

Innovative Dispensing Solutions for Mobility Now and in the Future



Every Change Brings Opportunity

Our mobility is on the verge of the greatest breakthroughs in its history. Trends such as new mobility concepts, digitalization, powertrain electrification and autonomous driving are challenging what we've known about mobility up to now. At the same time, product and development cycles are becoming increasingly shorter, creating a daily challenge for everyone involved in shaping this change.

The good news is that proven, innovative adhesive bonding, sealing and potting solutions are available to take advantage of the opportunities this change has to offer.

We're Working on It

Emissions-free, autonomous and connected with the entire world – the car of tomorrow will resemble this or something like it, remaining a key part of the vehicle mix of cutting-edge mobility concepts. From today's point of view, these concepts will largely cover electrically powered vehicles – regardless of whether full electric drives or fuel cells prevail. And even vehicles powered by internal combustion engines will always need more powerful electronics. This is the key driver of innovation. Without cutting-edge, multifunctional electronic subassemblies, battery technology, electric drives, sensor arrays, touch displays, connectivity and artificial intelligence, etc., the door to future mobility will remain shut.

By no means does everything have to be reinvented. After all, many of today's electronic systems already make driving safer and more comfortable. In the future, the share of electronics installed in cars will continue to rise. At Scheugenpflug, we make sure that the relevant computers, sensors, control units and cameras work smoothly throughout their lifetime. After all, the reliability of these systems depends among other things on the ideal application of sealants, adhesives, potting material and thermally conductive pastes. These materials protect the parts and components from harmful influences as well as high temperatures, contaminants, moisture and strong vibrations, preventing parts failures and defects that are as costly as they are relevant to safety. And we provide stand-alone and system solutions which you can use for efficient, economical sealing, bonding and potting.

For over 30 years we have partnered with our customers and have already guided them through many technological changes. To maintain this tradition, we are already working on solutions now for the requirements of the future. You can count on us to provide you with a dispensing solution that is economical and technically state of the art, delivers reliable process quality and can be adapted to changing requirements at any time. We fulfill highly specialized requirements with custom systems and automation solutions.

*“Technological change
requires partners who
understand the industries
and have the innovative
drive to help shape it.”*

Olaf Leonhardt, CEO





Efficient Dispensing – More Than Just a Matter of Technology

Today, efficient dispensing is not a problem if you can rely on our proven and innovative bonding, sealing and potting solutions, our decades of experience and our comprehensive support for process-safe dispensing.

We're Here for You

With our systems, the increasing variety of dispensing materials no longer poses a major challenge. That's why our products are aimed at making the dispensing process even faster and more reliable. However, at Scheugenpflug efficient dispensing is based on many more factors, all of which we fully support:

1. These days, product requirements and production quantities can change quickly. The technology used must guide this trend. Our stand-alone and integrated solutions are modular and optimally tailored for this.
2. Ideal dispensing solutions make your application the center of attention. This is why you should draw on our expertise and our professional dispensing test services in our in-house **Technology Center** before purchasing a system.
3. The variety of materials is growing continuously, and personalized materials that make sense on a project-by-project basis place changing demands on dispensing technology. Working closely with our materials partner network, we are solving emerging issues at the right time.
4. The efficiency of a dispensing system is also determined by the operation and thus the knowledge of the operators. To ensure that your workforce can get the most out of the system, we offer an extensive training and education program through our **Academy**.
5. System availability is a key criterion for efficiency. This is why we provide extensive **after sales services** and a worldwide service network. Experienced service technicians assist you – either in person or remotely – to ensure that your systems operate smoothly.
6. Rapidly changing application conditions and variant changes repeatedly lead to production bottlenecks. Particularly when potting small quantities, as a stopgap solution until delivery of the ordered system, or when production peaks need to be absorbed on short notice, the **subcontracting** service from our Dipotec subsidiary is the perfect solution. On request, the service also covers all upstream and downstream process steps relevant to bonding and potting.

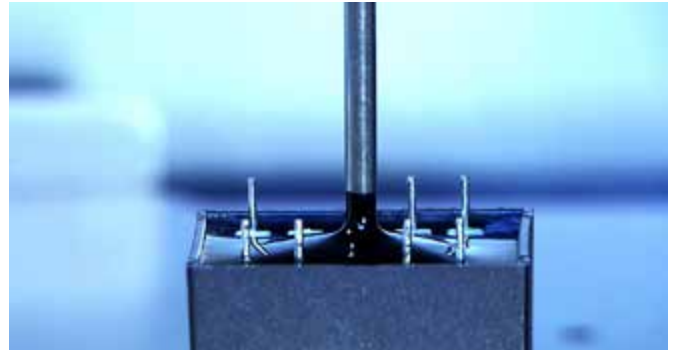
“Our comprehensive approach really brings our technology to life.”

