

Substantial

AND FOR REDUCED
CONSUMPTION



FOR-HYBRID, FOR-BLUE, FOR-TECH



FORSCHNER

We know.

► BETTER IDEAS

Thomas Brandt, Thomas Chaloupka and Ludwig Puskas

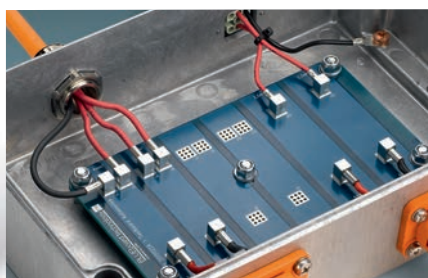


► **BETTER INNOVATIONS**

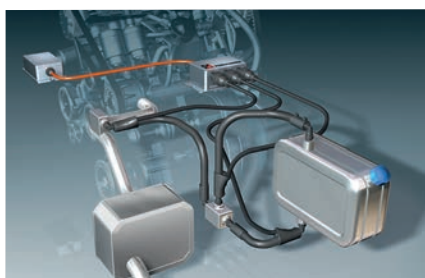
CREATIVITY IS A SOURCE OF DELIGHT

With our own successful developments for the automotive industry, we demonstrate our market orientation and innovative strength: FOR-hybrid, the first ever plug-and-play distributor box, represents maximum safety thanks to permanent connections inside the box and the tightest of production tolerances. FOR-blue, the innovative heating hose, opens up

unique benefits for passenger and commercial vehicles alike. With FOR-tech we can also make use of the synergies released by other Forschner divisions - by means of targeted support, from the initial idea and the consulting stage all the way to series production.



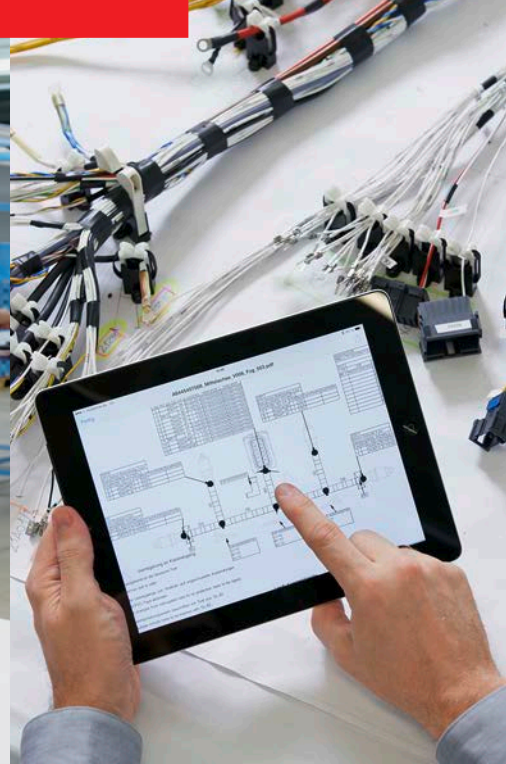
FOR-hybrid



FOR-blue



FOR-tech



INNOVATIONS ARE ALWAYS TIMELESS

Development cycles in the automotive industry are growing ever shorter. Here we not only intend to keep abreast of them but also to assume a lead role in key niche markets for the mobility of tomorrow – as evidenced by our own developments FOR-hybrid and FOR-blue. And via FOR-tech, we want to place our collective innovative strength at the disposal of other sectors as well. Constantly high investment in research and development has turned us into a company where retaining the competitive edge has become a tradition. When it comes to timeless ideas and their implementation, we have made a name for ourselves.



Extensive certification

All Forscher sites for cabling systems are certified to the following norms. It goes without saying that we also carry out the relevant follow-up audits.

- DIN ISO 9001
- ISO TS 16949
- VDA 6.1
- UL certificate

Our Cabling Systems division is also certified to the environmental audit ISO 14001.

