

**LOCTITE®**  
**BONDERITE®**  
**TECHNOMELT®**  
**TEROSON®**  
**AQUENCE®**

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**LOCTITE®**

# The Seal of Quality

Reliable Sealing Results from High-Quality  
Impregnation Products and Services



[www.loctiteimpregnation.com](http://www.loctiteimpregnation.com)

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**Henkel**

- › When high-quality metal and electronic parts are required, Henkel is the ideal partner for sealing solutions along the entire automotive value chain. ◀

## SUPERIOR SEALING SOLUTIONS FOR AUTOMOTIVE PARTS



### What the industry needs

High-quality metal and electronic parts play a vital role in the automotive industry. The reliability and safety needs of today's automotive industry require all parts to be fully sealed against fluids, gases and other external influences. At the same time, the automotive industry is confronted with the increasingly demanding challenges of reducing costs, increasing productivity and complying with environmental regulations.

### How we can help

As a world-leading supplier of porosity-sealing products and services, we can meet your reliability needs by sealing cast-metal parts and electronic components against leakage. Our sealing solutions can be provided from close-by or on-site impregnation service centers, all of which provide comprehensive evaluations and technical support to meet your sealing needs.

### Where our solutions make a difference

At Henkel our mission is to enable our customers to tackle industry challenges with innovative product solutions and services. Our impregnation products and services are designed to provide superior quality for sealing porosities and leak paths in your parts and components. To achieve the highest reliability and quality assurance, we ensure our products are designed to be extremely versatile. They can withstand harsh environments while offering excellent resistance to attack from oils, gases, thermal cycling and other external influences.

Impregnation products and services also help you achieve your cost reduction goals by enabling your operations to run more efficiently, with increased quality accompanying improved productivity. Boasting an ever-expanding global presence at major OEMs and Tier 1 suppliers, Henkel is your ideal partner for sealing solutions along the entire value chain.

### How you benefit



#### Process optimization

- › Improved quality and better performance thanks to a best-in-class product portfolio
- › Unmatched availability and flexibility from a high-speed impregnation service on-site or close-by
- › Exceptional sealing quality thanks to clean, operationally efficient facilities
- › Individual validation testing and on-site service staff to ensure tailored product and service concepts



#### Cost reduction

- › Lower overall costs by reducing scrappage due to porosities and other structural defects



#### Sustainability

- › Improved ecological footprint thanks to a recycling system to continuously recover impregnation resin from the wash water

## UNMATCHED SERVICE – ON-SITE OR CLOSE-BY



### Unique on-site impregnation

Our impregnation service centers offer you a fast and high-quality impregnation service. On-site, with one important advantage – temporary installation of a small but customized impregnation service center directly on site. This on-site solution brings you clear benefits:

- > Optimum operation flow
- > High-speed service
- > Small, flexible and highly qualified Henkel team on site