Marco Murgia, Manager Sales

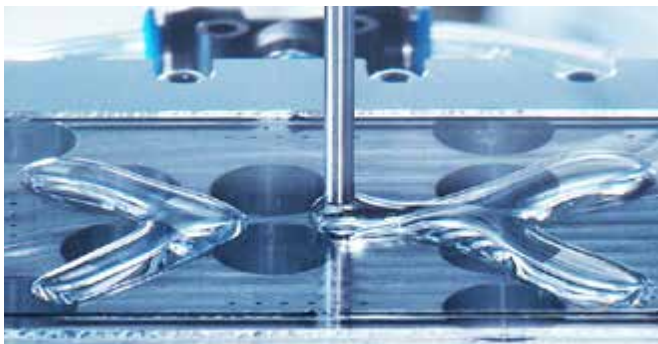




Sealing – barrier against external influences



Filling – protects against mechanical damage, critical environmental factors and curious glances



Bonding – the bonding technology of the 21st century

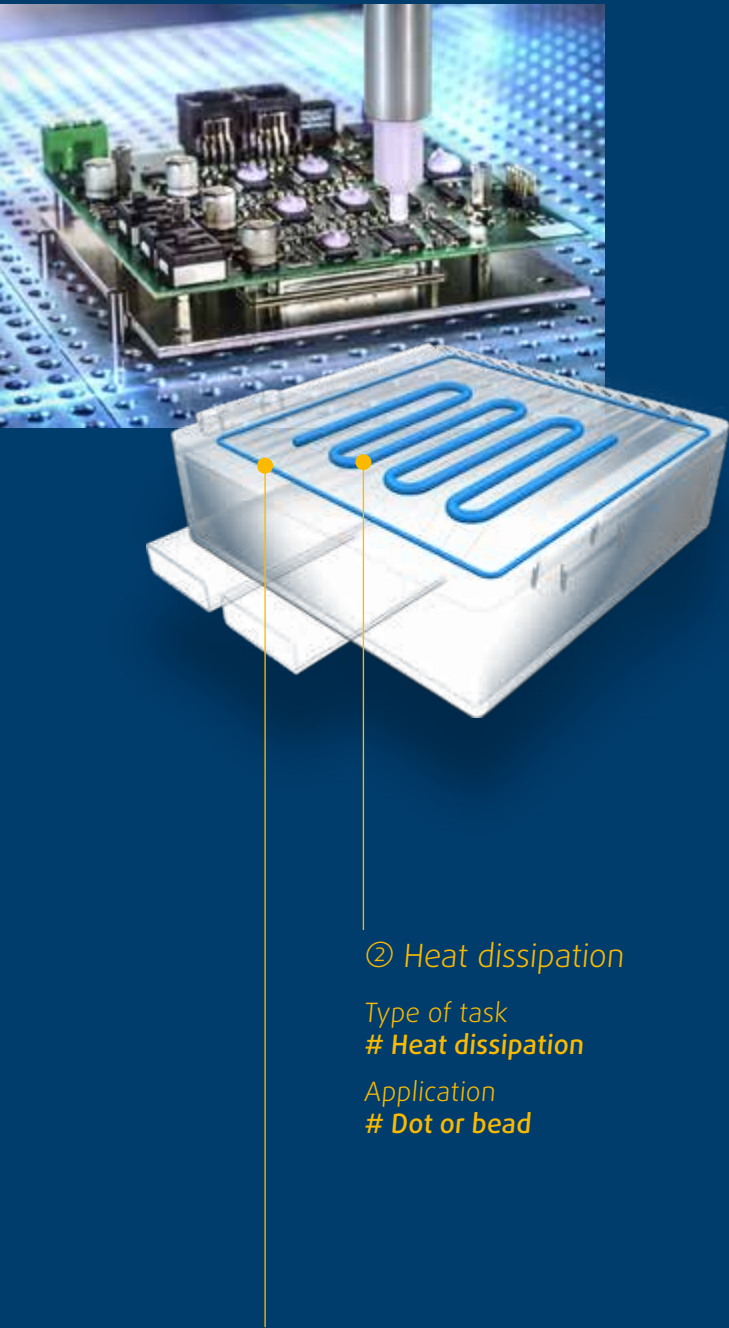


Heat dissipation – the hot spot solution

The Right Solutions for Your Dispensing Tasks

Each electronic component in electrically powered vehicles places special demands on a custom dispensing solution. This is equally true for liquid seals and adhesives as well as potting materials.