Making our presence felt

We have been driving our own developments since the start of the new millennium. Production of FOR-blue SCR heating hoses has been under way since 2004, and we have manufactured FOR-hybrid since 2009.



Spaichingen site, Germany

Our research and development activities, prototyping and also low-volume production of FOR-hybrid and FOR-blue all take place at our headquarters, as well as all our activities relating to FOR-tech. As a platform for know-how transfer, the newly-built Technology Center also opens up international synergies.



Uherské Hradiste site, Czech Republic

Medium to high-volume production of our plug-and-play distributor box as well as our innovative heating hose for passenger and commercial vehicles takes place at this plant. A highly automated machine park keeps production efficiency at the very highest level.



Istanbul site, Turkey

Forschner also offers FOR-tech development services on the threshold to Asia. A compact team of experienced engineers expands our presence and keeps responses rapid.

Further sites

Our other international presences include a second plant in the Czech Republic, as well as in Ukraine and Turkey. These are rounded off by a joint venture in North-east China. For maximum market proximity in America, too, Forschner is currently building a further production plant in Mexico, in the region of Queretaro.



Jörg Krieger (Dipl.-Ing., FH),
Dr. Gert Forschner and
Dietmar Geiger run the
family-owned company.

The Forschner company

With around 2,000 employees and numerous international locations, Forschner offers not only its own developments but also cabling systems, precision turned parts and electromechanical systems.



Thomas Brandt is your
FOR-hybrid contact
partner at Forschner.



FOR-hybrid: THE PLUG-AND-PLAY DISTRIBUTOR BOX

The voltages generated in hybrid and electric vehicles are far higher than in those with conventional drives. To deal with these safely, appropriate energy distribution solutions are required. With FOR-hybrid we offer a system with a diverse range of options and functions that is equally impressive in both passenger and commercial vehicles.

Definitely advantageous

100 percent pre-assemblable, mechanically and optically codable, vibration-resistant, resistant to electricity and fire-proof. In 2009, with FOR-hybrid, Forschner successfully developed a solution that guarantees a safer high-voltage connection in hybrid vehicles, from SUVs to trucks. FOR-hybrid has lower thermal distortion than rival products and also saves on material. The combination of press-in and crimping technology on a PCB basis results in unrivaled quality and process reliability. Despite higher procurement costs, the superior production method pays dividends as early as the medium term where economic efficiency is concerned.

