Product portfolio

Engine Bay · Interior Floor · Underbody
Sustainable Champions · New Mobility
Measurement Systems · Simulation Tools
Autoneum is the global market and technology leader in acoustic and thermal management for vehicles and partner for automobile manufacturers around the world.

The Company develops and produces components that enhance a quiet and comfortable driving experience with a low environmental impact at the same time.
Product portfolio

Engine Bay
Engine encapsulations, engine and battery covers, hoodliners, outer dashes

Interior Floor
Tufted and needlepunch carpets, inner dashes, floor insulators, floor mats

Underbody
Underbody systems, wheelhouse outer liners, battery boxes, heatshields and tunnel insulators

Sustainable Champions
Best-in-class products and technologies with a superior sustainability performance

New Mobility
Products for new types of mobility

Measurement Systems
Specialized systems to measure NVH performance of component and material properties

Simulation Tools
Innovative software to optimize NVH performance
Engine bay is the vehicle area where most of the noise and heat sources are concentrated. With innovative lightweight and multifunctional components, Autoneum helps automobile manufacturers to address new regulations for pass-by noise and CO₂ emissions.
OVERVIEW

Autoneum supplies interior floor components to these customers. These products include a variety of features and benefits:

- Floor mats
- Tufted carpets and needlepunch carpets
- Floor insulators
- Inner dashes
- Spacers and crash pads

Autoneum supplies engine bay components to these customers. These products include a variety of features and benefits:

- Hoodliners
- Water box shields
- Engine top covers
- Engine encapsulations and battery covers
- Outer dashes
- Oil sump covers
- Engine top covers
- Engine encapsulations and battery covers
- Outer dashes
- Oil sump covers

These products include a variety of features and benefits:

- Exterior noise
- Interior noise
- Heat protection
- Lightweight
- Drainage and air duct
- Aesthetics

Autoneum supplies engine bay components to these customers.
Theta-FiberCell
Key technology for engine encapsulations

Innovative engine encapsulations enhance the efficiency and sustainability of vehicles: The heat storage in the engine bay achieved with the encapsulations reduces fuel consumption at the next cold start, which in turn leads to lower vehicle emissions.

Theta-FiberCell, the key technology for engine encapsulations combines the benefits of the fiber carrier Theta-Fiber and foam absorber Theta-Cell and is based on Autoneum’s long-standing experience. It takes into account customer-specific product requirements such as optimum noise protection and integrated thermal insulation. For instance, Theta-FiberCell is barely flammable and can withstand temperatures of up to 200°C.

As well as the acoustic absorption of interior (by up to 4 decibel) and exterior (by up to 8 decibel) noise, the fiber-foam solution enables heat to be stored for long periods after the vehicle has been parked. After being switched off for 12 hours, the temperature of an engine with Theta-FiberCell encapsulation is up to six degrees higher than one without this special insulation.

**BENEFITS**

- Lightweight fiber-foam solution
- High acoustic absorption
- Resistant to engine vibration

**200°C**

Heat insulation and temperature stability up to 200°C
The engine bay compartment is a major source of heat and noise in any vehicle. Therefore, it has to be acoustically and thermally isolated in order to increase passengers’ comfort. For that, Autoneum offers Theta-Fiber, a robust and multifunctional non-woven material.

Theta-Fiber stands out against conventional non-woven components above all thanks to its high temperature resistance: While traditional thermoplastic materials are able to withstand temperatures of up to 150°C, noise and thermal insulation parts based on Theta-Fiber can also be applied at temperatures of up to 200°C.

Compared to traditional heavy engine covers made of solid plastic, Theta-Fiber engine covers achieve weight savings of up to 60%, reduce the interior and exterior noise of vehicles and insulate heat generated by the engine.
Theta-Cell
Durable and lightweight foam absorber

Theta-Cell is an innovative polyurethane foam material developed by Autoneum. It is used for different applications such as lightweight and multifunctional hoodliners, outer dashes, tunnel insulators and battery covers. Compared with conventional acoustic absorbers, Theta-Cell components can be used to achieve weight reductions of up to 60% as well as high thermal insulation.

