

IPEngineering

Individual Solutions for Vehicle Development



IPEngineering

Each Component counts

Innovative components and systems, which are perfectly coordinated both in their own function and in the interaction of the subsystems, form the basis for the development of marketable vehicles.

In the field of thermal management in particular, IPETRONIK makes decisive contributions at every stage of development, from the concept phase through the entire development period to series release. This includes comprehensive tests on the entire vehicle as well as on individual components and subsystems. Special focus is placed on the interaction of the systems in the vehicle and the requirements for thermal comfort, efficiency and vehicle acoustics.

Do you have any question about a specific application? Our experts will be pleased to provide you with personal advice. Just send an e-mail to IPeeng@ipetronik.com or give us a call at **+49 7221 9922 222**.

Services



Thermal Management
& Component
Development



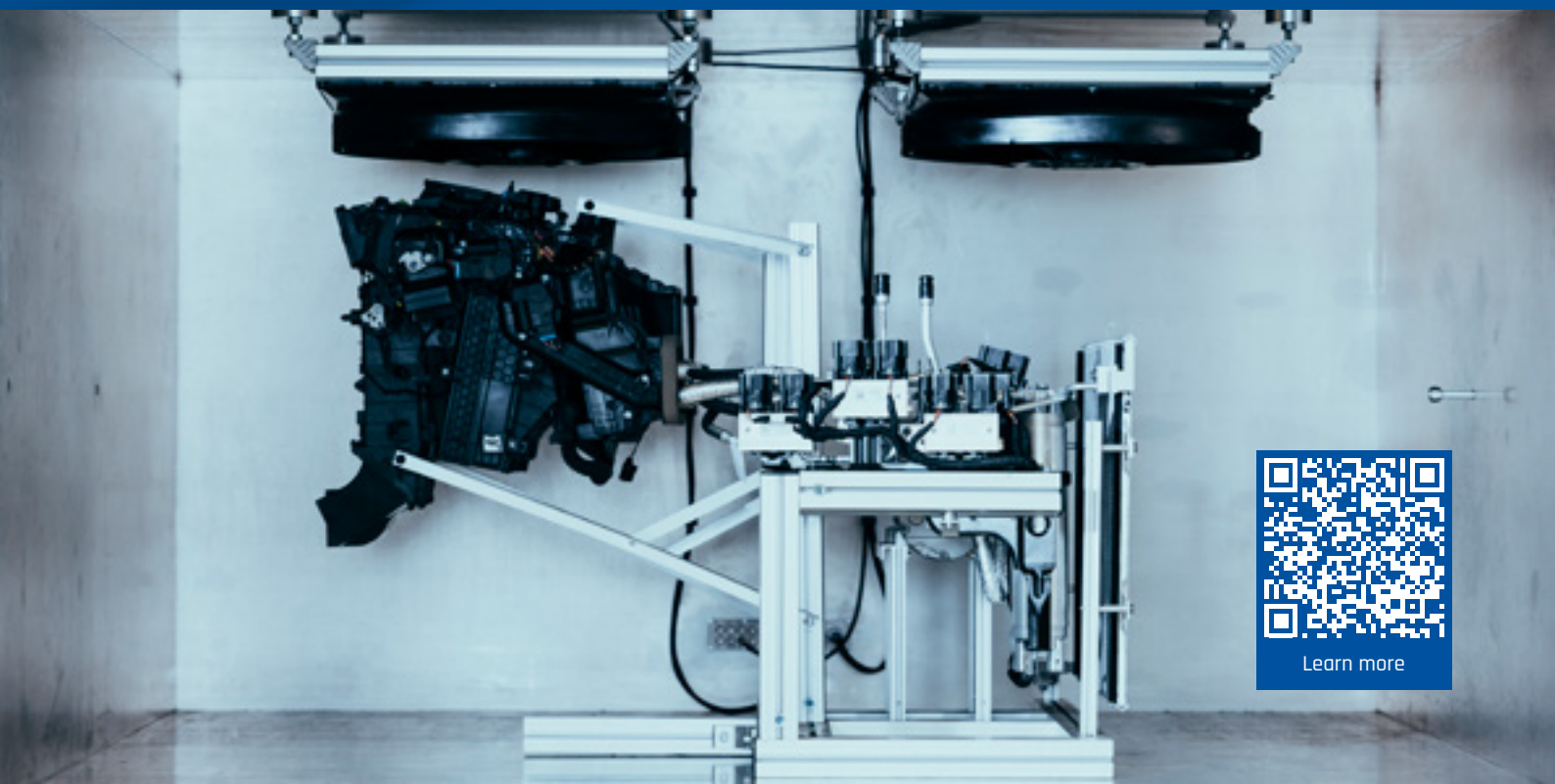
Acoustic Engineering



Vehicle Testing



Benchmarking



Learn more



Thermal Management

Solutions for the Future of Thermal Management

IPETRONIK can draw on in-depth expertise and many years of development experience in this area. The high degree of complexity of current thermal management systems and the ever-increasing requirements demand the development of innovative overall systems that optimally combine a wide variety of individual systems. This approach opens up completely new possibilities for efficient energy use and allows to meet the requirements of tomorrow today. IPETRONIK has extensive expertise in this field, gained through many years of cooperation with OEMs and TIER1s - from the early development phase through to series production.

Service Portfolio:

- > System- und subsystem tests
- > Design and validation of system architecture
- > Controller development and safeguarding
- > Measurements with different refrigerants

Component Development

For more Performance & Efficiency

IPETRONIK design and supply customised test bench solutions for the development and validation of automotive air conditioning components. All components of a thermal management system - from valves to refrigerant compressors - can be measured and validated individually or in combination. As a manufacturer-independent test center with many years of cross industry experience in the field of thermodynamics, IPEngineering offers component measurements including well-founded evaluations.