Numerous options

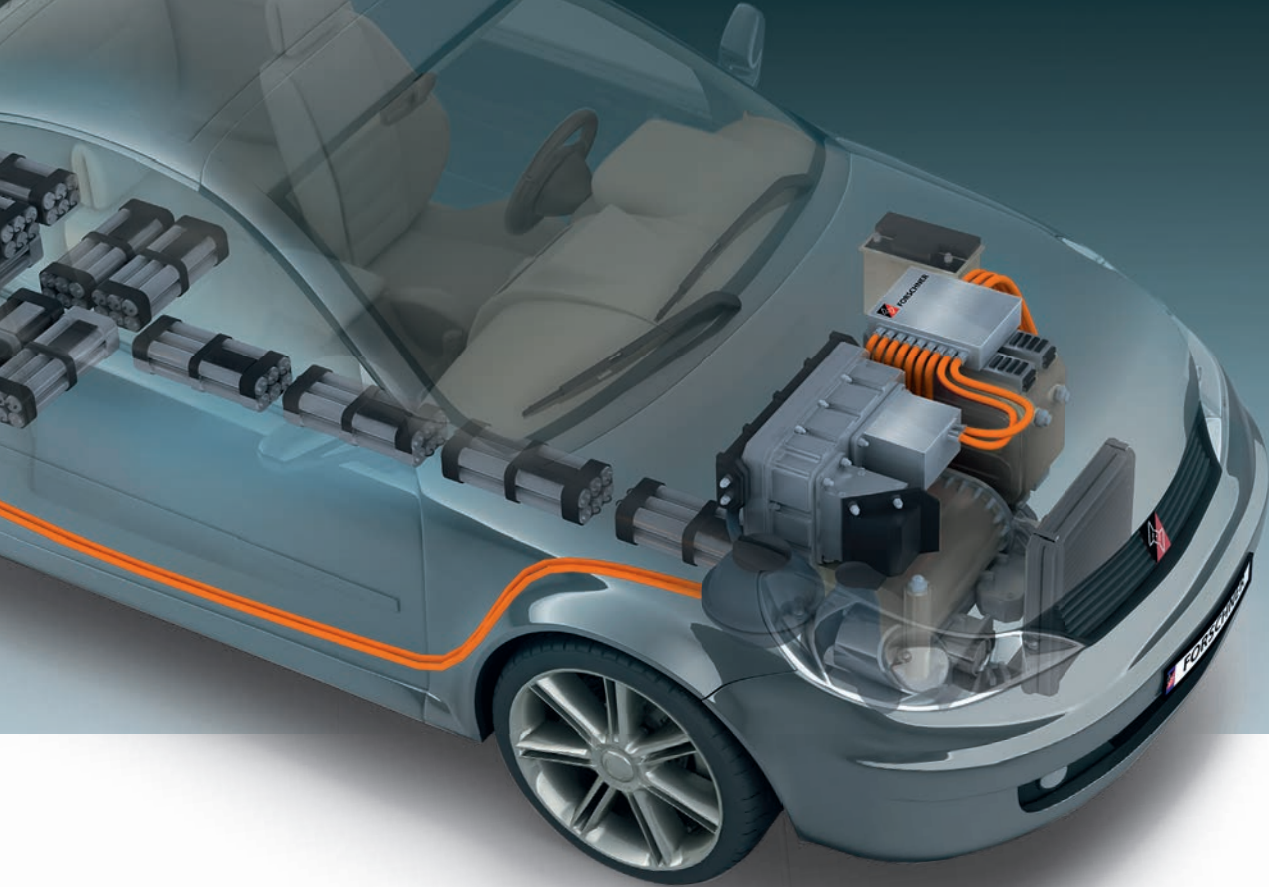
The distributor box can be custom-designed with a fixed stop or plug-in connectors as required. The latter facilitate and accelerate the localization and repair of any faults. The geometry and the size of the box – including circuit boards, connectors and distributor variants – are always adapted to suit the required output. Distributor boxes have thus already been developed for vehicles as different as buses and sports cars. A cooling system and emergency cutoff unit are also available as options. Comprehensive documentation in 2D and 3D as well as high-voltage tests that far exceed customers' specifications are further convincing arguments in favor of FOR-hybrid.

BROAD RANGE

- For 12 V, 24 V, 48 V or 60 V
- Variants 61 V – 1,000 V are 100 percent shielded
- Solutions for AC and DC

FUNCTIONS

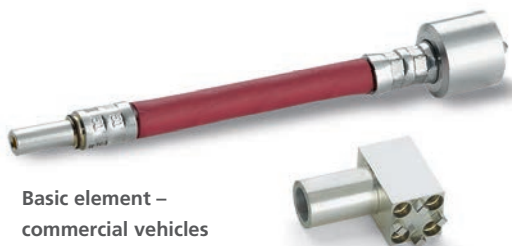
- Distributor
- Fuse box or switching cabinet
- Joint connectors
- Central measuring point



Emergency cutoff unit



Basic element –
passenger vehicles



Basic element –
commercial vehicles

FOR-HYBRID PASSENGER VEHICLES

▀ Power range:
400 V of 10 - 200 A

FOR-HYBRID COMMERCIAL VEHICLES

▀ Power range:
700 V of 10 - 400 A



Thomas Chaloupka is
your contact partner at
Forschner for FOR-blue.

FOR-blue: THE INNOVATIVE HEATING HOSE

So that SCR systems for reducing nitrogen oxides in diesel vehicles can function reliably even in lower temperatures, powerful heating hoses are required. With FOR-blue we offer appropriate variants for passenger, commercial and special purpose vehicles according to a modular principle.