Products based on Theta-Cell are able to withstand temperatures of up to 180°C at peak; they meet customer requirements and legal provisions with regard to the non-flammability of components for the engine bay. They are also oil and water-repellent and help to reduce the interior and exterior noise of vehicles.
Autoneum’s interior floor products makes the vehicle lighter, more comfortable and environmentally-friendly – while providing optimum acoustics performance at the same time. In addition, these multi-functional components also meet the increased requirements for comfortable vehicle interiors thanks to their outstanding cleanability, low odor and high durability.
OVERVIEW

Floor mats

Inner dashes

Tufted carpets and needlepunch carpets

Spacers and crash pads

Floor insulators

These products include a variety of features and benefits

- acoustics
- lightweight
- fit to body and trimmets
- aesthetics
- cleanability
- slip resistance
- puncture resistance
- slippery and compression
- energy absorption
- VOC and odor

Autoneum supplies interior floor components to these customers
Di-Light
Better durability and perceived quality

Needlepunch carpets have until now been seen as cost effective textile surfaces but prone to flattening and wear over lifetime. With Di-Light, Autoneum now offers a more durable non-woven carpet thanks to its great abrasion resistance and resilience. The technology additionally allows an attractive esthetics even in highly shaped carpet areas due to its uniform surface appearance. The needlepunch carpet absorbs noise entering the passenger compartment from the road or engine bay, thereby contributing to enhanced driving comfort.

The enhanced resistance/weight ratio and the homogeneous look and feel of the carpet are based on newly developed fibers. Depending on the product variant, they consist of up to 97% of recycled PET which is reflected in the carpet’s excellent environmental performance.

**BENEFITS**

Homogeneous look and feel
Highly resilient and wear-resistant

97%
Made from up to 97% recycled PET
Clean-Tuft
Easy to clean and more premium

This technology for tufted carpets has a number of advantages compared to the needlepunch carpets mainly used in the compact and medium class. Thus, also drivers of these vehicle classes benefit from the quality standard and the look and warmth feeling of premium carpeting.

Clean-Tuft offers a clearly improved cleanability compared to needlepunch floor coverings: In particular, small particles such as grass, sand or animal hairs can be removed more easily and thoroughly because of the vertical orientation of the carpet filaments and the characteristics of the polymer used. Carpet systems based on Clean-Tuft also feature high stain-resistance thanks to its hydrophobic property.
Hybrid-Acoustics provides automobile manufacturers with a versatile acoustic solution for inner dashes, floor insulators and wheelhouse inner liners. This hybrid technology for vehicle interiors offers a unique performance-to-weight ratio: Hybrid-Acoustics is up to 50% lighter than conventional solutions, thus the lightest hybrid technology on the market. Furthermore, it consists largely of recycled materials, which reduces CO₂ emissions during the production process.

Thanks to the dynamic stiffness-controlled layer (DSL), the acoustic properties of Hybrid-Acoustics parts can be locally tuned to maximize absorption or insulation performance. As a result, Autoneum’s Hybrid-Acoustics parts can be designed to tackle any acoustic challenges in vehicles. Statistical energy analysis (SEA) simulations that take the available packaging space into account, the acoustic loads and the part’s environment are used to find the most optimum material configuration before a physical prototype of the car is available.
Prime-Light
Extremely light and high design freedom

Prime-Light is the latest advancement of Autoneum’s successful Ultra-Light technology. Components based on this innovative technology can be formed into a wide variety of different shapes and sizes. This way they adjust optimally to the individual body-in-white shapes and take account of increasingly complex production processes in vehicle construction.

Prime-Light also convinces with a light weight while maintaining the same level of acoustic protection. Thanks to a 30% weight reduction compared with previous models, Prime-Light-based inner dashes and floor insulators save more than two kilos of a vehicle’s weight in average. Prime-Light-based components consist of thermoplastic cotton felt blends in which the share of recycled materials amounts to up to 50% depending on the application-specific composition.
Autoneum is setting new standards in felt technology: The fully-automated IFP-R2 production systems are based on the Rotating Injection Fiber process which is an innovative, patented manufacturing process from Autoneum used for manufacturing tailor-made felt blanks for inner dashes and floor insulators in vehicles. These blanks with locally adjusted area weight are then molded into the shape required for the final product.

The advanced process leads to better acoustics, lower weight and the possibility to locally increase the compressional stiffness of carpet systems for improved quality perception. Autoneum also achieves a higher environmental performance of the production process, as up to 70% of recycled fibers are possible, fewer fiber scrap is generated which can additionally be immediately recycled by the line.

**BENEFITS**

- Optimized part weight and acoustics
- Increased compression hardness

Up to

70% recycled fibers
Textile-based and correspondingly lightweight underbody systems of Autoneum absorb noise and therefore simultaneously reduce the interior and exterior noise of cars. They also enhance the aerodynamics of a vehicle. This leads to lower fuel consumption and reduced vehicle emissions.

