



Individual thermal management systems  
for electric and hybrid vehicles.



## THAT'S WHO WE ARE.

### FLUID MANAGEMENT FOR VEHICLE AND MACHINE CONSTRUCTION

As a larger medium-sized group of companies, VOSS develops and produces line and connection systems for the automotive industry and mechanical engineering. The success of the VOSS Group is based on great customer proximity, committed employees, innovative products and the demand for permanent top quality for customers with the highest requirements.

With strategic corporate development, a responsible awareness of people, the environment and the region, VOSS has evolved over the past 90 years to an internationally successful group of companies.

### VOSS in figures

**54**

sales partners in  
56 countries

**6.500**

employees

**>50.000**

marketable  
articles

**16**

international subsidiaries

# VOSS

## COMPETENCES FOR COOLING SYSTEMS.

### OUR SYSTEM COMPETENCE. YOUR ADDED VALUE.

Our expertise is in the development and production of customer-specific system solutions for the thermal management of mobile and stationary applications. For maximum battery performance in electric or hybrid vehicles, optimal temperature control is essential. For this purpose, VOSS designs solutions for connecting and distributing that are tailor-made to meet individual customer requirements.

This includes the development of precisely fitting line routings for the smallest and most complex installation spaces as well as the integration of supplementary system components such as quick connect systems, valves, sensors or customer-specific components. Depending on the level of optimization, we work with our customers to develop compact, ready-to-install and functionally integrated modules for minimum assembly effort. In this way, customers and users benefit from the system competence of the entire VOSS Group. This includes not only our innovative product solutions but also our comprehensive services:

- Vehicle analysis and benchmarking
- Innovative product and system development
- Continuous accompanying simulations and FE analysis
- Own test vehicle fleet for field tests under real conditions
- Rapid prototyping and pre-series production
- Validations and tests during the entire product development process
- Worldwide standardized production and assembly processes
- Intelligent logistics concepts
- First installation advice & service also after series production
- Extensive theoretical and practical training
- Worldwide availability of our products & services
- Comprehensive certifications and compliance with the highest quality standards