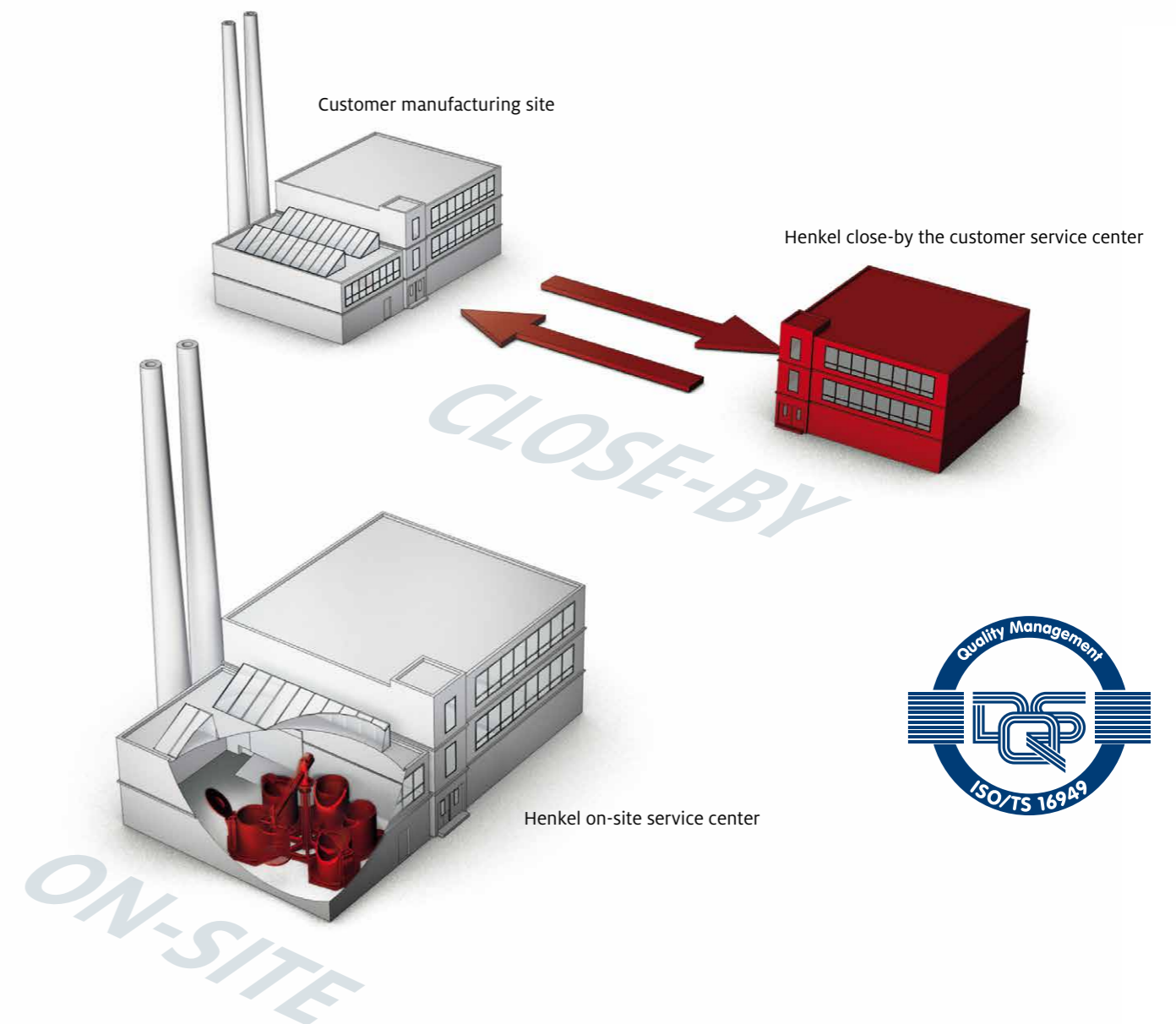
Alternatively, you can benefit from a Henkel impregnation service center located close to your manufacturing facility. Whichever solution you choose – on-site or close-by – our specialist engineers will work hand in hand with your design, production and quality management staff to discuss every aspect of our impregnation portfolio and agree with you on the ideal solution to meet your specific needs.

### Millionfold proof

Henkel guarantees provision of a high-quality, standardized and reliable impregnation service. At our strategically located centers we seal millions of components a year. Moreover, our impregnation centers collaborate closely with our R&D facilities to deliver the best solution for impregnating your parts.



The choice is yours – Henkel's on-site or close-by service center





## Vacuum Impregnation Products and Services

# HOW YOUR METAL PARTS BENEFIT

### Added value of impregnation

Impregnation products from Henkel bring added value to your casting process by allowing you to make use of metal parts that would otherwise have to be scrapped due to structural defects. Although metal casting is a highly advanced technology, porosities and other defects can still occur during the manufacturing process. Our products have been developed to deliver consistently clean, leak-proof and sealed parts ready for just-in-time assembly. This applies to all casting alloys, sintered metals, ferrites, ceramics and composite materials.