Modular possibilities

The single-component system design, with additional pressure intensifier and optional fiberglass insulation for passenger vehicles, dispenses with unnecessary additional elements, facilitates installation, and enhances flexibility – especially in view of the high variance required by the automotive industry. In addition to passenger and commercial vehicles, Forschner also knows all about the specific requirements in the non-road sector. On the basis of a modular system we offer market-ready adaptations for mobile cranes, construction machinery, tractors, etc. Small diesel generator sets are also included, as well as all conceivable production volumes, from prototypes and the shortest reaction times to six-figure mass production. In addition to the heating hoses, Forschner has recently introduced CAN-networked control units to its range.

360° systems competence

In view of ever stricter emission norms – in the US just as in Europe – FOR-blue is making an important contribution toward reducing energy and power consumption as well as emissions on a sustainable basis. Whether with passenger, commercial or special-purpose vehicles, customers everywhere definitely benefit from Forschner's 360° competence – from our flexibility, customer proximity, engineering know-how and validation as well as our vertical range of manufacture.

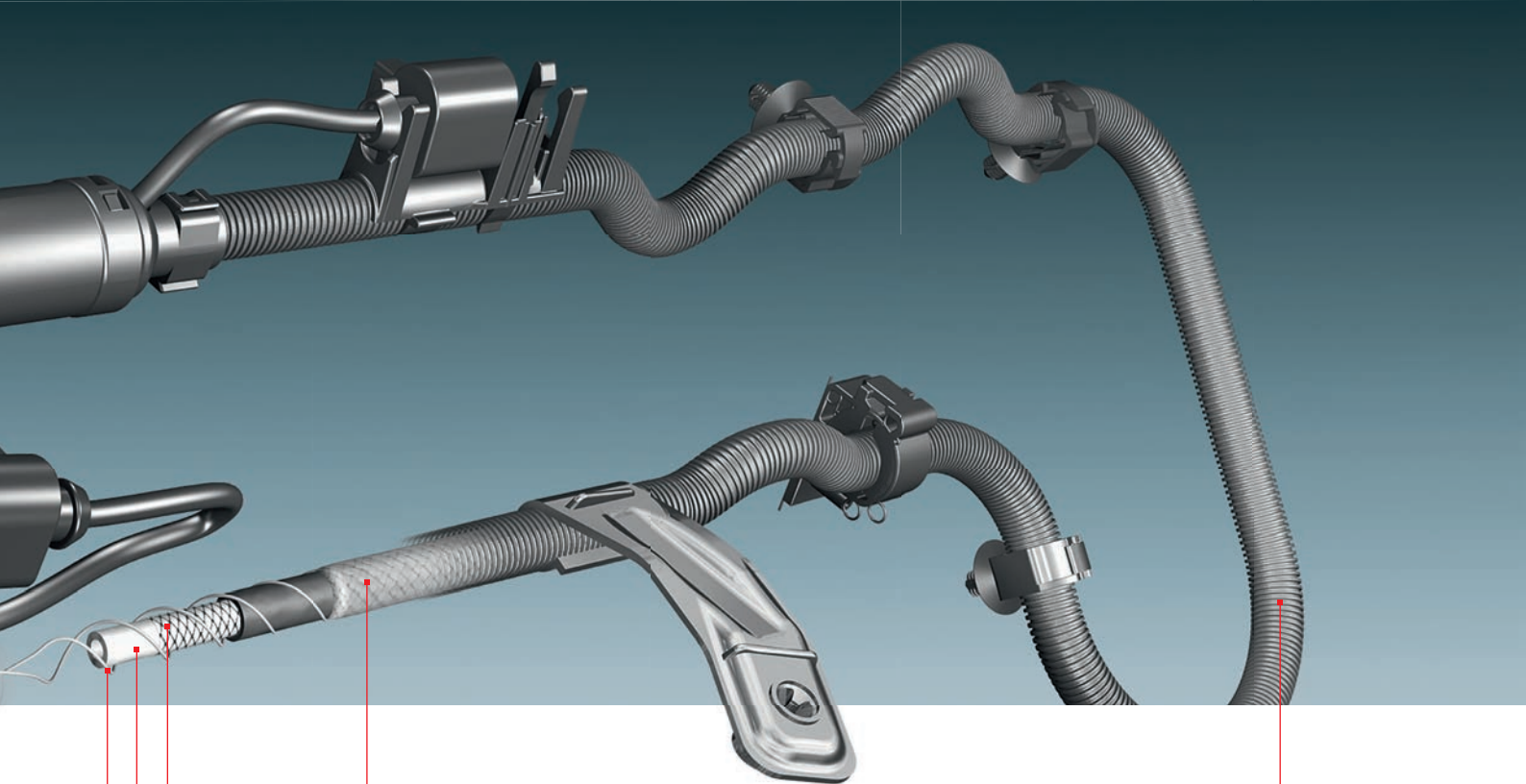
High-temperature
SCR hoses
for up to 180 °C