For further information, please contact:
Autoneum | Global Product Management Underbody
underbody@autoneum.com
Autoneum supplies underbody components to these customers. These products include a variety of features and benefits:

- Wheelhouse outer liners
- Outer tunnel insulators
- Floor pans
- Heatshields
- Under engine shields
- Underbody shields

Autoneum supplies underbody components to these customers: Ford, BMW, Mercedes-Benz, Audi, Honda, Volvo, Toyota, Jaguar, Land Rover, Renault, Infiniti, PSA Peugeot Citroën, FCA, Geely, and Subaru.
Ultra-Silent
The lightest textile underbody system

With underbody systems made of Ultra-Silent, Autoneum offers the most lightweight textile underfloor systems for vehicles: They are up to 50% lighter compared with equivalent plastic components. Underbody systems made of Ultra-Silent also convince with a high degree of impact resistance and optimum stone chip protection. The PET based, glass-free mono-material is resistant against water and heat and fully recyclable.

At the same time, Ultra-Silent absorbs sound and in doing so reduces the vehicle noise by up to 2 decibels. In addition, underfloor systems made of Ultra-Silent enhance the aerodynamics of vehicles by reducing their air resistance. This contributes to lower fuel consumption and thereby reduces CO₂ emissions. The sophisticated engineering behind Ultra-Silent helps reduce mass, the number of fixation points, part numbers, overall complexity and costs. This makes Ultra-Silent a convincing value offer for OEMs.

In electric cars, undercovers made of Ultra-Silent are installed underneath the battery casing, providing the battery cells with the best possible protection against extreme ambient conditions.

**BENEFITS**

- Lightest textile underbody technology
- Benchmark fixation point strength and stone-chipping performance
- 100% PET completely recyclable and safe handling
The newly-developed Alpha-Liner is a lightweight textile wheelhouse outer liner featuring a thin coated surface on the tire side. Thanks to this innovative technology, the porosity of the textile material is tuned to maximize the sound absorption, what contributes to the reduction of tire noise and accordingly improves pass-by level as well as passenger comfort. This advantage is key for car manufacturers, especially in light of increasingly tightening exterior noise regulations worldwide. Sound-reducing components are also essential for electric vehicles because tires have to be insulated here even more: Due to the lack of the engine noise, they are more audible for passengers. The coating can be adapted to the specific requirements of every vehicle, thereby protecting the textile carrier in areas strongly impacted by water and stone chipping for instance. The plasticized surface is also easier to clean than standard textile wheelhouse outer liners with less ice accumulation on the component. The manufacturing process of Alpha-Liner is solvent-free and eco-friendly. Applied only where it is most effective, the coating allows the recyclability of the production trim waste.
Heatshields are used in vehicles primarily to provide protection against the heat that arises in the engine bay and the exhaust system. In order to shelter this radiant warmth, these shields are heat-resistant up to 500°C. Acoustic heatshields based on Autoneum’s RIMIC technology additionally reduce the noise emission of the vehicle thanks to their integrated acoustic function. The noise reduction is achieved by means of a special perforation developed by Autoneum. It converts the airborne sound into thermal energy and absorbs it. Using in-house production processes, these perforations are applied specifically only at predefined areas to ensure optimal heat protection and durability. The acoustic performance of heatshields is controlled by the number and density of openings per shield. RIMIC can be used as a single layer, with glass fiber mats or in combination with the Theta-Cell acoustic absorption technology in order to facilitate the absorption of high-frequency sounds of between 2 – 6 kHz.
Autoneum’s sustainable champions display an excellent sustainability performance throughout the product life cycle. They are made partially or entirely of recycled materials, which have a significantly low environmental footprint. Moreover, the production waste can be reclaimed during the manufacturing process and reused again.