### Outstanding portfolio

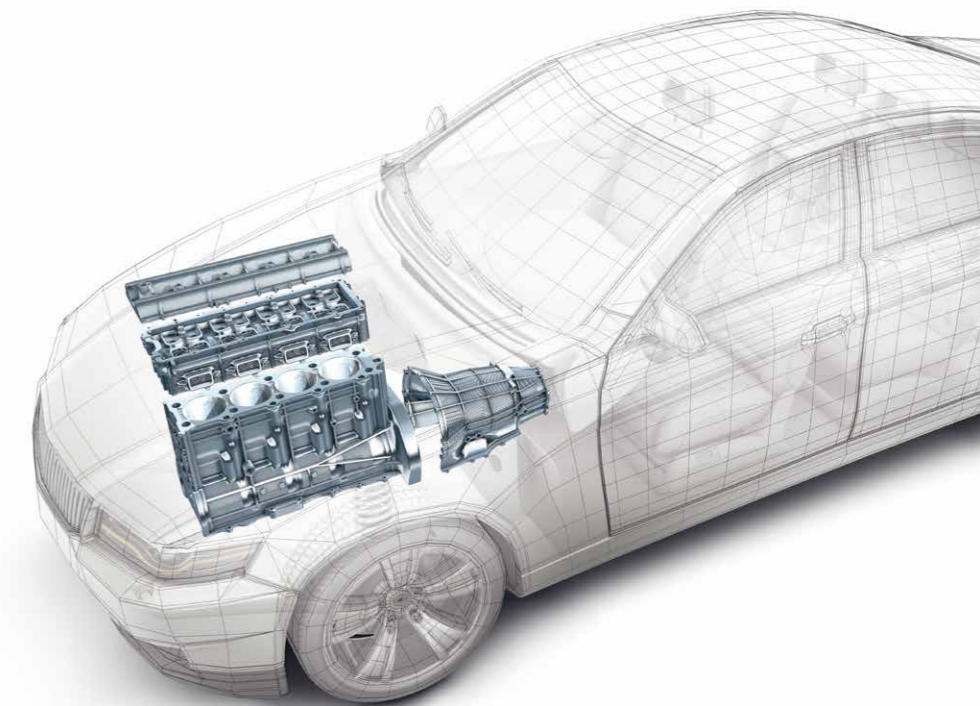
Henkel's complete product portfolio offers impregnation resins, systems and service. Our impregnation products meet the worldwide specification requirements of major automotive OEMs and components suppliers. They offer outstanding characteristics including resistance to chemicals and solvents, high temperature resistance and superior sealing.

### Lifetime sealant

The Henkel impregnation sealants and sealing processes cause no damage or distortion to the parts. After impregnation, all parts are clean, free of corrosion or oxidation, and are ready for use without post-treatment. During the life cycle of the treated parts, the sealant will withstand oils (including aggressive synthetic, low-viscosity varieties), grease, virtually all acids, liquid fuels, gases, coolants and solvents. Continuous operating temperatures may range from -90°C to +200°C, while our products can also withstand short-term exposure to temperatures as high as 250°C.

### Application examples for castings

- > Engine blocks
- > Cylinder heads
- > Engine covers
- > Clutch housing
- > Gear boxes
- > Pump components
- > Filter housings
- > Compressor components
- > Cooling/oil pumps



# Vacuum Impregnation Products and Services

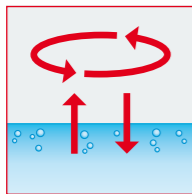
## HOW YOUR METAL PARTS ARE IMPREGNATED

With an unmatched portfolio of LOCTITE products and vacuum impregnation systems, we provide permanent and reliable sealing solutions to the problems of porosities and leakages.

### LOCTITE Circular Sealing System

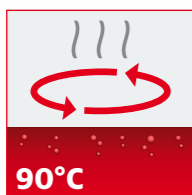
Well suited for high-volume, fully automated impregnation solutions, the LOCTITE Circular Impregnation System (CIS) functions in five steps, beginning with the parts being placed in processing baskets and positioned in the CIS loading station. From there, the fully automated processing cycle for impregnation of the parts begins.

#### Step 4



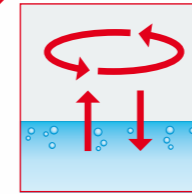
- > Rinsing of parts
- > Centrifuge prepares for curing step

#### Step 5



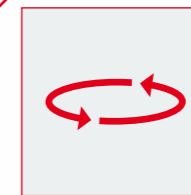
- > Curing of sealant within part porosities
- > Centrifuge removes surface water and dries parts

#### Step 3



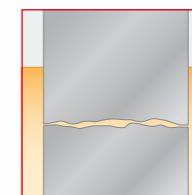
- > Washing of parts
- > Centrifuge prepares for rinsing step

