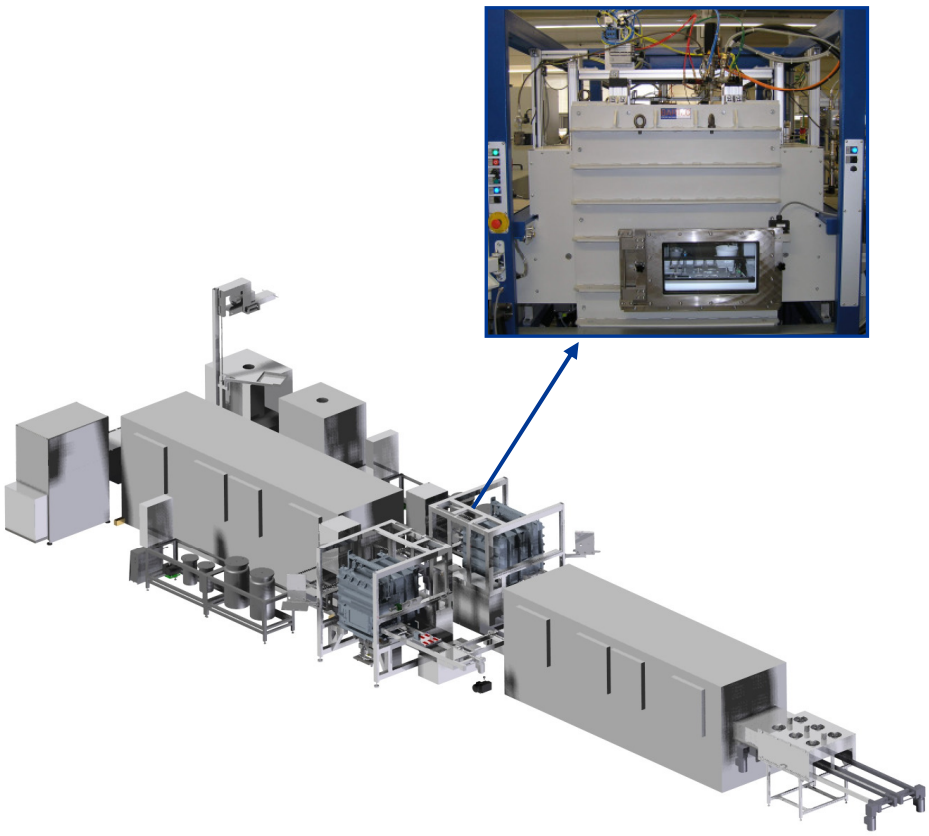
# Product information
# Dispensing under vacuum

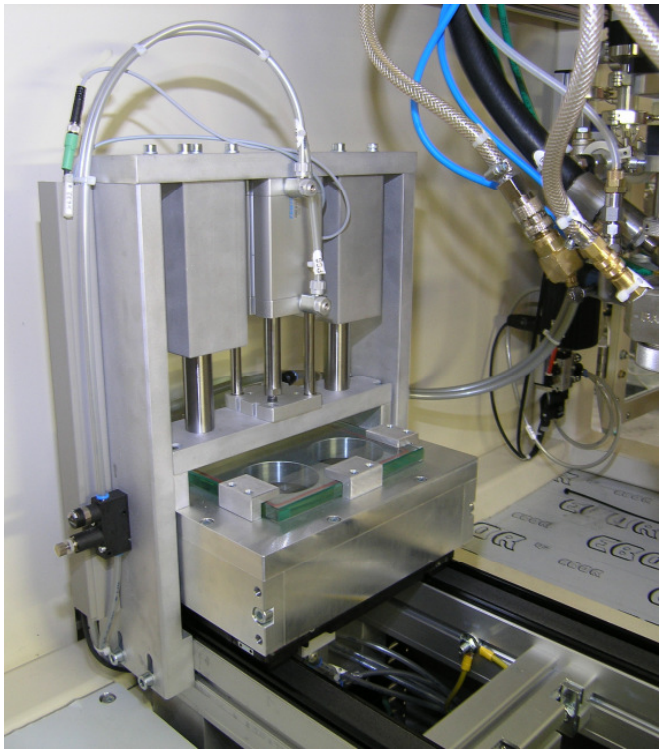


The protection of electric parts shows a difficult task over and over again. Huge environmental factors like dust, humidity, heat, pressure and vibrations can have an effect on the highly complex components.

To counteract against these factors and to protect the part against significant and unsteady conditions to be able to guarantee thus a long functional duration the clear setting of tasks is. The optimum solution for this is the potting of the components under vacuum application to achieve such a flawless potting result free of air bubble.