Whether displays, sensors, power electronics or charging plugs – different dispensing tasks, in some cases several, have to be managed. With over 30 years of experience and knowledge from more than 3,000 reference projects and thousands of dispensing tests, we work with you to develop the custom-fit high-tech stand-alone or integrated solution for your particular dispensing task.



② Heat dissipation

Type of task

Heat dissipation

Application

Dot or bead

① Sealing

Type of task

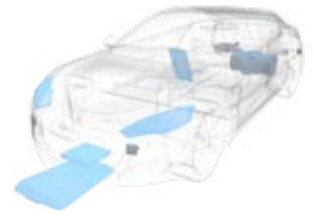
Protects against environmental influences

Application

Bead

#Power electronics

The Key Component for Hybrid and Electric Vehicles



Completed projects:

- Motor, transmission and steering control units
- Higher-power semiconductor modules for electric motors
- Battery management systems
- Onboard chargers

① Protects against harmful environmental influences

Control units in the engine compartment, around the powertrain, at sensitive points around the wheel axles or the tank need long-lasting protection. The liquid seals applied to the housing handles this task. At the same time, special seals and adhesives also provide the form-locking connection for components. Here it is important to apply the material precisely, evenly and continuously along the intended – sometimes complex – contours. We have the solutions for these tasks.

[!\[\]\(28f72b996fc97883dfd9d4e8b1b16b4e_img.jpg\) Info: Learn more about applying liquid seals](#)

② Dissipating heat from electrical power losses

The operating temperatures in motors and drives are very high. The ongoing miniaturization and resulting higher power densities mean that the “thermal management” issue in power electronics will continue to challenge developers and solution providers.

High-performance thermally conductive adhesives and potting materials provide effective heat dissipation. In addition to being extremely robust, the dispensing systems used in this case also need to be designed for the quick application of highly viscous and filled materials in order to meet cycle time and process safety requirements.

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② Sealing

Type of task
Protects against corrosion and environmental influences

Application
Coating, "dam and fill"

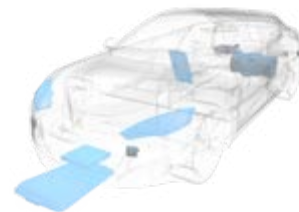
① Bonding

Type of task
Fastening

Application
Dot or bead

#Sensors

The "Eyes" for Safety and Comfort



Completed projects:

- Radar sensors
- Parking distance sensors
- TMAP (Test Management Approach) sensors
- Ultrasonic sensors
- Screen sensors