#### Step 2

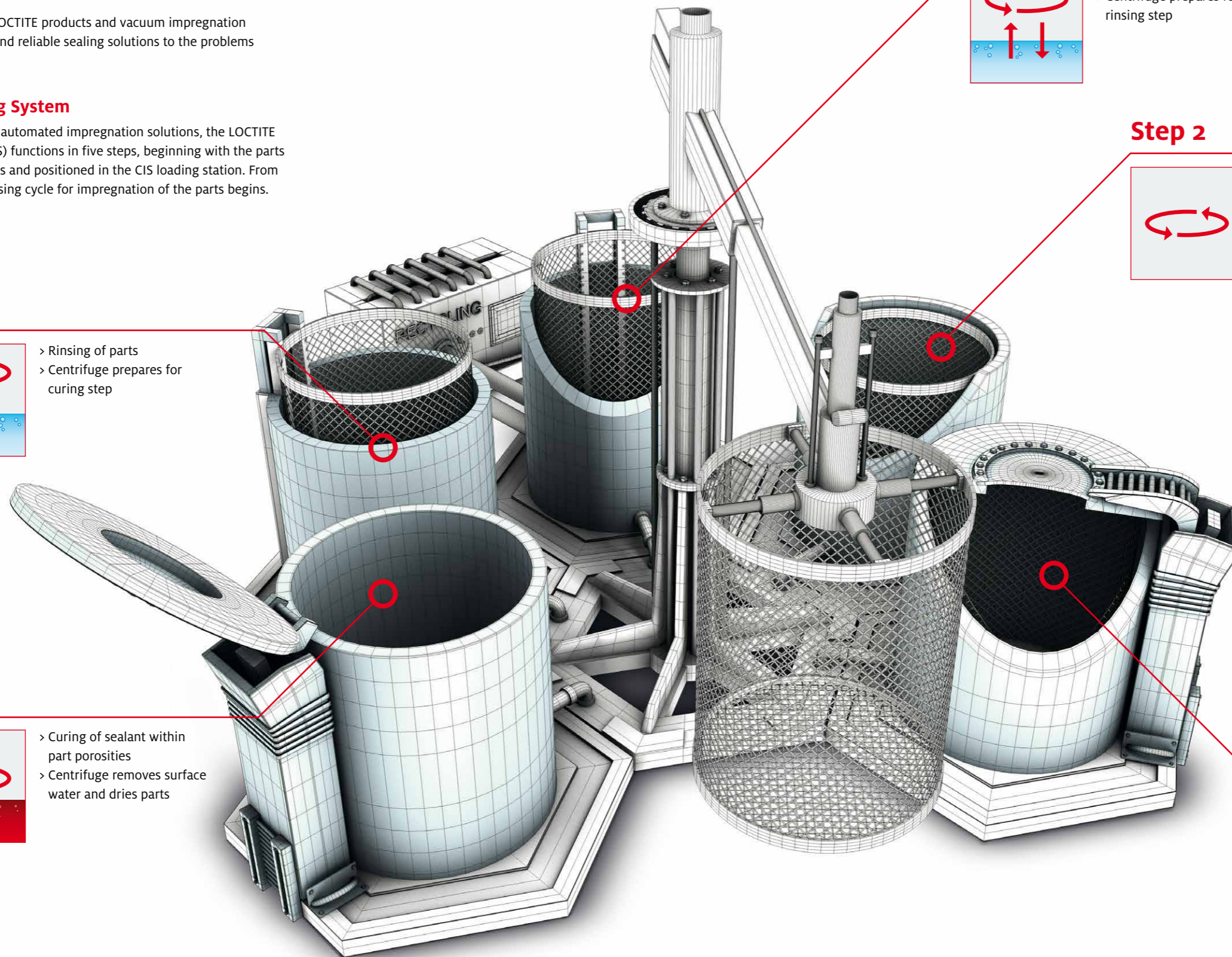


- > Drip-off and spin
- > Centrifuge removes excess sealant from part surfaces

#### Step 1



- > Dry vacuum
- > Wet vacuum
- > Sealant fills porosities, shrinkage cavities, capillary pores and cracks



## Vacuum Impregnation Products and Services

# HOW YOUR METAL AND ELECTRONIC PARTS ARE IMPREGNATED

Our unmatched portfolio of LOCTITE products and vacuum impregnation systems has recently been extended to include the LOCTITE Modular Impregnation System (MIS), which is particularly suitable for metal parts and electronic components.

