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New, high-efficiency air system for fuel cells from Opcon

Swedish company presents a new, high-efficiency air system for fuel cells

Mission completed! The development of a new air system for fuel cell engines has reached a successful conclusion. Lighter, more compact and highly efficient, the new system meets all the requirements set for achieving smaller, better integrated units. The project has involved three Swedish businesses - Opcon Autorotor AB, NFO Drives AB and AB Kompositprodukter. The new air system will be presented for the first time at Engine Expo in Stuttgart, Europe's premier engine exhibition which opens on Tuesday.
Fuel cell engines for vehicles have been made for some time, but development has really intensified in the past three to four years. Nearly all the major auto-makers currently have projects concerning fuel cell engines or vehicles. As development moves forward and reaches the stage of serial production, demands are increasing for reduced weight, volume and cost. The development of the new air system by the three Swedish businesses has taken place against this background.

The aim of the development project, which was partly financed by the Swedish National Energy Administration, was to design, test and build a compact and optimally adapted electrically powered compressor for a vehicle driven by a fuel cell engine.
"We have succeeded in developing a truly excellent unit. Fuel cell developers are queuing up to order the new system," says Roland Ärlebäck, Managing Director of Opcon Autorotor, a subsidiary of Opcon AB.
The new air system comprises a double screw compressor and expander, a high rev electric motor and a frequency changer for sine-regulated high frequency alternating current. Clever integration of the components has created a new air system that easily meets all of the targets set for the project.

"We exceeded the efficiency goals by a large margin, especially for current measurements. We succeeded in dimensioning the separate units so that they fit each other very neatly. Successful integration means that we produced a highly efficient end product," explains Roland Ärlebäck.
The drive system is a unique combination of efficient, high-speed motor and a frequency changer that delivers a pure sine-wave voltage. The highest overall efficiency measured for motor and inverter is 95%.
"We also met the targets for weight and volume, although there is till some scope for further optimisation," adds Roland Ärlebäck.

Each of the three companies involved in the project owns the cutting-edge technology used in their field of competence.
Opcon Autorotor AB is today a world leader in air systems for fuel cells engines and is involved in nearly all the current development projects around the world involving fuel cells for buses, cars and jeeps.
AB Kompositprodukter develops permanently magnetised motors for high rev applications.
NFO Drives AB develops, manufactures and markets disruption-free engine control systems under the brand name NFO Sinus.