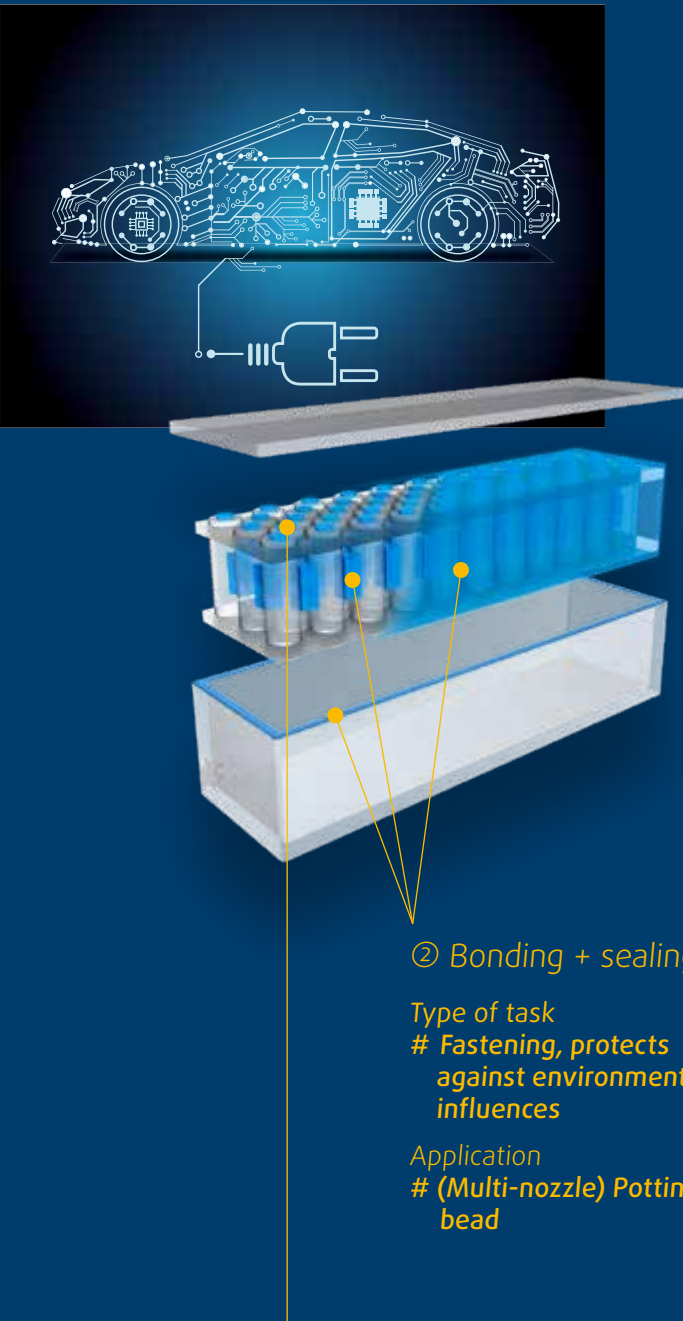
① ② Safe protection against pressure, moisture and vibrations

Comprehensive protection for electronic systems safeguards electric vehicle operation and safety. Components such as sensors are therefore bonded, sealed, coated or encapsulated with liquid to medium-viscous media.

The open contact points on the housing are also shielded from harmful influences with suitable adhesives or potting materials. When choosing the right material, there isn't one that fits all purposes, as very different properties can be important depending on the sensor and its location, geometry and function. Here it is advisable to seek collaboration with the systems manufacturer and materials partner at an early stage of the project.

[!\[\]\(899d8b7697d64725bf017d3296cfcf1b_img.jpg\) Info: Learn more about the bonding, sealing and potting of sensors](#)

[!\[\]\(c1168d6a8b365d11e842ece304635fa7_img.jpg\) Video: 2C encapsulation of automotive sensors](#)



② Bonding + sealing

Type of task
Fastening, protects against environmental influences

Application
(Multi-nozzle) Potting, bead

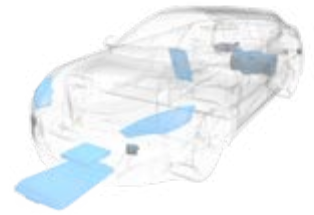
① Heat dissipation

Type of task
Heat dissipation

Application
Dot, bead

#High voltage battery

The Core Component of Electric Vehicles



Completed projects:

- Cylindrical cells
- Prismatic cells

① Ideal metering of thermally conductive materials

Thermal influences have a tremendous impact on the service life, capacity and especially the operational reliability of HV batteries. In addition to providing the required heat transfer, other challenges, such as insulation strength and vibration resistance, need to be mastered. Different concepts have been developed by battery manufacturers for this purpose. The manufacturers of potting media then adapt the material properties according to the specific requirements. Different material systems – silicone, epoxy resins or polyurethanes – can be used, which are either applied through dot, bead dispensing or potting. Robust and powerful dispensing solutions are available for these applications.

[Info: Learn more about heat dissipation](#)

② Reliable protection against environmental influences

Whether prismatic or cylindrical cells, they all have one thing in common: They need to be effectively secured at the correct distance from each other. Due to the changing battery design, especially with cylindrical cells, multi-piston dispensers are increasingly being used. With this process, low-viscosity thermal conductive adhesive is dispensed simultaneously at several positions on or between the battery cells, thus achieving maximum performance in the smallest space. In the battery housing itself a seal connects the cover to the housing. It protects the battery modules inside from dust and moisture while also providing an adhesive bond. When dispensing liquid seals, applying the material precisely and with repeat accuracy along the intended seal contour is particularly important. We offer a wide range of CNC-enabled dispensing and potting cells that can be flexibly adapted to existing production conditions.