### LOCTITE Modular Sealing System

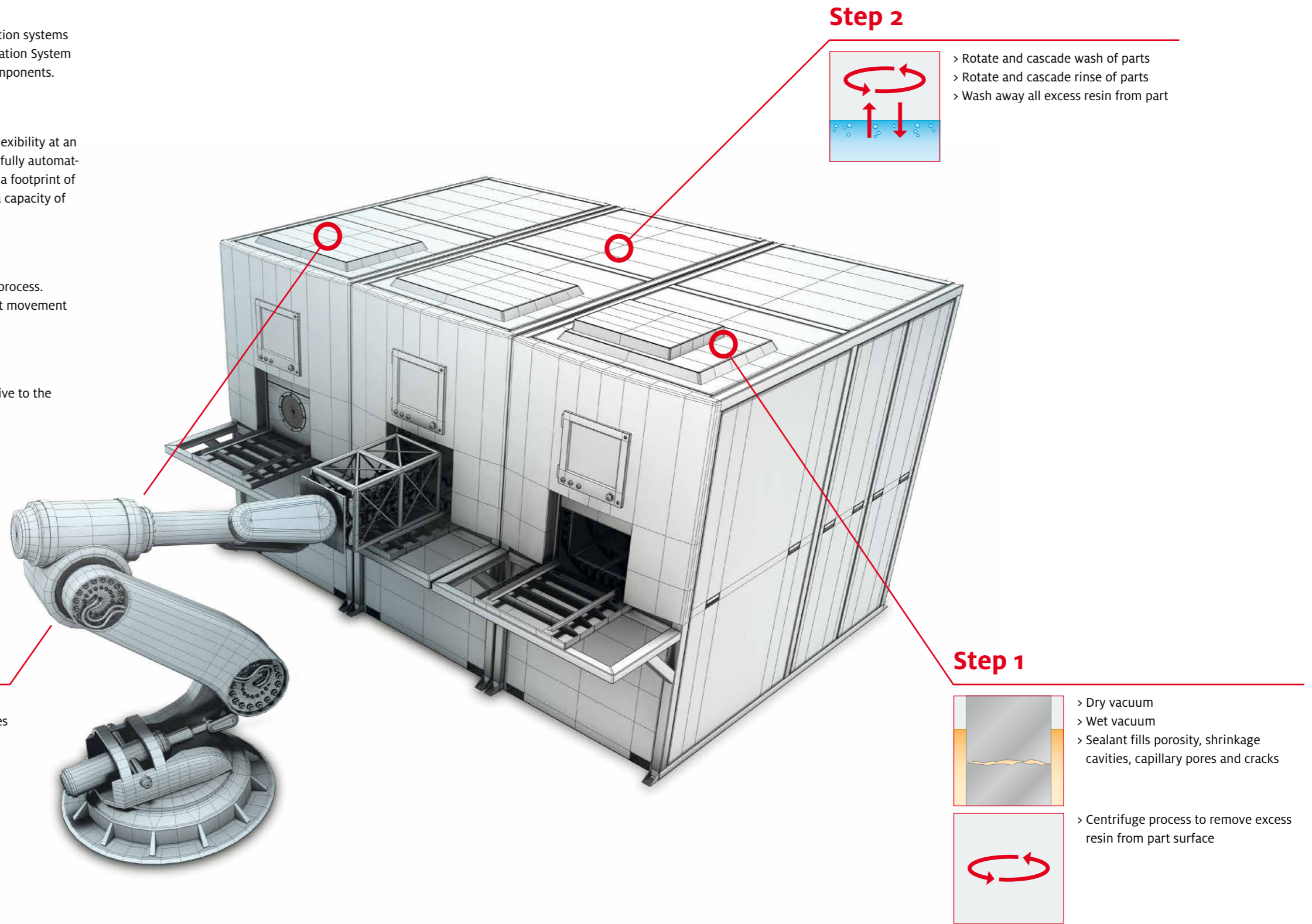
The LOCTITE Modular Impregnation System (MIS) offers production flexibility at an affordable investment price, and can function as a manual system or fully automated robotic system. LOCTITE MIS requires as few as two modules with a footprint of just 82 sq. ft./7.6 m<sup>2</sup>, but can be extended to up to six modules with a capacity of up to 40 cycles per hour.

### Fully automated LOCTITE MIS

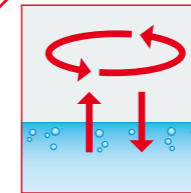
Module One combines the vacuum impregnation and resin recovery process. Module Two combines the wash and resin cure process, reducing part movement and ensuring the entire part is clean and free of resin contamination.

### Manual LOCTITE MIS

The manual version of LOCTITE MIS provides a cost-effective alternative to the fully automated process.