# Possibilities in the vacuum technology

## Vacuum after-treatment



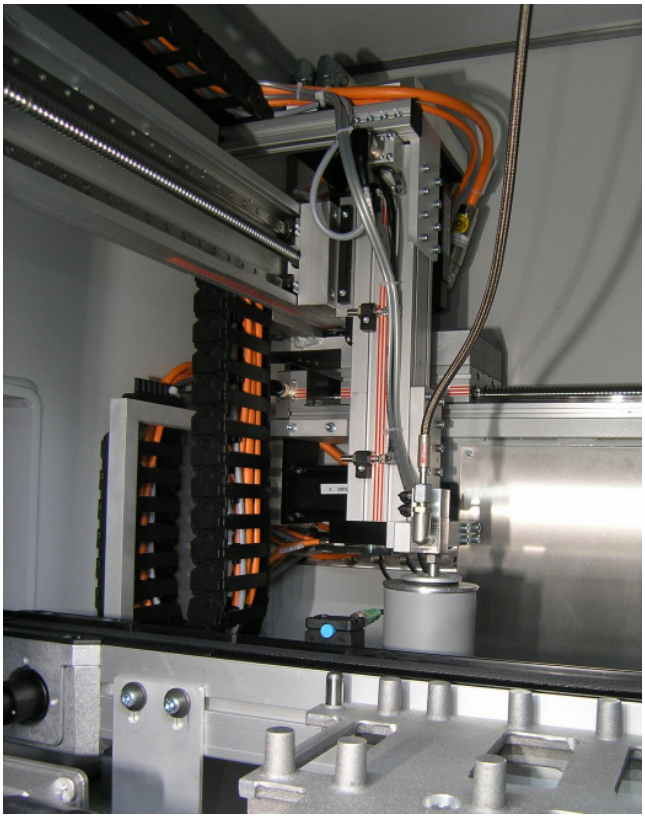
The vacuum after-treatment is a  process in which the evacuation of the part proceeds after the dispensing process.

First the part is potted under atmospheric conditions. Afterwards the component becomes manual or automates by means of a conveyer belt under a vacuum bell carried.

The subpressure originating in the vacuum unity takes away the aerial storages from the part and provides for a potting result free of air bubble and an optimum filling of the component even in the smallest hollow cavities.

The vacuum after-treatment can be integrated into all manual, semi and fully automatic dispensing processes.

## Potting under vacuum



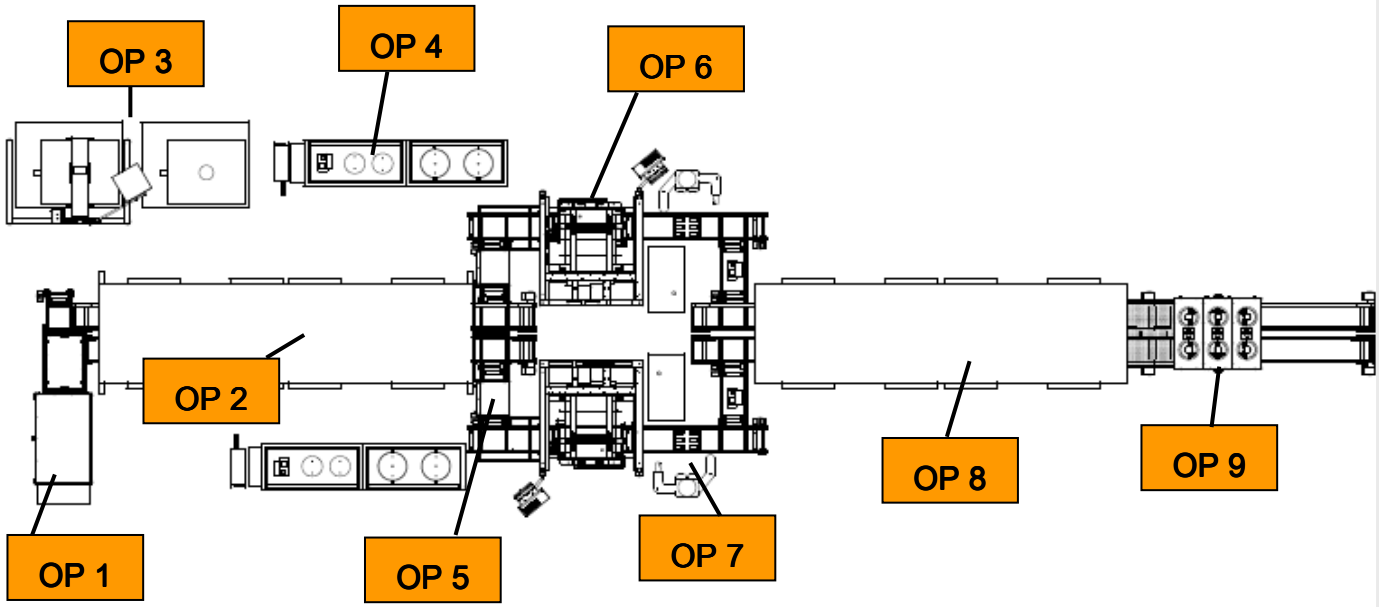
Potting under vacuum is called the procedure that guarantees an optimum potting result free of air bubble. The principle is based on only one single working step in which the component is potted using vacuum. The dispensing process takes place in one, in BARTEC mixing and dispensing machines integrable vacuum chamber.

