

BSPL company on BUSWORLD EUROPE 2017 in Kortrijk in hall 2 stand 222b will present the complete solutions of cooling systems for different kinds of engines according to fuel used.

BSPL will take part in BUSWORLD EUROPE KORTRIJK on 20-25th of October in Belgium. This year, the organizers announce a record 350 exhibitors from 33 countries and more than 35,000 visitors. BSPL company on BUSWORLD EUROPE 2017 will present the complete solutions of cooling systems for different kinds of engines according to fuel used.

In hall 2 on stand 222b BSPL will present among others designed and developed by BSPL solutions providing appropriate working temperature for the hydrogen fuel cell systems or cooling system for electric bus electronics control

The module for Alternative Power Supply: Hydrogen



BSPL has developed a solution for eco vehicles using hydrogen as a fuel. The cooling module solution developed by BSPL engineers provides a suitable working temperature for the hydrogen fuel cell system. This solution is guaranteed to work up to 45degC.

The operation of the module is monitored by a controller, which, thanks to its appropriate configuration, accurately sets the fan rotation speed necessary to maintain the required coolant temperature. Thanks to this solution no energy is wasted.

The module is supplied with the control system (BOSCH REXROTH), monitoring the module in relation to the temperature in the cells. The control system uses information available in the CAN network of the vehicle, which allows for eliminating additional sensors.

The module is supplied with lightweight and efficient heat exchangers, which makes it weight lower. Fans equipped with brushless motors are the highest quality solution, guaranteeing extended service life and low failure rates.

Main features:

- Provides a suitable operating temperature for the hydrogen fuel cell system
- Guarantees operation at ambient temperatures **up to 45 degC**
- **Saves energy** thanks to adjustable fan speeds
- Uses a control system applying **BOSCH Rexroth** controllers
- Uses **CAN network** of the vehicle
- **Low weight of the module** thanks to light and efficient heat exchangers
- **Extended service life and low failure rates** thanks to brushless fans.

The module for DIESEL EURO6 engines:



BSPL has responded to market demand by developing a modern type of cooling module based on electric fans. In the era of environmental care and simplicity of service, requirements related to the use of electric fans have been appearing more and more often in specifications submitted by end customers and—subsequently—by bus manufacturers.

The solution designed by BSPL is based on high quality heat exchangers used by large OEM vehicle manufacturers. The side-by-side configuration (heat exchangers are placed next to one another) allows for a lower pressure drop, and consequently the use of electric fans.

The fans mounted in the modules are the highest quality solutions, applying brushless motors (extended lifetime of the fans amounts up to 30,000 h). The module's operation is monitored by a controller, which— thanks to its appropriate settings —accurately adjusts fans' rotation speed to maintain the coolant at required temperature. This significantly influences the generation of noise by the cooling system and the energy consumption.

The controller uses information available on the vehicle's CAN network, eliminating the need for additional sensors.

Main features:

- Guarantees operation at ambient temperatures **up to 45 degC**
- **Saves energy** thanks to adjustable fan speeds
- Uses **CAN network** of the vehicle
- **Extended service life and low failure rates** thanks to brushless fans.
- **Low noise generation and low energy consumption** due to mounted controller monitoring module's operation

The module for CNG EURO6 engines:



In applications where there is little space for cooling system, or where maximum operating temperature requirements are higher than European standards, BSPL successfully applies solutions based on hydraulic fan drives.

The presented solution designed by BSPL is based on high quality heat exchangers used by large OEM vehicle manufacturers. Additionally, the use of Intercooler enables the operator to tilt it for cleaning. The sandwich configuration (one exchanger behind the other) allows for minimizing the space necessary for the cooling system. Moreover, it takes the advantage of hydraulic fan drives—their continuous operation during significant pressure drops. The presented solution is designed to operate at ambient temperatures of up to 55°C, which corresponds to tropical conditions.

BSPL, as a Bosch Rexroth system integrator delivers solutions based on hydraulic fan drives complete with an entire hydraulic system.

Modules are equipped with multi-piston pumps with adjustable output, which allows for optimum use of the power available from the diesel engine, and for obtaining higher operating pressures.

The module is supervised by a controller that monitors the temperatures of the coolant and the inlet manifold, ensuring that they do not exceed the manufacturer's specified values.

Main features:

- Guarantees operation at ambient temperatures **up to 55 degC**
- **Saves energy** thanks to adjustable fan speeds
- Uses a control system applying **BOSCH Rexroth** controllers
- **Low weight of the module** thanks to light and efficient heat exchangers
- **Long service life and low failure rate** thanks to application of high quality Bosch Rexroth components
- **Small module`s dimension**

The module for electric buses (M095)



BSPL has developed a cooling system solution for the electric bus control electronics. The presented solution has been designed to operate at ambient temperatures up to 55 degC , which corresponds to tropical conditions. The module is supplied with lightweight and efficient heat exchangers, which makes its weight lower. The operation of the module is monitored by a controller which, thanks to its appropriate configuration, accurately sets the fan rotation speed necessary to maintain the required

coolant temperature. Thanks to this solution no energy is wasted. In addition, the control system is responsible for the operation of the circulation pump and reports the status of the entire system to the CAN network of the vehicle. Fans equipped with brushless motors are the highest quality solutions, guaranteeing extended service life and low failure rates.

The presented solution is also delivered with a circulation pump, additional sensors and an expansion tank. BSPL thus provides a complete cooling system that can be easily integrated into any vehicle.

Main features:

- Guarantees operation at ambient temperatures **up to 55 degC**
- **Low weight of the module** thanks to light and efficient heat exchangers
- **Extended service life and low failure rates** thanks to brushless fans
- **Saves energy** thanks to adjustable fan speeds
- Uses **CAN network** of the vehicle

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BSPL Sp. z o.o. designs, manufactures and supplies complete cooling systems for vehicles and industrial equipment. BSPL was founded in 1989 under the name of Mar-Art and soon was integrated into international structures of BEHR and later with MAHLE Industrial Thermal Systems and MAHLE Behr Service, and has been, since then, their official representative.

The offered products and solutions for cooling, air conditioning and heating systems are designed by the BSPL's Research and Development Department in cooperation with its Clients. Designs are sent to the Prototype Department and after passing the qualitative research in the BSPL Laboratory are efficiently delivered to the OEM/ OES market. BSPL has completed over one hundred individual projects for European bus, truck, special and military vehicle manufacturers.

In 2016 the company launched its research program, BSPL Innovation program, enabling BSPL engineers to work on future environmental solutions, the application of new materials, noise reduction and connected vehicle solutions.

BSPL's headquarters, along with the production, research, quality assurance and development departments are located in Krakow.