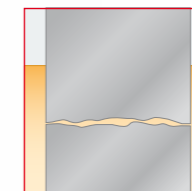


### Step 2



- > Rotate and cascade wash of parts
- > Rotate and cascade rinse of parts
- > Wash away all excess resin from part

### Step 1

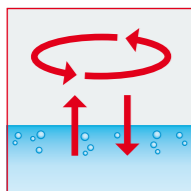


- > Dry vacuum
- > Wet vacuum
- > Sealant fills porosity, shrinkage cavities, capillary pores and cracks

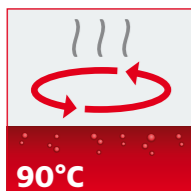


- > Centrifuge process to remove excess resin from part surface

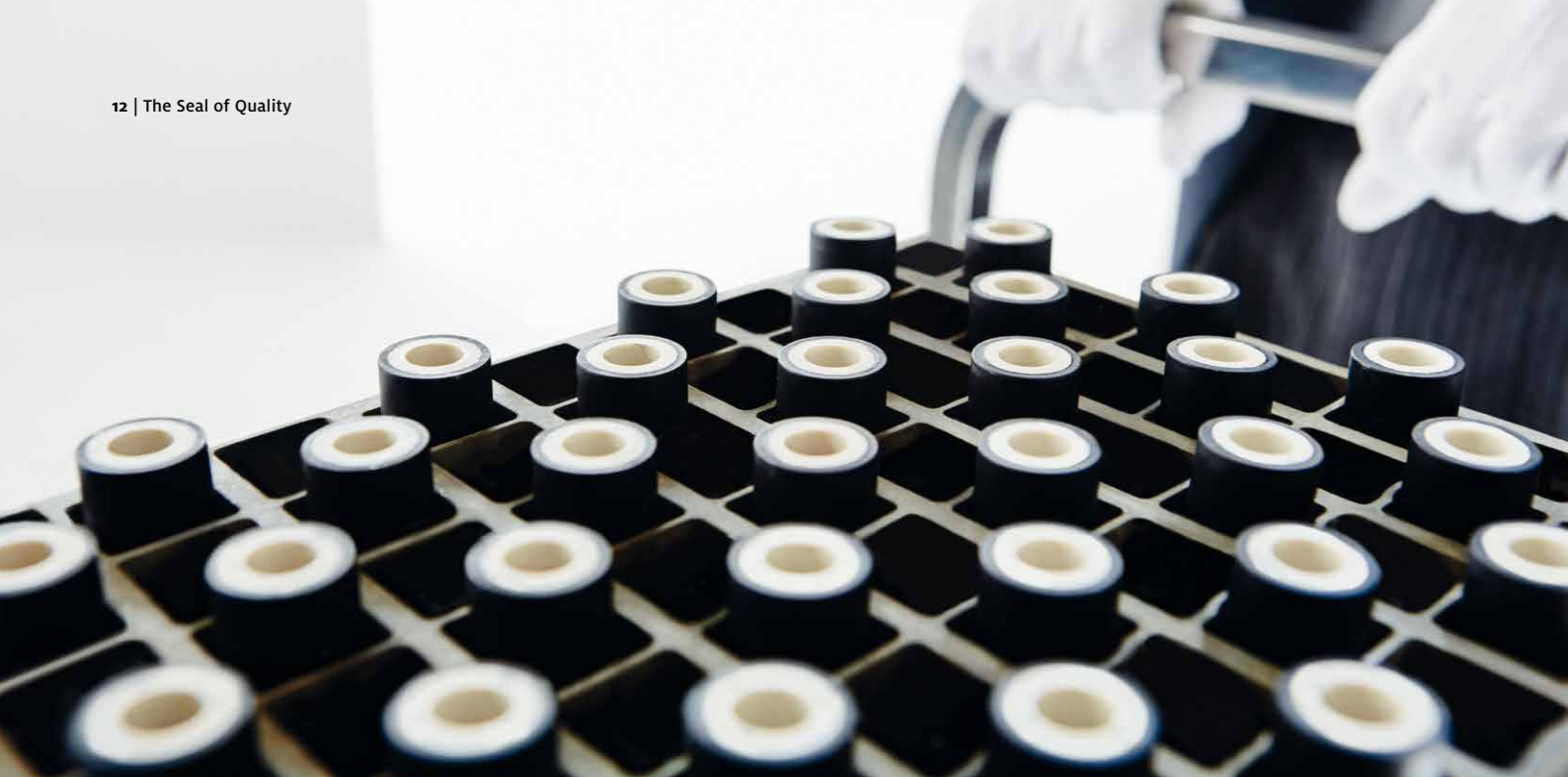
### Step 3



- > Rotate and cascade hot water cure
- > Cure the sealant within part porosities

