

Managing construction engine autonomy

TO ADDRESS THE TECHNICAL CHALLENGES ASSOCIATED WITH ELECTRIFIED CONSTRUCTION ENGINES, SIROCO PROVIDES OEMs WITH TECHNICAL EXPERTISE, TESTING TECHNOLOGIES AND DEDICATED PROJECT SUPPORT

▶ Electromobility of construction vehicles has raised thermal challenges, leading to a more precise approach of cab temperature and battery use. Siroco, as a recognised expert in thermal management for industrial vehicles, supplies the world's leading OEMs with complete tailored and standard thermal or electric solutions ranging from 12V to 800V.

Electrification at the core

"The electrification of construction machinery is evolving rapidly, and new increasingly complex electrical systems require technicians and engineers specialising in electronics and electromechanics," explains Sylvain Reydellet, Siroco's managing director. "Our engineering teams are fully dedicated to the development of tomorrow's thermal solutions. We place electrification at the heart of our developments, and we are working on specific heat pump, battery cooling and thermal management solutions. Energy management is of paramount importance, the aim being to achieve the best possible efficiency or coefficient of performance (COP)."

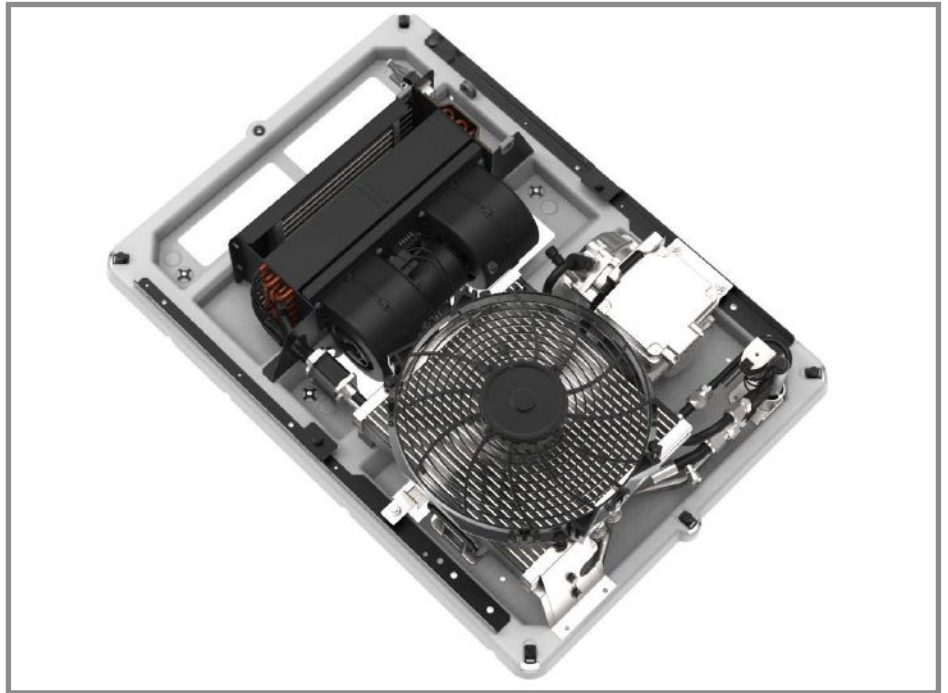
The thermal expert adds another string to his bow with Simulink software to model a thermal system using Simscape and optimise component sizing and control logic. "This enables us to reduce design times and time to market. To achieve this, close collaboration with our customers is essential," adds Mr Reydellet.

E-mobility developments at Bauma

As Siroco is also pursuing its development in the growing e-mobility sector, the following electric standards units will be on show at Bauma.

Designed for 24V to 800V motors, the E-Duo Top electric roof unit is available in an electric heating and air-conditioning version (E-HVAC) and electric air-conditioning version (E-VAC), offering a cooling capacity of up to 6kW and a heating capacity of 2.5kW. It is also available as a heat pump version.

For small cabins, the Solano Top rooftop is available in electric (E-HVAC) and thermal (HVAC) versions. Available in 48V and 80V, the electric version offers a cooling capacity of 5kW, a heating capacity of 2.3kW and a nominal air flow rate of



ABOVE: View under the cover of the E-Duo Top rooftop unit in the heat pump version

350m³/h for an electrical capacity of 160W. To ease the set-up, the air distribution ceiling with integrated or remote control can be used with the E-Duo Top and the Solano Top.

The Stand up II, a vertical HVAC unit mounted inside the cab offers a 5kW cooling capacity and 355m³/h nominal air flow. Its cover is made of four adjustable 84mm diameter air diffusers, and a defrosting grid to enable a 360-degree air distribution inside the cab.

To adapt to cabin with reduced space, this unit also exists in a convenient compact version. Stand Up II M, made of a single blower, features a 20PPI interchangeable air filter and a control panel with three-speed ventilation. The Stand Up II M exists in HVAC and E-HVAC versions, both offering a 3kW cooling capacity.

The Sanoa is an ultra-modular unit covering all needs: EHVAC, HVAC, AC, EHV, HV. The EHVAC

version offers 4kW cooling capacity, 2.7kW heating capacity and a nominal air flow rate of 420m³/h.

The CAN/LIN HVAC controller remains the brain of the system: compact and flexible, it integrates real-time intelligence to control ventilation, heating/air conditioning/cooling of the powertrain and optimise energy consumption.

Last but not least, a novelty coming soon, one of the most modifiable and compact built-in unit of its range for horizontal installation in small cabins available for all requirements: HVAC, AC, EHVAC, HV, EHV from 12V to 400/600V.

A key player

The energy efficiency of the thermal system is the most important issue for electric products. In a sector where construction vehicle engineers face many obstacles, Siroco is a key player in proactively meeting these challenges. Besides its turnkey service, the company offers drafting specifications, calculating components, 3D validation, simulation, prototyping and testing in a climatic chamber. **ivt**



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