

**FRÄNKISCHE**

INDUSTRIAL PIPES

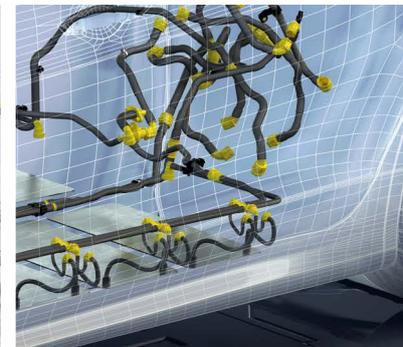
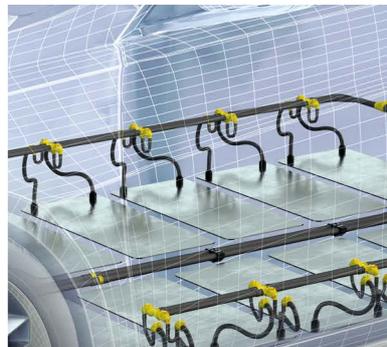
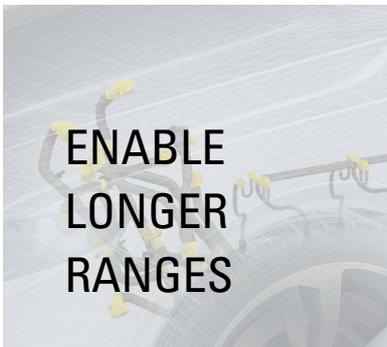
# FIPCOOLING

Thermal management solutions

REDUCE  
CHARGING  
TIMES



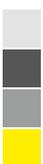
ENABLE  
LONGER  
RANGES



EXTEND  
THE LIFE OF  
BATTERIES



*Shaping the future of*  
**MOBILITY TOGETHER**



# Integrated durable thermal systems for battery, hybrid and autonomous vehicles

From the point of view of the automotive sector, thermal management is understood to mean the energy optimization of the heat balance in the vehicle with the task of operating all components in the optimum temperature range and generating comfortable temperatures for the occupants in the passenger compartment.

In the field of thermal management, too, our customers benefit from the expertise we have built up over decades. In close cooperation with customers, we develop and produce easy-to-assemble systems in compact design, including CFD design, including CFD analysis and pressure loss optimization. In addition, taking the weight into account (lightweight construction) and with optimized water vapor permeability.

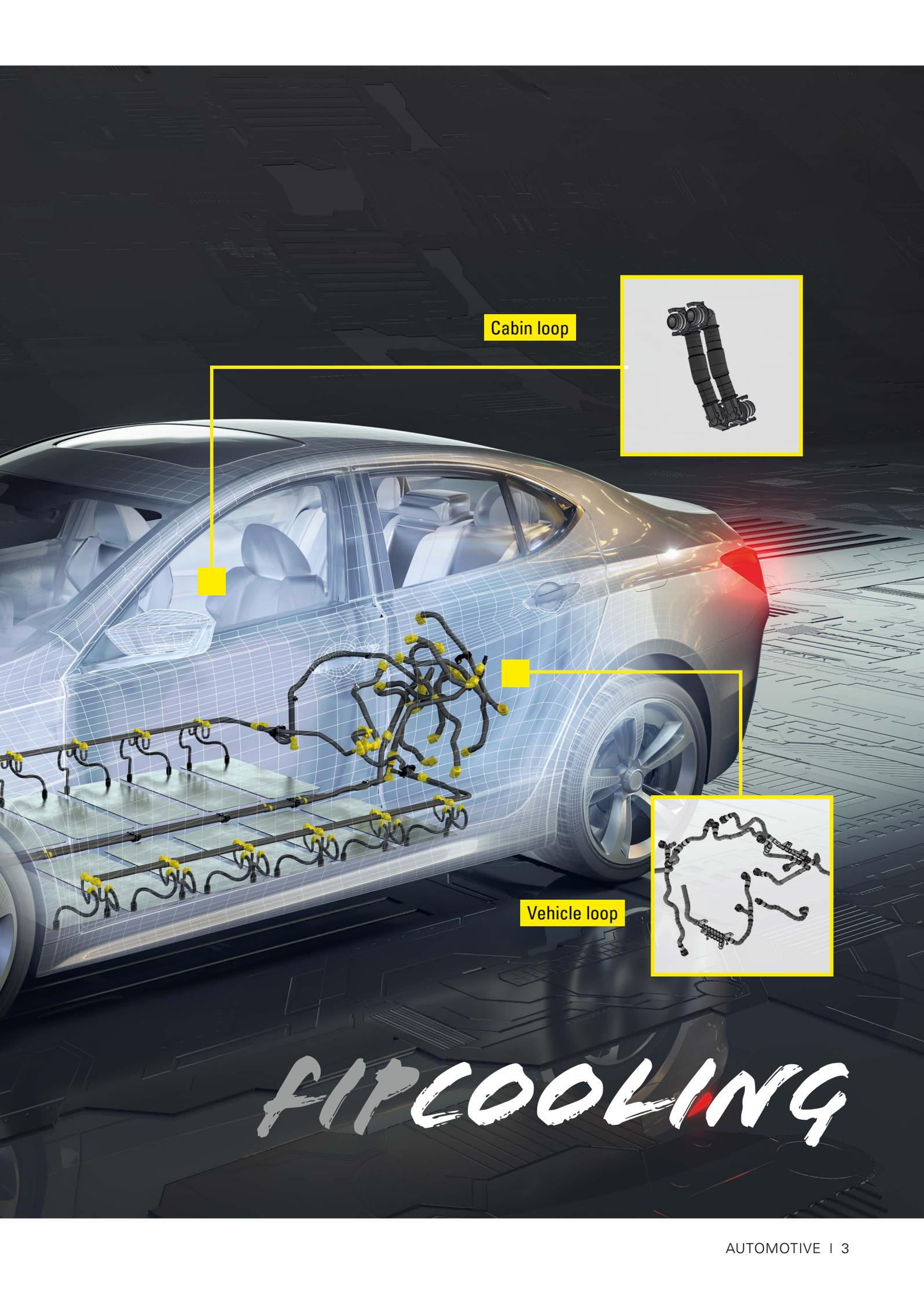
The individually optimized ducting systems regulate the temperature of the battery, the traction drive, the electronics and the interior of battery and hybrid vehicles. The special solutions for cooling, heating and venting of vehicle and battery are based on state-of-the-art connection technology and are designed for increased service life.