Being lightweight, Autoneum’s sustainable champions also reduce vehicle weight and therefore fuel consumption and CO₂ emissions.
Prime-Light
Made of 40% bio-recycled cotton fibers
Fully recyclable

Di-Light
Up to 97% recycled PET
20% lighter than standard needlepunch carpets
Major industry trends such as electromobility, autonomous driving and car sharing are raising the requirements on future vehicles. There is a growing demand for components designed to make vehicles significantly lighter, quieter and environmentally-friendly while enhancing driving comfort. As innovation leader in acoustic and thermal management, Autoneum is manufacturing products and technologies that meet the requirements of modern mobility.
Wheelhouse inner liners

Wheelhouse outer liners

Under battery covers
## Optimized product portfolio for e-mobility

### Topics
- **Electromobility**
  - Missing heat sources
  - Reducing vehicle weight
  - Aerodynamics
- **Autonomous driving**
  - Road noise
  - Sustainable technologies
  - Powertrain noise
- **Shared mobility**
  - Interior and trunk aesthetics
  - Comfort in autonomous vehicles
  - Shared use

### Opportunities
- **Acoustic components with thermal properties**
- **Lightweight construction expertise and product portfolio**
- **Expanding underbody business**
- **Textile exterior treatment**
- **Recycled fibers**
- **Tailored acoustic solutions, diagnostics and simulations**

### Components
- **Carpet systems**
- **Inner dashes**
- **Wheelhouse outer liners**
- **Underbody systems**
Battery undercovers made of Ultra-Silent act as insulators helping to lower sound that enters the passenger cabin, for instance caused by tires, and also pass-by noise. At the same time, the textile battery undercovers also convince thanks to their low weight: They are up to 50% lighter than corresponding components made of plastic and thus ensure a greater driving range.

Undercovers made of Ultra-Silent are installed underneath the battery casing, providing the battery cells with the best possible protection against significant cooling or heating and ensuring a constant temperature with a correspondingly optimized battery capacity. As a result, the components help to improve battery performance. They are also resistant to water, stone chipping and vibrations and thus help to protect the battery casing.

**BENEFITS**

- Ensuring constant battery temperature
- Up to 1 db noise reduction
- 100% based on PET fibers
Autoneum has been the leading supplier of specialized measurement tools in automotive acoustics for 50 years. The innovative systems can be used to assess and compare noise-reducing components in next to no time. This facilitates the compilation of sound packages for vehicle manufacturers while at the same time ensuring that the customer receives a product that is optimally tailored to his needs. Autoneum’s measurement systems have become globally recognized industry standards that are successfully used by vehicle manufacturers, suppliers and research institutes alike.

For further information, please contact: Autoneum | Measurement Systems ms-sales@autoneum.com
AFR

The AFR (Airflow Resistance Measurement) system was designed to measure the airflow resistance of porous materials in an easy way without compromising measurement quality. The results comply with ISO standard 9053-1:2018.

**Dimensions** | 600 x 600 x 1240 mm (L x W x H)
---|---
Sample diameter | 100 mm
Airflow Source | Vacuum pump or compressed air
Standards | ISO standard 9053-1:2018
Output | Airflow resistance, airflow resistivity

**BENEFITS**
- Extremely robust, stable, durable construction
- Easy and intuitive operation
- Measurement of thin materials (fabrics or non-wovens)

Alpha Cabin

The Alpha Cabin is the leading system to measure the acoustic absorption properties of materials and components that contribute to noise reduction in vehicles. The system is particularly suitable for validation and quality assurance of the measured data. A recognized standard by OEMs, the system is used in over 20 countries worldwide.

**Dimensions** | 1740 x 1180 x 1865 mm (L x W x H)
---|---
Sample size | 840 x 840 mm
Frequency range | 100 – 10000 Hz
Output | Overall acoustic efficiency

**BENEFITS**
- Results enable specifications for the absorption properties of NVH products
- Fast and repeatable measurement processes
- Significantly smaller than normal reverberation rooms

APAMAT II

APAMAT II compares and classifies the complex range of soundproofing solutions currently used in the automotive industry. For instance, the system evaluates the effectiveness of NVH materials in terms of noise control, noise damping and noise insulation in just one system. Optionally, the system is compatible with the airborne excitation only, allowing the installation of loudspeakers in the excitation chamber.

**Dimensions** | 3220 x 2370 x 2030 mm (L x W x H)
---|---
Volume | 6.44 m³
Sample surface area | 1.2 m² (standard sample), 0.6 – 2.4 m²
Frequency range | 400 – 10000 Hz
Standards | Based on ISO 354:2003
Output | Absorption coefficient, equivalent absorption area

**BENEFITS**
- Measurement of acoustic efficiency by reproducing material performance in the car
- Combination of structure-borne and airborne excitation
- Quick and easy measurement
**ARTIS3**

The innovative ARTIS3 system features an optimized experimental set-up for the performance assessment of structure-borne noise of acoustic packages. The dedicated software for testing, archiving and analysis makes it easy for the user to find the best solution in terms of performance, weight or cost.

