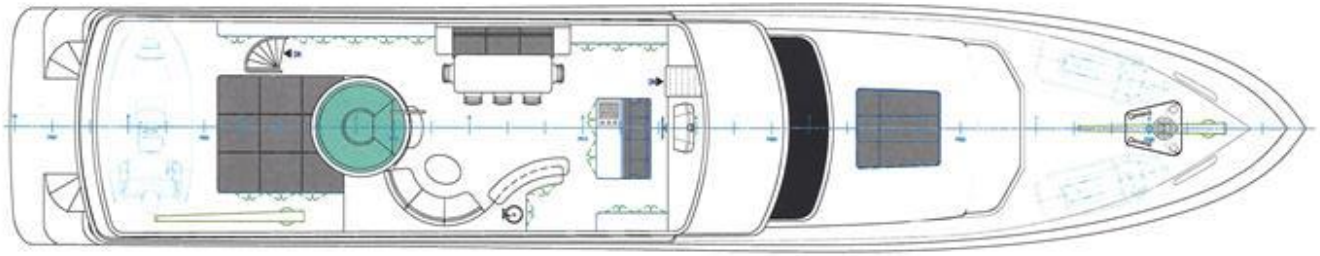
Inboard Profile





2 FLYBRIDGE DECK
SCALE : 3/16"=1'

3 MAIN DECK
SCALE : 3/16"=1'

4 LOWER DECK
SCALE : 3/16"=1'