The potting material processed under vacuum is dispensed inside of a vacuum chamber in the component. The subpressure ruling in the chamber lets the potting material flow into the part and also provides in the smallest hollow cavities of the component for a steady dispensing result free of air bubble.

The process "Potting under vacuum“ can be used for fully automatic production lines as well as for semiautomatic and manual processes.

# Fully automatic production line for dispensing under vacuum

## Layout




## OP 1 Palletizer

Process:

- The components are supplied by means of workpiece pallets automatically to the mixing and dispensing machine.

Process Steps / Equipment:

- Over a role carriage the workpiece pallets are pushed in the station.
- Role carriage is raised.
- Just as puffer distance is free, 2 workpiece pallets are pushed by the role carriage on the conveying system.
- A sensor checks whether the workpiece pallets stands in the right position on the conveyor belt and generates a error message if necessary.

## OP 2 Preheating station

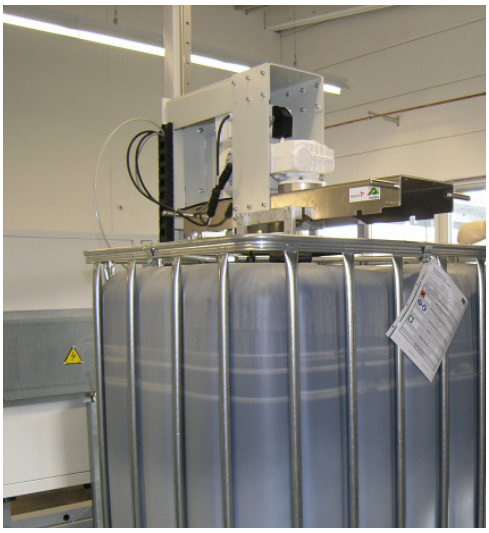
Process:

- In der preheating station the parts are warmed up.

Process Steps / Equipment:

- Warm up of the parts until approx. 60°C.
- Workpiece pallets and parts go through the heating tunnel at a speed of approx. 200mm / min.

## OP 3 Pumping station



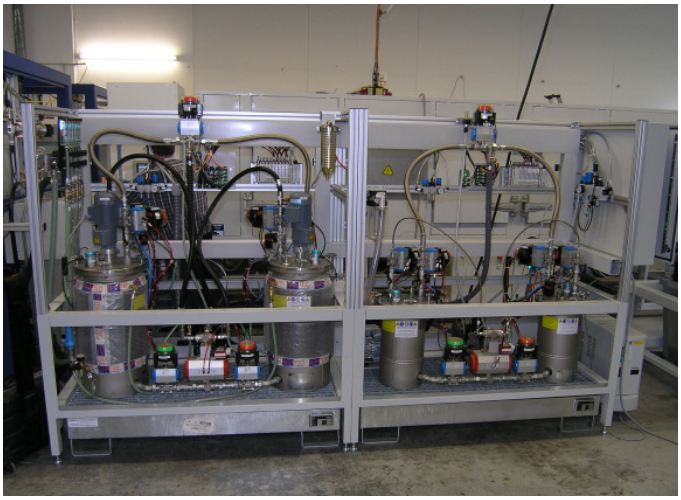
Process:

- In the pumping station the material is sucked by means of subpressure from the material vessels to the material preparation

Process Steps / Equipment:

- The both pumping stations for the resin and hardener components are equipped with catch trays as well as a sensor for empty announ cements.
- The pumping station for the resin component contains, in addition, a agitotor to prevent the sedimentation of particulated material. This agitator is fastened to a pneumatic lift unity and allows thus a light bundle or vessel change.