**BENEFITS**
- Robust evaluation of the acoustic effectiveness of a passive treatment versus structure-borne noise
- Immediate and easy measurement process
- Easy to transport thanks to comparatively small size

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>920 x 920 x 1490 mm (L x W x H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>100 – 800 Hz</td>
</tr>
<tr>
<td>Sample size</td>
<td>643 x 544 mm</td>
</tr>
<tr>
<td>Output</td>
<td>Structure-borne insertion loss</td>
</tr>
</tbody>
</table>

**CARE+**

The control of airflow resistance in the production of materials and components is a growing requirement in the automotive industry. CARE+ (Concentric Airflow Resistance Evaluator) is an apparatus designed to measure the airflow resistance of materials and parts.

**BENEFITS**
- Non-destructive air flow resistance measurements
- Quality control adequate to manufacturing environment
- Easy to transport

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>440 x 180 x 305 mm (L x W x H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bell overall dimensions</td>
<td>145 mm</td>
</tr>
<tr>
<td>Range of airflow resistances</td>
<td>200 – 4000 Ns/m³</td>
</tr>
<tr>
<td>Recommended sample thickness</td>
<td>less than 20 mm</td>
</tr>
<tr>
<td>Output</td>
<td>Airflow resistance</td>
</tr>
</tbody>
</table>

**Carpet Cleanability Analyzer**

Autoneum developed the Carpet Cleanability Analyzer measuring system to conceptualize carpet systems during predevelopment of new vehicle models. The underlying process enables the cleanability and dirt resistance of different carpet surfaces to be analyzed and compared. It can be supplied together with standardized soiling particles and tools for sample soiling preparation.

**BENEFITS**
- Works with all carpet surfaces (tufted and non-woven)
- Repeatability of the results ensured
- Quantitative assessment of carpet cleanability

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>1500 x 950 x 1800 mm (L x W x H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions of standard sample</td>
<td>180 x 620 mm</td>
</tr>
<tr>
<td>Suction head speed</td>
<td>7 m/min</td>
</tr>
<tr>
<td>Output</td>
<td>Cleanability index, dirt repellency index</td>
</tr>
</tbody>
</table>
ELWIS

ELWIS (Evaluation of Light Weight Impedance System) offers a full, reliable and rapid characterization of the physical parameters of the porous materials (Biot-Allard parameters). The system consists of the ELWIS-A and ELWIS-S devices which can be used independently from each other although both applications are needed for a complete material modeling.

### BENEFITS
- Rapid, easy and reliable data evaluation
- Adaptable to a wide range of materials and parts
- Easy-to-operate

### Isokell

Isokell offers a flexible method geared specifically to the needs of the automotive industry for measuring airborne noise insulation and the transmission loss of vehicle components. The system is easier to use and less costly than traditional transmission loss suites.

### BENEFITS
- Measurement of flat samples or components
- Fast and easy measurement procedure
- Used in combination with Alpha Cabin, it can also measure absorption

### PORPOS

PORPOS measures the porosity (ratio of air to overall volume) of felts and foams on the basis of the so-called air-based method. Via a process of alternately compressing and decompressing air, the porosity of the sample under analysis can be derived from the resulting pressure changes.

### BENEFITS
- Fast and easy measurement procedure
- Automatic evaluation of the measurement results
- Suitable for a wide range of porous materials such as felts and foams
Autoneum provides a full range of simulation tools based on our long-standing expertise in vehicle acoustics and thermal management. These tools predict and optimize NVH in the concept phase to provide our customers with cost-effective solutions and reduced lead times. Thanks to our broad range of measurement systems, the data for this process can be evaluated thoroughly.

For further information, please contact:
Autoneum Products and Systems Simulation
simulation@autoneum.com
Optimizing the vehicle body structure and acoustic trim

Autoneum has developed a complete tool portfolio for state-of-the-art computer-aided engineering (CAE) for vibroacoustics, focusing on body vibration and acoustic trim performance. Our tools predict and optimize NVH in the concept phase to provide our customers with cost effective solutions and reduced lead times.

GOLD

GOLD is a unique simulation tool for the simultaneous improvement of a damping package and vehicle body panel shape. It exploits the Finite Elements (FE) analysis performed with NASTRAN (Superelement Technique for full body optimization) and uses an Autoneum modeling-technique to simulate the application of damping material on vehicle body panels. GOLD automatically updates the FE model with possible shape modifications as set by the user: beadings, ribs and soapfilms.