CAN control and
OBDH diagnostics
for heating control

Flexible basic
material, Ø 2.0 - 7.5 mm,
thermally preformed
or flexibly layable

Modular system
with lengths
from 0.5 - 18 m





CORRUGATED PIPE

- As mechanical protection and for coupling of distributor sections
- Increases stability of the entire system
- For improved efficiency

FULLY-ENVELOPED SURFACE

- For thermal insulation
- For increased efficiency

FABRIC REINFORCEMENT

- Up to min. 20 bar operating pressure and 80 bar burst pressure
- With NBR and polyamide supports, volume increase up to 12 percent

INNER HOSE

- Made from NBR (nitrile butadiene rubber)
- Far higher resistance to media than EPDM
- Polyamide dual layer

HEATING-WIRE BRAID

- For additional stabilization
- Vulcanization avoided for higher process reliability



Ludwig Puskas is your
contact partner at
Forschner for FOR-tech.

FOR-tech: DEVELOPMENT SUPPORT FOR THE HIGHEST REQUIREMENTS

We're professionals when it comes to tuning good ideas quickly and efficiently into large-volume production. With FOR-tech we accompany your projects and products with our full expertise, experience, and numerous helpful ideas.

Expertise across all industries

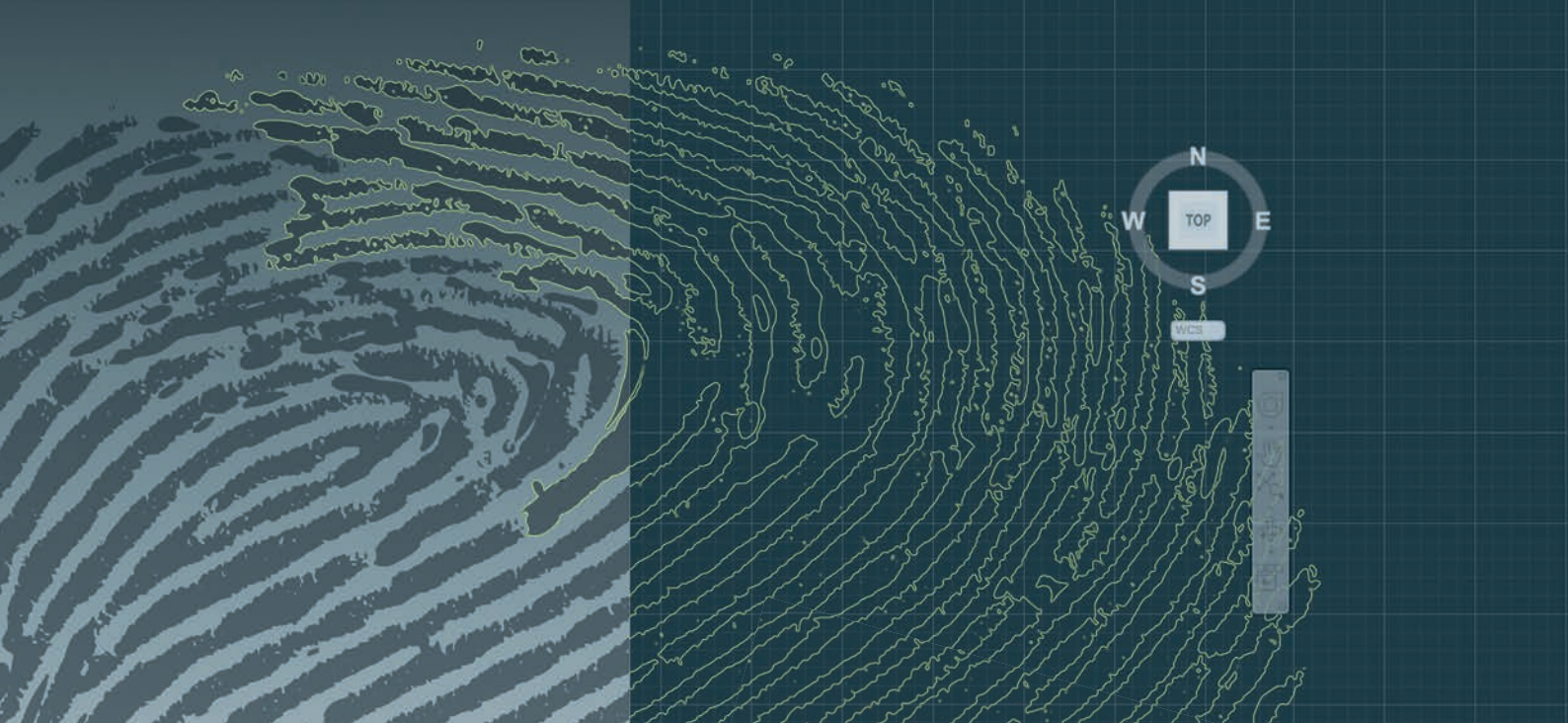
When companies from the automotive industry, medical technology, systems engineering and other sectors benefit from comprehensive development expertise and want to concentrate on their own core competencies, they rely on FOR-tech. Leading car manufacturers place their trust in our expertise when it comes to onboard wiring system development of commercial vehicles and special vehicles, high-voltage cabling systems, the SCR sector, complex precision turned parts and electromechanical systems and subassemblies. They also rely on our support as a partner, which covers the entire value chain from development and prototyping to series production. Maximum safety is included from the very start, e.g. thanks to solid feasibility analyses. In the process itself too you can rely on our experts – they know how to deal with every potential difficulty.

Tangible benefits

With FOR-tech we shorten development times, make things easier on-site with resident engineers, and use intelligent concepts to reduce production and manufacturing costs. This naturally includes all logistics-related issues and all the relevant interfaces along the way. In short: together with our customers, we create technical solutions that are practice-based, and that enrich life in numerous areas of application. How can FOR-tech help you? Check out the examples provided. Naturally, when it comes to customizing your applications, we give you all our support and commitment in other sectors of industry too!

FOR-tech BENEFITS

- **Know-how transfer and innovative strength**
- **Shorter development cycles**
- **Reduced development costs**
- **Relieves own resources**



CABLING SYSTEMS

However many kilometers of cable you have to install: Comprehensive know-how regarding innovative cable solutions, complex wiring harnesses and complete onboard wiring systems is all available, ready for you to access it at any time.



PRECISION TURNED PARTS

Whatever your precision turned parts have to do: benefit from our many years of experience with materials and machining, including complex surface treatment methods.



ELECTROMECHANICAL SYSTEMS

Whatever the intended area of application for your coil: we have specialized expertise in everything related to electromechanical systems, combining metal technology, coil development, cabling and plastics technology.





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