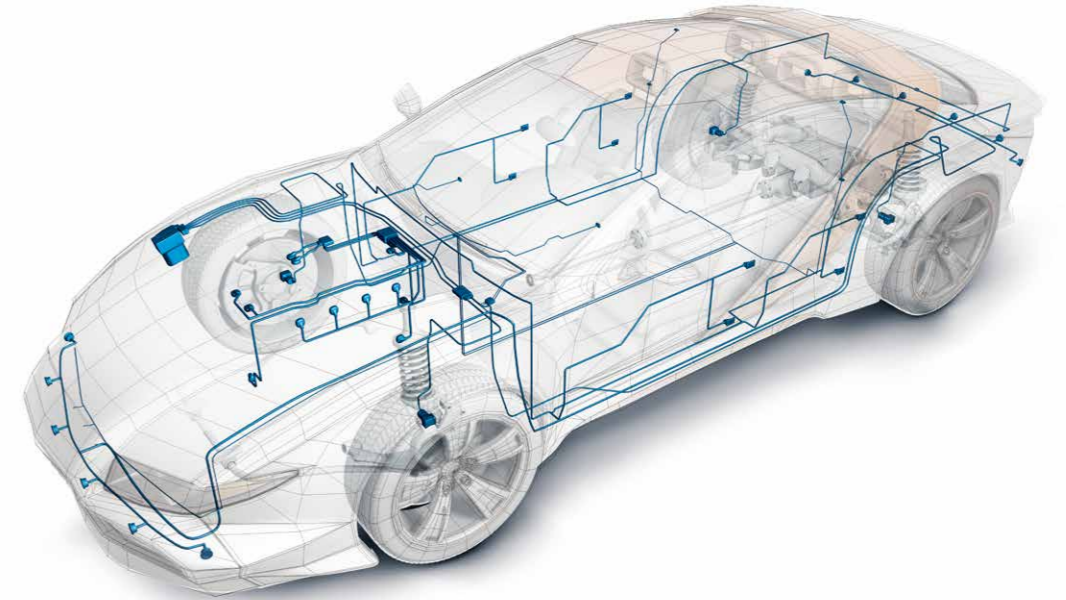


- > Rotate and forced air dries parts



**Application examples**

- > Connectors
- > Sensors
- > Plugs
- > Coils and solenoids
- > Plastic housings
- > Plastic covers
- > Overmolded electronics
- > Cables
- > Wire harness



**Vacuum Impregnation Products and Services**

**HOW YOUR ELECTRIC AND ELECTRONIC COMPONENTS BENEFIT**

**Sealed for good**

Impregnation products from Henkel provide the ideal sealing solution for electrical and electronic components. Microscopic voids are inherent in many electronic assemblies, particularly where metals and plastics are assembled together. This can lead to customer complaints, lost production or even lost business. However, our resin solutions seal even microscopic gaps and leak paths in critical electrical and electronic components. Permanently sealing components protects them from moisture, solvents, fluxes and other corrosive agents.

**Lasting product improvements**

High-performance impregnation products from Henkel are designed for applications requiring greater flexibility and higher temperature and fluid resistance. After the impregnation process, components are clean and unchanged in their dimensions or appearance, and they remain flexible under conditions of thermal cycling. Our solutions allow fast processing of high part throughputs for low unit costs. Impregnation improves the durability and long-term reliability of components with no adverse effect on their solderability or electrical conductivity. Moreover, our innovative sealing solutions eliminate the need for costly and unsightly topcoats.

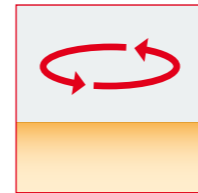
**Industry-approved sealing solutions**

Thanks to our unmatched portfolio of sealing resins and a fully automated high-speed vacuum impregnation system, we can offer outstanding sealing solutions for components such as powertrain electronics, connectors, power supplies, heating and air-conditioning systems, alternative energy vehicle (AEV) power generation systems, tire pressure monitoring systems, safety and driver assistance systems, and fuel delivery systems.

**Step 1**

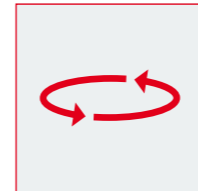
- > Pre-process preparation of components

**Step 2**



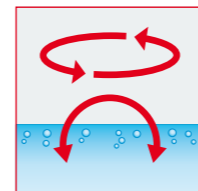
- > Dry vacuum
- > Wet vacuum
- > Sealant fills porosities, shrinkage cavities, capillary pores and cracks
- > Centrifuge removes excess sealant from component surfaces