[Info: Learn more about bonding](#)

[Info: Learn more about sealing](#)



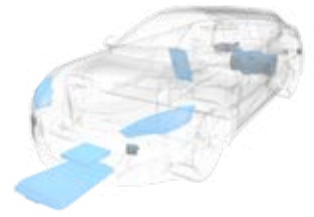
① Filling

Type of task
**Insulating, fastening,
protects against corrosion and
environmental influences**

Application
Vacuum bonding

#Charging plugs

Safe Power Flow



Completed projects:

- Charging stations
- Charging plugs

① Electrical breakdown and corrosion protection

Outdoor charging stations are often exposed to wind and the elements. To protect the cables in the charging plugs from temperature fluctuations, moisture and other climate influences, the housing is filled with liquid casting resins. What is critical here is that no air is introduced into the housing during the potting process. Not only can this compromise the high-voltage resistivity, but it can also facilitate corrosion. Therefore, vacuum processes are employed for reliable insulation without air bubbles. Evacuating the potting material – as early as during the preparation process – prevents air bubbles from being dispensed into the housing interior with the potting medium.

[!\[\]\(c50c8b7b2cc2cf9ff925edec0ee94c0d_img.jpg\) Info: Learn more about filling](#)

[!\[\]\(6a9b39b98eb945faa14c645ec99e4eaa_img.jpg\) Video: Process-safe preparation and evacuation of potting media](#)



② Optical Bonding

Type of task
Reduction of reflections,
higher screen quality

Application
Vacuum bonding

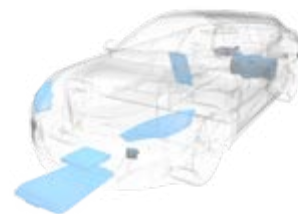
① Sealing and bonding

Type of task
Protection from outside
influences and safe bonding

Application
Bead

#Displays

The Human Interface of Modern Mobility



Completed projects:

- Head-up displays
- Digital mirrors and speedometers
- Infotainment touchscreens

① Protection from dust and cleaning agents

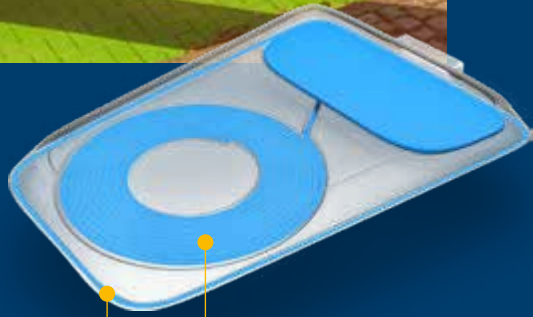
When sealing and bonding frames, safety glasses and displays in housings, special seals and adhesives provide protection against harmful external influences. At the same time they create a form-locking connection between the components. Applying liquid seals and adhesives is particularly suitable for complex 3D geometries that cannot be precisely made with solid seals such as pads or sealing cords. Dispensing solutions have proven their worth here through powerful axis systems with which even large quantities of material can be precisely and continuously applied. Bonding or sealing the most complex 3D geometries is a daily routine for our systems.

[Info: Learn more about applying liquid seals](#)

② Higher screen quality, reduced reflections

Optically bonded displays are increasingly being used in infotainment systems. With less reflection and higher picture quality, displays produced this way offer better readability in the vehicle interior and thus greater comfort and safety – even under unfavorable lighting conditions. Moreover, optically bonded displays are better protected against dirt and moisture. Since trapping air and dust must be avoided during the bonding process, this process usually takes place in a clean room and in a vacuum. Vacuum bonding requires a high level of process expertise and is now one of our proven standard technologies.

[Info: Learn more about vacuum bonding](#)



② Heat dissipation

Type of task
Heat dissipation

Application
Vacuum bonding

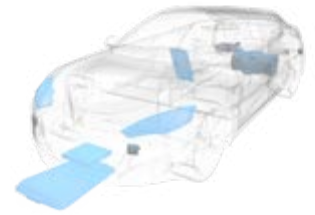
① Sealing and bonding

Type of task
Protection against environmental influences

Application
Bead

#Inductive charging stations

The Outdoor Component of Wireless Charging



Completed projects:

- Inductive charging stations

① Seamless protection from wind and the elements

While the secondary coil is attached to the bottom of the vehicle, the primary coil is on the ground or sunk underground. To protect this coil from inclement weather and moisture penetration, the housing must be securely and reliably sealed and bonded. Due to the size of the housing, a powerful metering system with a large travel range should be used. In our system of equipment modules you will find the right modules for your requirements.