**BENEFITS**

- Handles high number of design variables
- Customized shape modification

11 design variables for the position and the thickness of damping patches.

27 design variables for the shape modifications on the panels: 20 beadings, 7 soap films.

Full vehicle simulation: 7 uncorrelated loading conditions

**Example**

Reduction of damping package weight by 20% in floor area.

Same or better performance as original (same panel vibration).
TREASURI2

TREASURI2 allows the Finite Elements (FE) simulation of acoustic trim components containing porous materials. TREASURI2 can set-up, solve and post-process vehicle FE models that include trim parts with porous materials. It is applied to predict noise levels in the passenger compartment (full vehicle acoustics) mainly for structure-borne noise in the low- and mid-frequency range. TREASURI2 can also be used to evaluate in situ insertion loss of full components like floor components.

BENEFITS

- Simulates structure-borne noise in the low- and mid-frequency range
- Fully integrated in NASTRAN, a standard for the automotive industry

Example

Refinement of baseline damping package with 15% weight reduction

SILVER

SILVER is a simulation tool which predicts the shape and ideal location of dampers based on a single vibration Finite Elements (FE) simulation performed with NASTRAN. SILVER rationalizes and simplifies the design process of a damping package by optimizing the overall weight and the distribution of pads among the different areas of the vehicle, making it possible to efficiently evaluate a particular damping solution (e.g. reference damping configuration versus a proposed modification). It is applied directly on the same FE models used by the OEMs for NVH optimization.

BENEFITS

- Rationalized and simplified design process
- Provides ranking of damping package parts

Example

Refinement of baseline damping package with 15% weight reduction
Enhancing the acoustic performance of vehicle parts

High-performance software programs are used for the analysis, optimization and validation of the isolation and insulation properties of components for the vehicle interior floor, including carpet systems, inner dashes and floor insulators. The aim is to achieve the perfect balance between acoustic performance and product weight.

VisualSISAB

VisualSISAB calculates the absorption and insulation of sound package components with complex geometries and a wide range of different materials. It exploits the transfer matrix technique to represent the wave propagation through layers of porous materials, hard layers, foils or spacers. VisualSISAB enables material compositions and thicknesses of press-molded components already to be reviewed with respect to NVH requirements and adjusted if necessary during the CAD stage by means of computer-controlled simulations. This is a prerequisite for the development and manufacture of effective, lightweight and cost-efficient noise protection components.

Example

Area split to simulate transmission loss of dashes
REVAMP can predict the impact of trim parts inside the passenger compartment. It is based on the existing Statistical Energy Analysis (SEA) theory. REVAMP is based on over 20 years’ experience in SEA modeling and is specifically designed to carry out typical sound package development and optimization tasks in the mid- and high-frequency range.

**BENEFITS**

- Supports the building and analysis of SEA models of vehicles
- Allows determination of dominating acoustic transfer paths
- Cascades vehicle noise level targets down to acoustic component TL and ABS targets
- Compatible with other commercial SEA tools

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**Example**

Workflow to link parts performance to vehicle targets
Thermal management solutions for vehicles

Autoneum’s range of automotive thermal management solutions includes state-of-the-art thermal testing and calculation processes to develop components for the insulation, shielding and storage of heat.

At global research and development centers, Autoneum’s thermal management experts carry out material testing on components and in vehicles and use unique simulation software to develop innovative thermal protection packages that are tailored to customer needs.

For example, Autoneum offers Theta-FiberCell, a key technology for innovative engine bay parts like engine encapsulations, engine top covers or hoodliners. Autoneum provides full engineering services for the predevelopment and development stage for thermal safety, heat storage as well as acoustic validation at vehicle level.

For further information, please contact:
Autoneum | Thermal Management
tm-support@autoneum.com

Example
Engine encapsulation pre-development workflow
Autoneum offers a variety of thermal management solutions for its customers

Part simulation for thermal and acoustic performance

**VisualTherm:** predicting the thermal insulation performance of engine bay parts  
**VisualSISAB:** predicting the acoustic absorption and insulation performance

Autoneum’s global vehicle testing facilities

To perform OEM’s thermal safety cycles and 24 hours cooldown measurements for engine encapsulation efficiency assessment.

Engine cooldown methodology

Based on a smart and accelerated combination of Star-CCM+ and TAITherm to virtually evaluate the cooldown duration and efficiency of engine

Material measurement equipment

To enable the creation of temperature- and density-dependent thermal property databases.
Autoneum. Mastering sound and heat.