APPLICATIONS



VOSS SOLUTIONS

VOSS quick connect system 246<sup>NX</sup>

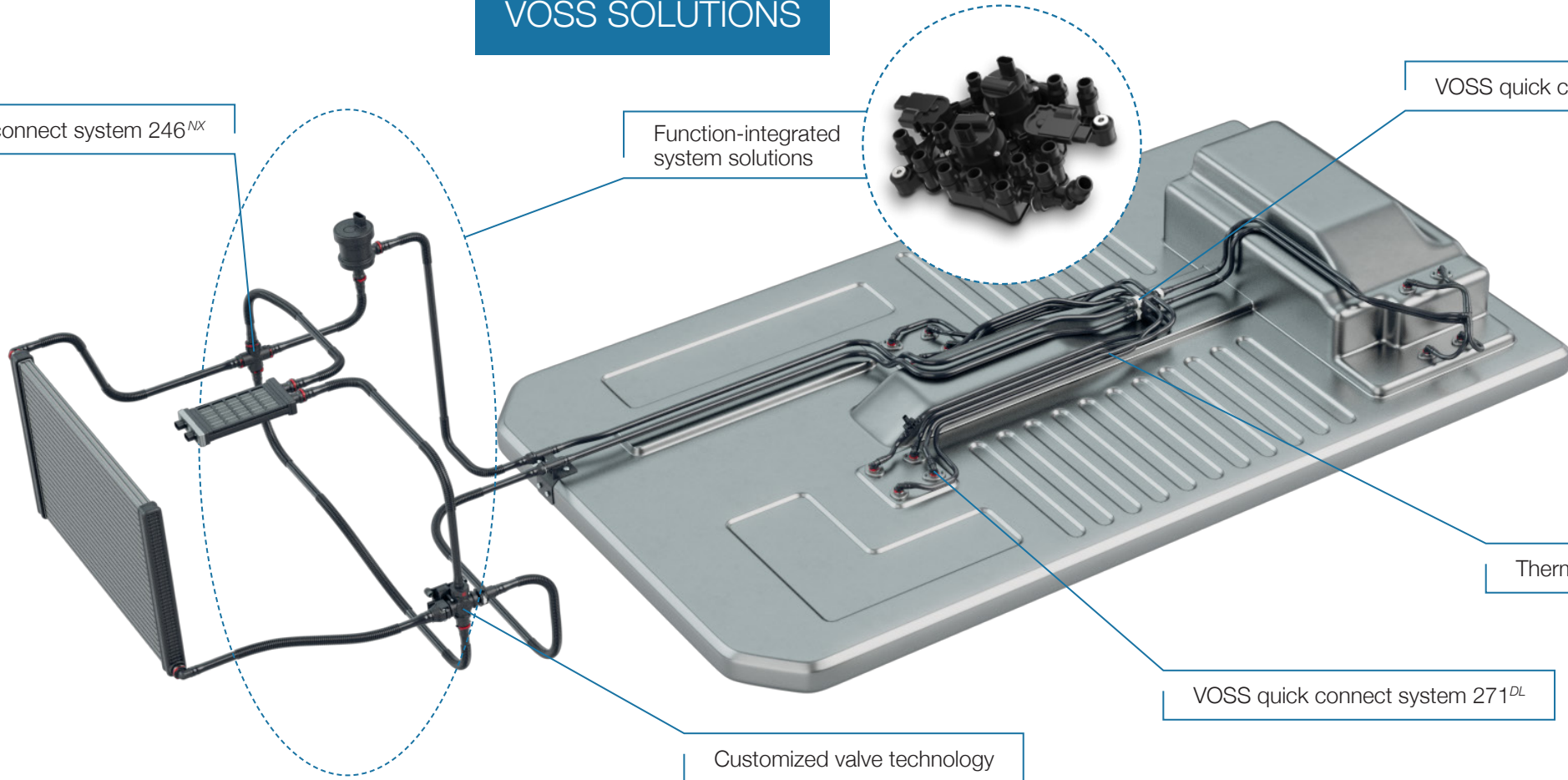
Function-integrated system solutions

VOSS quick connect system 270<sup>DL</sup>

Thermal management lines

VOSS quick connect system 271<sup>DL</sup>

Customized valve technology





## COMPONENTS FOR THERMAL MANAGEMENT SYSTEMS

### Thermal management lines

Individual solutions for coolant based on line routing and function integration

- Integration of different connection systems, e.g., VOSS QC systems 270, 271 and 246<sup>MX</sup>, or special solutions according to VDA standard
- Realization of minimum installation space
- Component and installation space optimization through function integration in customer-specific manifolds and connectors
- Integration of temperature sensors possible



- Leak-tight and maintenance-free media-bearing systems along the entire service life of the vehicle
- Minimized pressure losses
- Hydraulic balancing through defined cross-section changes
- Various combinations of hose and tube, plain and corrugated tube, or straight and preformed lines possible
- Customized flexibility by different corrugated tube wave shapes

VOSS

### VOSS quick connect system 270<sup>DL</sup>

Robust plastic couplings for the fir-tree connection of plastic tubes

- Particularly suitable for connections to filigree cooling plates and similar components
- Quick and safe assembly
- Double Lock (DL) for additional safety and active confirmation of the correctly connected QC system



- Very low system height
- Release mechanism can be supplied in two different positions for easy access
- Nominal sizes S6, S10, S14
- Temperature range -40 °C to +85 °C
- Operating pressure max. 2 bar

## COMPONENTS FOR THERMAL MANAGEMENT SYSTEMS

### VOSS quick connect system 271 <sup>DL</sup>

Robust plastic plugs for the fir-tree connection of plastic tubes

- Suitable for components with recessed ports, or with material for profiled bores
- Quick and safe assembly
- Double Lock (DL) for additional safety and active confirmation of the correctly connected QC system



- Very low system height
- Release mechanism can be supplied in two different positions for easy access
- Nominal sizes S6, S10, S14, S18
- Temperature range -40 °C to +85 °C
- Operating pressure max. 2 bar



### VOSS quick connect system 246 <sup>NX</sup>

Plastic QC system for convenient connecting, positioning and releasing

- System-specific 246 connection contour for low height of aggregate connections and adapters
- Quick, safe assembly and disassembly
- High positive engagement of release clip to connecting profile allows higher pressures



- Release mechanism can be rotated into eight different positions for easy access
- Nominal sizes 8 and 12 for different tube sizes
- Temperature range -40 °C to +120 °C
- Operating pressure max. 10 bar



## COMPONENTS FOR THERMAL MANAGEMENT SYSTEMS

### Customized valve technology

Future-oriented valve solutions for thermal management applications

- Broad spectrum of expertise: mechanically, pressure, thermally and electrically actuated valves
- In-house developed actuators with tailor-made communication protocols
- Integration of VOSS quick connect systems possible



- Modular design concept for individual requirements
- Combination with customer-specific manifolds and connectors
- Minimal internal leakage flows
- Easy integration into function-integrated system solutions (modules)



### Function-integrated system solutions

Customized thermal management modules for the optimization of cooling water circuits

- Integration of valves, lines, connection systems, sensors or manifolds into ready-to-install assemblies
- Reduction of single components and circuit complexity
- Minimized line length and optimal utilization of installation space by combining different line sections
- Significant weight savings on the aggregate side and in the water set
- Optimization of system pressure losses and thus the effectiveness of the system through individually designed flow channel cross-sections



VOSS



- Effective control of the different cooling circuits by implementable VOSS own proportional valves with in-house developed actuators
- Improved assembly behavior due to ergonomic arrangement of the connection points and pre-checked functions
- Only one central electronic interface to the vehicle electrical system
- Minimized assembly time in the production line
- Optimized organizational effort through reduction of part numbers and responsibilities
- For maximum performance and battery life and thus increased vehicle range with minimal emissions
- Minimization of the CO<sub>2</sub> balance due to the use of recycled material

# VOSS



VOSS Automotive GmbH  
Leiersmühle 2-6  
51688 Wipperfürth  
Tel. +49 2267 63-0  
automotive@voss.net

VOSS Automotive, Inc.  
4640 Hillegas Road  
Fort Wayne, IN 46818, USA  
Tel. +1 260 373 2277  
info@us.voss.net

[www.vossusa.com](http://www.vossusa.com)