**Step 3**



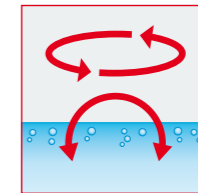
- > Drip-off and spin

**Step 4**



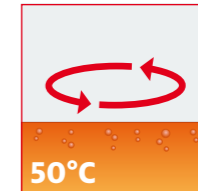
- > Washing of parts
- > Centrifuge prepares for rinsing step

**Step 5**



- > Rinsing of parts
- > Centrifuge prepares for curing step

**Step 6**



- > Curing of sealant in component porosities
- > Centrifuge removes surface water and dries parts

**Step 7**

- > Post-process and packaging

# LOCTITE HIGH-PERFORMANCE IMPREGNATION PRODUCTS

Worldwide consistent quality and service offering with technical manufacturing footprints.

## Application Area: Castings

LIS	Chemical type	Cure method	Appearance	Viscosity 23°C, mPa.s	Chemical resistance	Temperature resistance	Resin recycling	Application area
LOCTITE IS 90R	Methacrylate	90°C	Clear, fluorescent	6 – 10	Excellent	-90°C to +200°C	Yes	Castings with typical porosity range
LOCTITE IS 88C	Methacrylate	90°C	Clear, fluorescent	8 – 10	Excellent	-90°C to +200°C	No	Castings with typical porosity range
LOCTITE IS 90C	Methacrylate	90°C	Clear, fluorescent	5 – 20	Excellent	-90°C to +177°C	No	Castings with typical porosity range
LOCTITE IS RTC	Methacrylate	Anaerobic	Clear, fluorescent	5 – 15	Excellent	-90°C to +204°C	No	Casting with macro porosities, powder metal
LOCTITE IS AT	Methacrylate	Anaerobic	Clear, fluorescent	5 – 15	Excellent	+177°C	No	Sealing macro porosities and powder metal parts with excellent washability performance

## Application Area: Electronics

LIS	Chemical type	Cure method	Appearance	Viscosity 23°C, mPa.s	Chemical resistance	Temperature resistance	Resin recycling	Application area
LOCTITE IS 5100	Methacrylate	Anaerobic	Clear, fluorescent	5 – 30	Excellent	-54°C to +177°C	No	Soft and flexible product for electronic parts with leak paths
LOCTITE IS 5110	Methacrylate	Anaerobic	Clear, fluorescent	36 – 66 at 25°C	Excellent	+205°C	No	Rigid and unflexible product with excellent chemical and temperature resistance for electronic parts

## Vacuum Impregnation Products and Services

# HOW YOU BENEFIT FROM OUR LOCTITE IMPREGNATION SOLUTIONS








### Loctite Cycle Impregnation System (CIS):






-  **Process optimization**
  - > Fast processing time and high capacity for impregnating high volume parts
-  **Performance**
  - > Fully automated system ensures constant high-quality performance
-  **Cost reduction**
  - > Designed for broad spectrum of parts without costs for specific fixtures
-  **Sustainability**
  - > Space-saving footprint (645 sq. ft./60 m<sup>2</sup>)
  - > Environment-friendly: recycling performance drastically reduces resin and waste water
-  **Safety & Comfort**
  - > Enclosure and extraction ensures low noise pollution and emissions to protect employees and hardware
  - > Fully automated system ensures high safety level



### Loctite Modular Impregnation System (MIS):

-  **Process optimization**
  - > Best suited for small to mid-sized programs
  - > Stainless steel construction with removable panels for easy maintenance access
  - > Maximum flexibility for individually adaptable capacities thanks to modular design
  - > Fast project responsiveness due to easy build and installation time
-  **Performance**
  - > Offers in-line design not available with the CIS system
  - > Capable of processing parts as large as 30 x 18 x 18 inches (76.2 x 45.7 x 45.7 cm)
  - > Available as semi-automated or fully automated version
-  **Cost reduction**
  - > Fast lead and installation time
-  **Sustainability**
  - > Best-in-class space-saving footprint (less than 82 sq. ft./7.6 m<sup>2</sup> for small version)
  - > Capable of zero discharge
-  **Safety & Comfort**
  - > Fully automated system ensures high safety level

### Benefits Electronics:

-  **Process optimization**
  - > High volume drop-in solution for leakage problems
-  **Performance**
  - > Intensive cleaning process for cosmetically clean parts
  - > Process designed specifically for electronic parts
-  **Cost reduction**
  - > Sealing solution as a service, no investment required
  - > No design change required for sealing parts
-  **Sustainability**
  - > Reduces scrap of defect parts
-  **Safety & Comfort**
  - > Reliable long term solution