Service Portfolio:

- > Testing and development of AC/HP components
- > Acoustic and thermodynamic measurement
- > Endurance tests
- > Mounting and decoupling systems



Acoustic Engineering

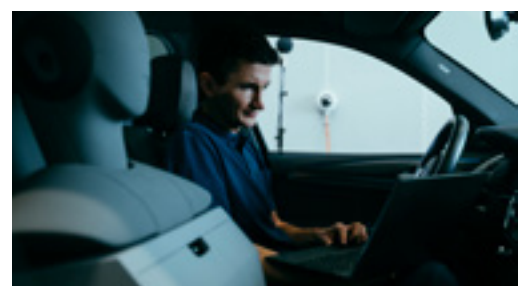
Comprehensive Expertise for Series Development

With comprehensive expertise in the simulation of structural dynamics and airborne sound radiation as well as the respective scope of testing, IPETRONIK offers support at every stage of development. Close cooperation in project teams with customers and partners ensures that the solutions are precisely tailored to individual requirements and needs.

At the engineering locations in Baden-Baden and Eichstatt, a broad portfolio of test bench resources is available for a wide range of services.

Service Portfolio:

- > Climate acoustic chamber for complete vehicle
- > Evaluation of sources and transfer paths
- > Unit and component acoustics
- > Acoustic chamber with 350 kW charging column
- > Ventilation acoustics
- > Benchmarking
- > Mounting and decoupling systems
- > Acoustic simulation (Structure & gas dynamics, airborne sound)



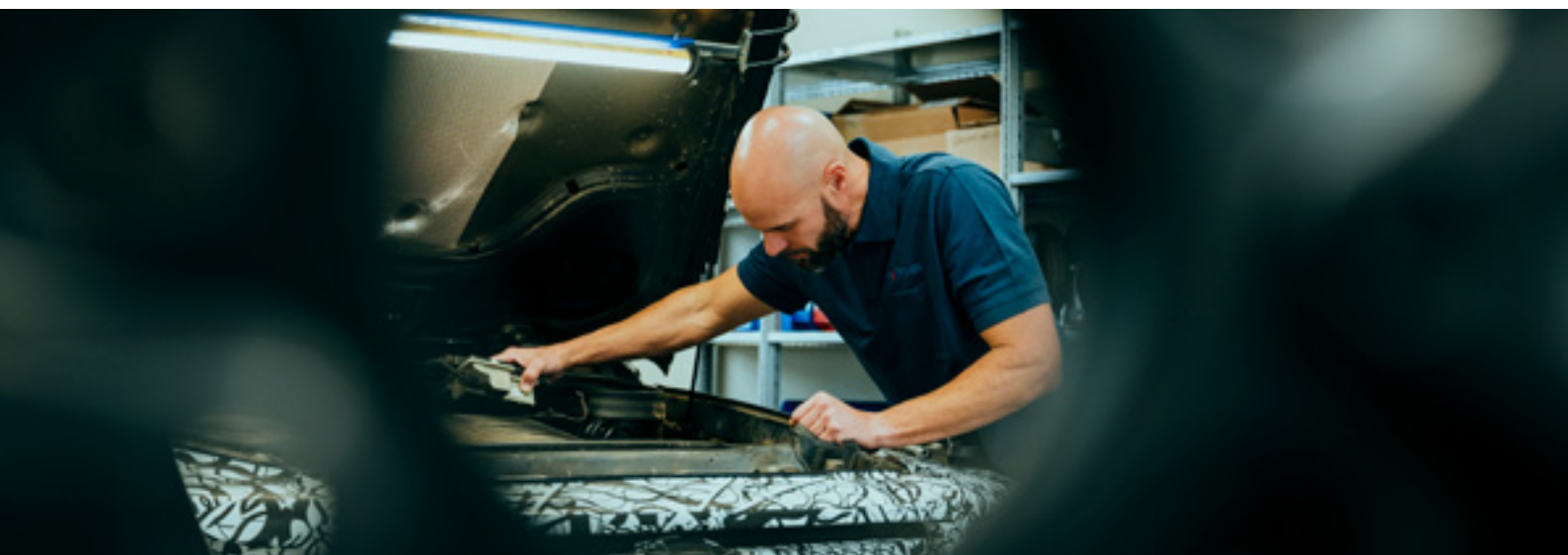
Vehicle Testing

Comparative Analyses, statistical Evaluations & Test Reports

After an initial consultation and system procurement, IPETRONIK takes over the entire project management. The measurement technology, including cabling and the complete application of sensors and actuators, is installed in the vehicle. The configuration of DAQ systems and data evaluation are just as much a part of the scope of services as calibration, functional testing and the subsequent dismantling of the test vehicles. A modern technology center and an experienced team of application engineers and mechanics are available specifically for this purpose. The portfolio is rounded off by carrying out tests in the company's own climatic acoustic chambers or on test drives worldwide

Service Portfolio:

- > Carrying out cool-down and heat-up tests
- > Investigation of vehicle acoustics/fast charging tests
- > Development of technology carriers
- > Support for global testing



Benchmarking & Competitive Analysis

Refrigerants, Air Conditioning, Thermal Management & Noise Behavior

Comparative analyses of components, system architectures, vehicles and refrigerants are of crucial importance and serve as a valuable tool in every development phase. These analyses make it possible to record the current state of the art and serve as a reference. Systematic comparisons can be used to identify potential for improvement and recognize new trends. Customers also benefit from this service portfolio when it comes to the current topic of "refrigerants".

Service Portfolio:

- > Complete Vehicle Benchmark: Focus thermal management
- > Comparative measurements with different refrigerants
- > Component benchmark
- > Concept evaluation system architecture