② Safe and long-term heat dissipation

As with wired charging, the heat generated during the charging process must be dissipated. For this purpose, the high-energy coils integrated in the housing are encapsulated with thermally conductive liquid materials. Excellent thermal dissipation as well as maximum high-voltage and insulation resistivity can be achieved by filling in a vacuum. Over the long term, this can prevent air bubbles from settling in hard-to-reach places in the coil during the potting process, which would be problematic. Since these solutions are permanently installed outdoors, unnecessary repairs must be prevented.

Our solutions help to effectively save costs.

[Info: Learn more about potting coiled products](#)

Sealing

Adhesive bonding

Filling

Heat dissipation



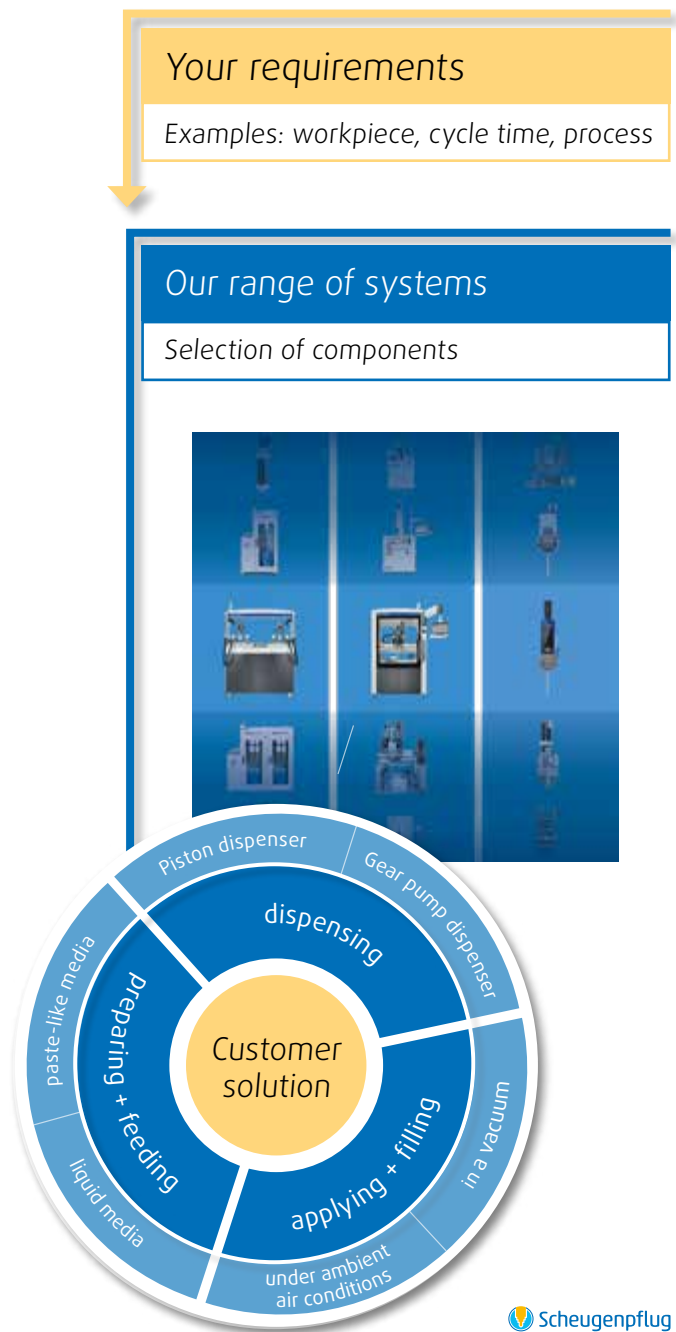
Our Integrated Solutions – Using Standards in a Modular Way

Whether sealing, filling, bonding workpieces or applying thermally conductive pastes: there isn't one dispensing system that fits all needs. The systems must fit the particular metering task and not the other way around. Our system of equipment modules is the answer to this problem. Our specialists put together the ideal system and control modules for your integrated solution based on our high-end technology. Whether it is a stand-alone or integrated system: all individual modules, from material preparation, feeding and application to process automation, are always ideally matched to each other.

