

# STEYR HDS MARINE ENGINES



**HYBRID**  
SYSTEMS

## FACTS

- Power output: 7 kW at 48 V (56 V charging)
- Hybrid unit weight: 75 kg (excl. batteries)
- Additional length: 100 mm
- 4 operational modes

In 2008, STEYR MOTORS introduced the world's first hybrid drive system for small to medium-sized pleasure and work boats - the STEYR HDS. Since the very successful launch of this hybrid propulsion system, it has been further developed and enhanced to fulfill highest demands in commercial and leisure boating. Decades of experience in the marine sector combined with the mission to supply efficient diesel and diesel-electric solutions to the industry ensure trendsetting technologies for the future. Among these innovative solutions will also be the next generation of the STEYR HDS with a brand-new e-machine.

## MAIN BENEFITS OF THE STEYR HDS

- Environmentally friendly technology
- Emission reduction
- Improved fuel economy
- Noiseless driving in e-mode
- More efficient operation in boost mode
- Enhanced comfort on board
- Access right to many nature preserves and refuges in e-mode
- Dynamic performance advantages during acceleration
- Additional propulsion unit for maneuvering in case one system fails



See more applications on our website or contact us for further references.

The STEYR HDS can be installed with all drive combinations on all STEYR MOTORS engines. The four operational modes comprise a starter mode of the combustion engine by the electric motor, a generator mode to re-charge the battery pack, an electric cruise mode to purely drive the boat by the electric motor as well as a boost mode to support the combustion engine for quicker acceleration, lower fuel consumption and improved dynamics.

Today, the STEYR HDS is available in the second generation. Compared to the first available marine hybrid system, the power output of 7 kW at 48 VDC as well as the four operational modes remained the same, whereas the hybrid control unit was updated and a new multi-disc clutch for more comfortable coupling was added to the system.

As STEYR MOTORS constantly strives for better solutions, the next move to further enhance the STEYR HDS is already in progress. The test phase for the third generation has already begun and the introduction of the most advanced hybrid system is planned for late 2016. The next version of the STEYR HDS will feature a completely new and highly sophisticated system providing a significant increase in electrical output at the same voltage level. More details will be released during 2016.

	<b>STEYR HDS CURRENT VERSION</b>	<b>STEYR HDS NEXT GENERATION</b>
<b>CONTINUOUS ELECTRICAL OUTPUT</b>	7 kW	20 kW
<b>PEAK ELECTRIC POWER</b>	10 kW	25 kW
<b>NOMINAL VOLTAGE</b>	48 VDC	48 VDC
<b>INVERTER</b>	4-quadrant regulation	4-quadrant regulation
<b>EFFICIENCY</b>	>90 %	>90 %
<b>SIZE OF E-MACHINE (DIAMETER X LENGTH)</b>	400 mm x 215 mm / 15.75 in x 8.46 in	400 mm x 235 mm / 15.75 in x 9.25 in

#### KEY FEATURES OF THE NEXT GENERATION

- Permanent magnet machine / transversal flux technology
- Simplified, small and lightweight design
- Updated operational modes and features
- Simple copper windings, reduced copper loss
- NVH optimized housing for smooth and silent operation
- Transversal flux machine compared to similar sized radial flux machine:
  - Torque and power increased up to 30 %
  - Efficiency improved up to 5 %
  - Mass inertia and weight reduced down to 50 %
  - Production steps decreased down to 80 %