## OP 4 Material preparation



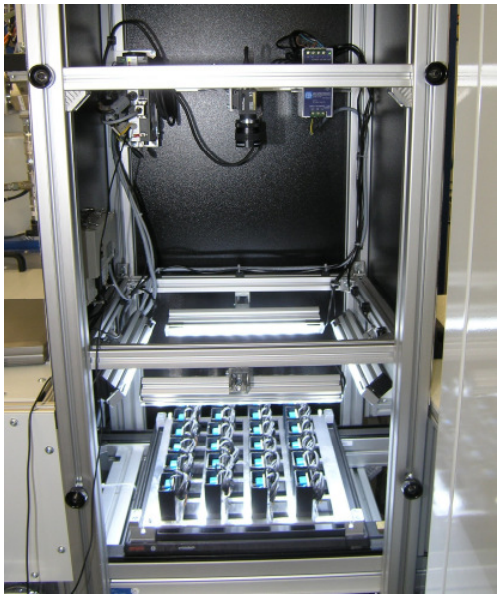
Process:

- In the material preparation the potting material is precessed for the dispenisng prccess.

Process Steps / Equipment:

- Double vessel pair to the material preparation for both components. While from a vessel pair is produced, the material processing takes place at the same time in the second vessel pair (refilling, evacuati on, tempering).
- The material is led by means of rezirkulation unit to the dispensing cell. Not spent material flows about the rezirkulation hoses back into the vessel. The material stands therefore constantly under vacuum.
- fully automatic material preparation

## OP 5 Camera station



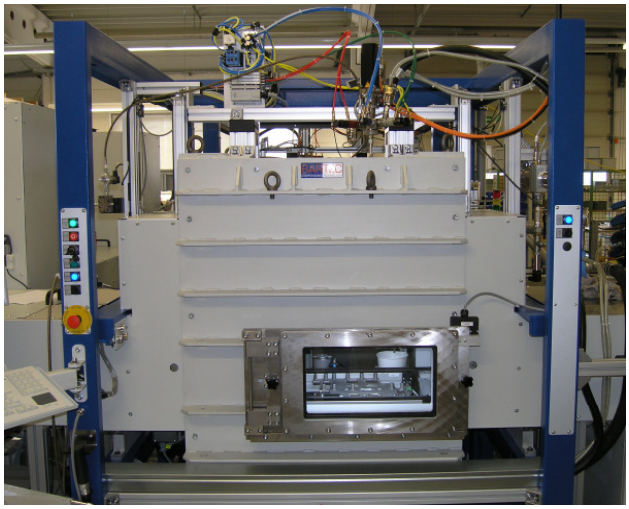
Process:

- The camera station is used to be able to carry out an examination of the components still before the dispensing station. A bar code scan recognises which component type it concerns. The chamber exami nes which nests on the suitable workpiece are booked. This infor mation is transfered to the dispensing station, so that only the occu pied positions can be worked on accordingly of the respective com ponent type on the workpiece pallet.

Process Steps / Equipment:

- Recognition of the component by bar code scan in the component admission
- The camera checks the nest allocation on the workpiece pallets, i.e. it is checked whether all positions of the workpiece pallet are equip ped fully or only partially. The received informations are immediately transfered to the dispensing station, so that only the occupied positi ons on the workpiece pallets are worked on.

## OP 6 Dispensing station with vacuum chamber



Process:

- Potting oft the parts in a dispensing cell with vacuum chamber

Process Steps / Equipment:

- The workpiece pallet with the part is carried by means of convoying system in the vacuum chamber
- After automatic closing of the vacuum chamber this is evacuated on approx. 60 mbar. As soon as the vacuum level is reached, the dispensing process starts.
- Inside of the vacuum chamber there is a 3-axis system which moves the shut-off valve, the outlet nozzle inclusive about the components. The mixing head located beyond the chamber and the dispensing pumps are connected by means of a hose with the outlet nozzle. By means of the information ascertained in the camera station the disen sing program is automatically selected and starts the dispensing pro cess.
- After dispensing process the vacuum chamber is ventilated and the workpiece pallets via conveyer system are carried in the next station.

## OP 7 Manually operated machine

Process:

- The integrated manually operated machine allows a manual treatment of certain component types after the potting.

Process Steps / Equipment:

- If a manual treatment of the component is necessary (depends on the respective component type) the workpiece pallets automatically stops in the manually operated machine and announces this to the operator about a signal lamp
- After treatment of the component the operator send the workpiece pallet by confirming of a release tracer with the conveyer system further.

## OP 8 Curing station

Process:

- Curing of the parts

Process Steps / Equipment:

- Workpiece pallets run by means of conveyer system in the curing station
- The parts are hardened there with 70°C.

## OP 9 Cooling funnel

Process:

- Cool of the components.

Process Steps / Equipment:

- The cooling funnel poststored to the Curing station cools the compo nents on, less than, 40°C.