Our System, Your Success

Not all metering methods are the same: Determining which method is right for your task depends on a number of factors. In addition to the component itself, the characteristics of the sealing or potting material used and the amount to be dispensed also play a role. The cycle time and quality demands, the process environment and the respective interfaces must also be considered when designing the ideal dispensing system. The list can be extended as desired – based on individual requirements. The advantages of our concept are obvious:

- The integrated solution fits your requirements without any compromises and provides **optimum performance**.
- A multitude of possible combinations and additional equipment options allow for customized system planning – the requirement for a high level of **flexibility and scalability**.
- Use of standard components ensures **short delivery times**.
- Our **best practice experience** is in every one of your solutions.
- Our systems can be flexibly adapted to requirements in scope and degree of automation or for upgrades – without the need to procure new basic modules. That's what we call **future viability**.
- The systems are modularly adaptable to changing tasks. This provides **investment security**.



#System solution

Heat Dissipation

To prevent drops in performance or faults in electronic devices and components, the heat produced in the component must be dissipated in a reliable way. This is done using metered thermally conductive materials.

When applying these highly viscous, abrasive media, it is important to check for compatibility with the production line technology. This will ensure economical material application and prevent damage to the application systems.

Our integrated solution for thermal management tasks ensures reliable application of thermally conductive pastes and adhesives. The individual modules have been optimized specifically for processing **highly viscous and highly filled materials**. This not only allows for **short cycle times** and thus **high productivity**, but also **long service life** and therefore significantly **reduced maintenance costs**.

Suitable for efficient application of thermally conductive paste for:

Inductive charging stations

HV batteries

Electronic control units

On-board chargers

ADAS

Your dispensing task

Heat dissipation



Our range of systems



Your system

Optimized for thermally conductive pastes



- Material feeding unit: A280 2C
- Piston dispenser: DosP DP803 TCA
- Process automation: DispensingCell DC803

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#System solution

Filling

Many electronic components, which are also becoming increasingly smaller, now have to be encapsulated to ensure their long-term functionality or to protect proprietary knowledge. Depending on the component geometry or potting material characteristics, the filling process is performed in different ways and can be done under ambient air conditions or in a vacuum.

To achieve high-quality, reproducible potting results, it is important to employ a material preparation that is suited to the task. Systems with heavy-duty feed pumps and sophisticated processing technology provide the necessary process reliability.

Particularly in the case of fill applications, precise measurement of the material or individual component quantities is essential. With our integrated solution for filling tasks, the piston dispenser ensures repeat accuracy of potting results and a constant mixing ratio at all times for 2C media. This results in a high level of **process reliability** and **ecomocal and safe potting**.

Suitable for the efficient filling of:

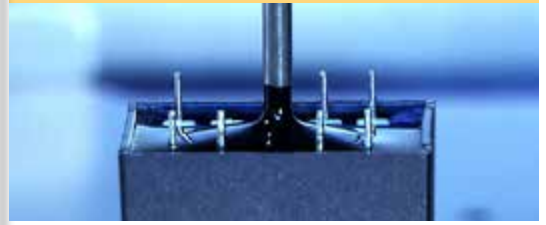
LED headlights

Sensors

Charging plugs

Your dispensing task

Filling



Our range of systems



Your system

Optimized for filling



... under ambient
air conditions



... in a vacuum

- Material preparation and feeding unit: LiquiPrep LP804
- Piston dispenser: DosP DP803
- Process automation: DispensingCell DC803 (under ambient air conditions)
VDS P (in a vacuum)

 [Info: Learn more about filling](#)

#System solution

Sealing

Sensitive electronics are often exposed to environmental influences such as dust, moisture, corrosive media and temperature fluctuations. Highly viscous sealants applied in the form of a bead to the workpiece, such as a housing, act as a barrier against external influences. The application is usually automated along specific, previously defined potting contour.

Liquid seals are frequently used as FIPGs („formed in-place gaskets“). In this process, the not yet cured liquid seal is set into the workpiece and then further processed. When using the CIPG procedure („cured in-place gasket“) on the other hand, further processing takes place only after the sealant has cured. Particularly in the case of housings, the applied seal often fulfils an additional adhesive function.

During the sealing process, precise, repeated and continuous application of the material along the intended seal contour is of particular importance. This is ensured in our integrated solution for sealing applications by the integrated gear pump dispenser; it **works quickly and accurately** even with complex workpiece geometries. Moreover, the powerful axis system of the multi-functional cell provides precise contour dispensing. Its modular design and wide range of equipment options enable **quick adaptation to changes in process and batch size**.