## Cooling for Battery Electric Vehicles (BEV)

The thermal management system in electric vehicles can be subdivided into three different areas, known as loops: Vehicle Loop, Battery Loop and Cabin Loop.

**Battery loop**





Cabin loop



Vehicle loop



# FIP COOLING

Turning standard into outstanding



## THE FIP SOLUTION

designed for extended lifetime (~10 times higher than ICE)  
requirements leading to reduced incident rates

## EXPERIENCES



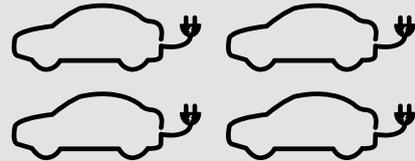
### advanced and experienced solutions

more than 800.000 FIP thermal systems

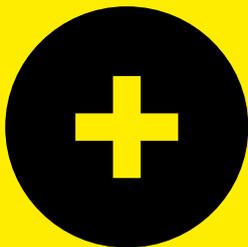
are already on the road

> 40 Mio. QCs

> 30 Mio. meters of  
corrugated tubing



## BENEFITS



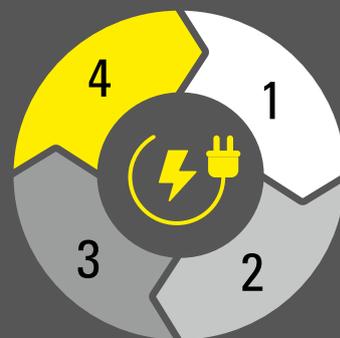
- + robust and durable
- + customer specific systems based on corrugation technology
- + maintenance-free
- + lightweight design
- + eco efficiency
- + recyclable
- + on-site design / CAE support
- + one stop shop
- + tracable function check



## SOLUTIONS



- 1 consultation
- 2 conception
- 3 production
- 4 service

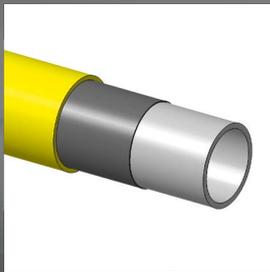


## CONNECT 6:

# Our 6 components for your individual thermal management system

Our wide range of products for battery, hybrid and autonomous vehicles can be individually composed of the following 6 components:

1



## FIPCOOL

Powerful corrugated and smooth tubes

2



## FIPCOOL SC

Space-optimized connectors with special features

3



## FIPCOOL CONTROL

Function-integrated plug systems with integrated sensors

CONN

# FIPCOOLING

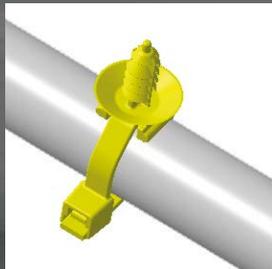
4



## FIPCOOLCONNECT

Form-fitting connecting elements

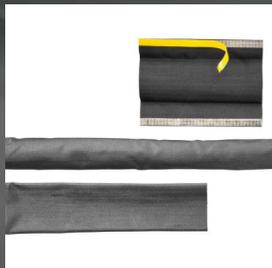
5



## FIPCOOLFIX

Securely lockable fixing elements

6



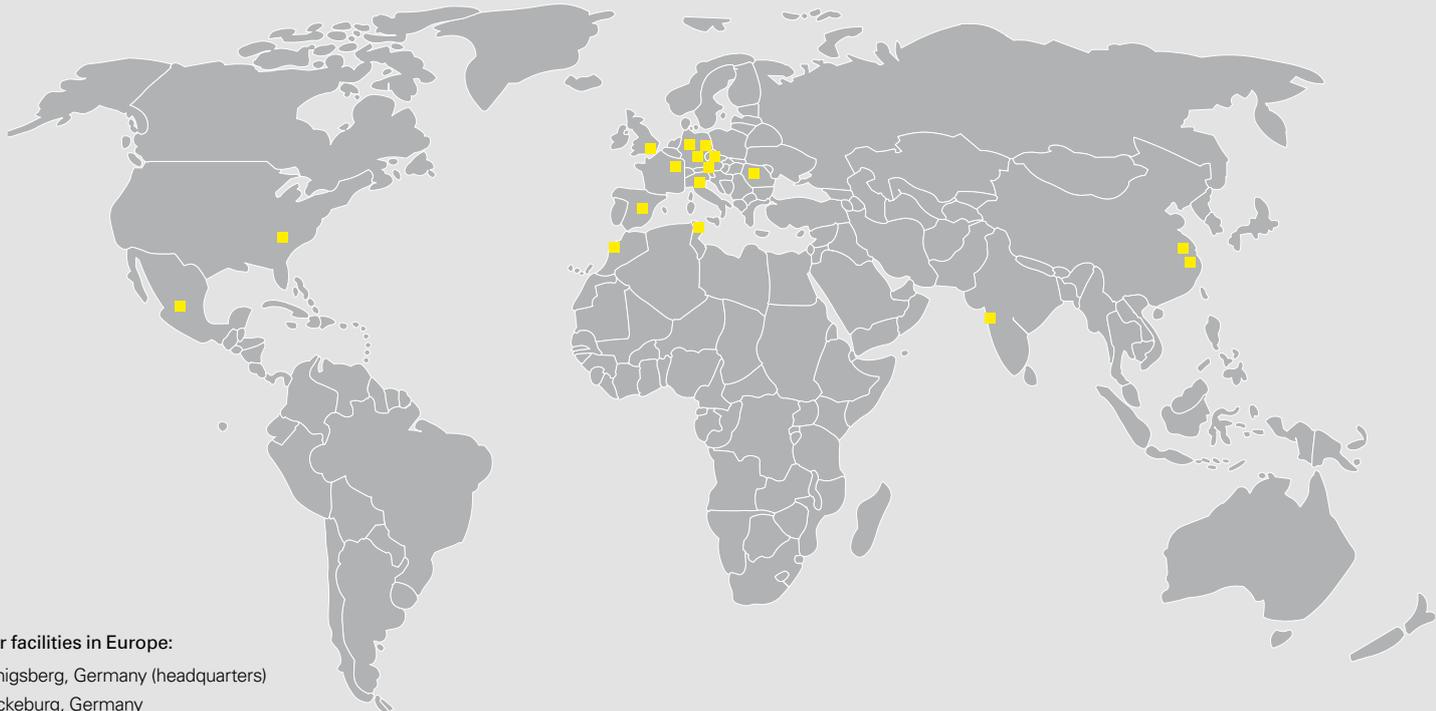
## FIPCOOLPROTECT

Protection sleeves and pads

ECT 6

It is time to move on.  
BE MORE SUSTAINABLE.

### Rooted in Königsberg – globally successful!



**Our facilities in Europe:**

- Königsberg, Germany (headquarters)
- Bückeberg, Germany
- Schwarzheide, Germany
- Okříšky, Czech Republic
- St.-Leonards-on-Sea, Great Britain
- Yeles/Toledo, Spain
- Torcy-le-Grand, France
- Milan, Italy
- Cluj, Romania
- Wels, Austria

**Our facilities in North America and Mexico:**

- Anderson, USA
- Rochester Hills, USA
- Silao, Mexico

**Our facilities in Africa:**

- Ben Arous, Tunisia
- Casablanca, Morocco

**Our facilities in Asia:**

- Anting/Shanghai, China
- Hangzhou, China
- Changshu, China
- Pune, India

FRÄNKISCHE is an industry leader in the design, manufacturing and marketing of technically superior pipe systems, shafts and system components made of plastic and metal, and offers solutions for building construction, civil engineering, automotive and industrial applications.

Founded in 1906, the company is a third-generation family-owned business with around 5,000 employees working at production and sales facilities around the globe.