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FROM CONSTANT SPEED TO VARIABLE SPEED ALTERNATORS: THE FUTURE IS POWERED BY THE SOGA ENERGY TEAM

Beside SINCRO constant speed alternators for gen-sets and engine-driven welders, the Soga Energy Team also develops and manufactures SOGAENERGIES variable speed alternators for special applications and renewables. These are high-efficiency solutions, the result of a technical expertise dating back to 1966, reports *Paola Nardi of the Soga Energy Team Marketing & Communication Department.*

Constant speed alternators represent the most widespread solution for power generation industry, used on generating-sets and engine-driven welders.

SINCRO alternators are known for their compactness, the proven reliability of performances, and the comprehensive range including over 200 models up to 2,600 kVA.

In constant speed applications (1500 or 3000 RPM depending if coupled to a 2 or 4-pole endothermic engine) the



rotor is made of copper electrical windings. But, rotors can also be made with modules of permanent magnets (Nd-Fe-B): in this last case, the

application field switches from 'constant speed' to 'variable speed'.

The Soga Energy Team industrial group is a pioneering leading player worldwide, by manufacturing variable speed permanent magnet alternators (PMG) since 2008 with its division SOGAENERGIES. It is focused on the development of new custom-made solutions for renewables and energy special projects.





The SOGA ENERGY TEAM's alternator range.

The group manufactures a range of alternators for high specialised industries, such as wind, hydro, cogeneration, hybrid systems, automotive, fire brigades and rescue, military, railway, telecom.

Focusing on PMGs at low RPM, Sogaenergies EV synchronous alternators with power range from 2 kW (EV180 frame size) to 300 kW/AC (EV900) are suitable for many variable speed applications at low speed (500 max RPM).

Important studies have been carried out on applications involving high torque motors or traction motors. EV units are also used on direct-drive wind turbines without gearboxes (Sogaenergies is considered the benchmark within the Italian wind industry).

EV alternators represent a disruptive technology compared to other permanent magnet alternators available in the market.

The base of innovation lies in their stator, having a 'naked' patented design. It is not inserted in a housing, as usually happens, but itself is the body of the alternator, and the cooling external fins are part of it.

In this way, the heat dissipation surface is wider, stator losses are



drastically reduced, and permanent magnets can work 'cold', determining an extraordinary efficiency increase. EV efficiencies are the best in the market (nominal values up to 96%).

The 'naked' stator also allows a reduction in the components and materials used: less lamination, less copper for the windings, less magnets. The resulting alternators are much lighter than common PMGs (there is up to 50% weight reduction), and much more compact.

Thanks to their compactness and light weight qualities, EV variable speed alternators can give OEMs important economical benefits in development (by allowing the simplification of the design of the final products where they are assembled) and in construction (other components can be smaller and made less expensively, and the final total weight will be reduced).

The alternators also assure more profitability. With EV high-efficiency

technology OEMs can always have the best optimised energy production. By reducing their current development and construction costs, OEMs can also obtain higher margins from their future sales.

Besides EV low speed alternators, the Sogaenergies range also includes alternators for medium and high speeds, with powers up to 1 MW.

Such a complete range, and tailor-made solutions, are the result of Soga Energy Team's extensive expertise in the development of rotating electric machines (alternators and electric motors) since 1966, when the first core element of our group was founded in the Italian North-East by Lino Soga.



Today, led by the second generation of his family, we are the technology partner contributing to success of OEMs in the most different applications across industry. www.sogaenergyteam.com/sogaenergies

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