Suitable for the efficient sealing of:

Power electronics

Sensors

Displays

Inductive charging stations

Your dispensing task

Sealing



Our range of systems



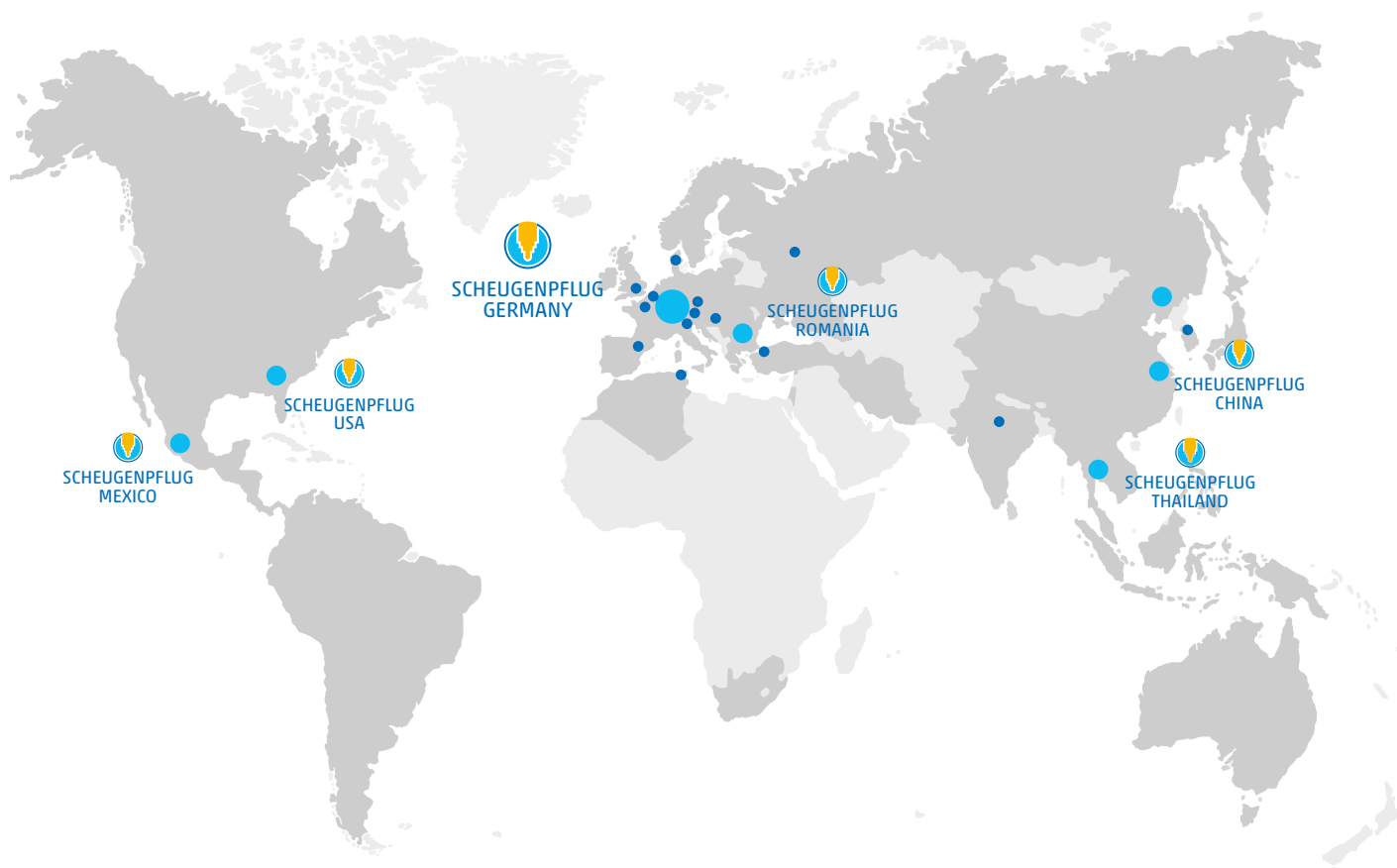
Your system

Optimized for sealing



- Material feeding unit: A220
- Gear pump dispenser: Dos GP
- Process automation: DispensingCell DC803

[Info: Learn more about sealing](#)



- Subsidiaries
- Sales and service partners
- Realized projects worldwide

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