



ATN – Partner to the automotive industry in the application technology

As a specialist for application technology, ATN stands for quality, dependability and innovation. Our know-how is based on over 20 years of experience in the application technology with a focus on the automotive industry. In this industry, ATN works in the car body production, paint shop and final assembly supplying individual systems, integrated systems and complete cells. Our customers can choose

between several systems depending on the material, the project scope and the overall process. We have branches in Spain, United States, Brazil and China to guaranty timely responses, local contact personnel and our proven ATN-quality. Additionally, ATN offers a 24 hour spare parts emergency service.

Utilization of application technology in the automotive industry

AUTOMOTIVE

- anti-flutter gluing
- hem flange bonding
- structural bonding
- hybrid bonding systems
- sealant applications
- seam sealer
- underbody application
- car body foaming
- 2K-applications
- quarter glass gluing
- moonroof and window glue systems
- DVD-gluing (roof reinforcement)
- tub gluing for spare tires, antennas and batteries
- miscellaneous parts
- endless door sealing
- VIN scribe (Vehicle Identification Number)

SOLAR

- frame gluing
- junction box gluing
- junction box sealing
- brick gluing

GLOBAL INDUSTRIES

- 1K-applications for round and profile beads
- 2K-applications for round and profile beads
- flat stream applications

CLEANING AND ACTIVATION

- cleaning of surfaces with wet-chemical cleaners
- application of adhesives
- application of activators

PUR-FOAMING

- soft foam
- rigid foam
- integral foam

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POLYURETHANE-MIXING TECHNIQUE

FOR REACTION INJECTION MOLDING



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RIM – Process flow and site technology

REACTION INJECTION MOLDING (RIM)

During Reaction Injection Molding (RIM), cavities are filled with 2K-PUR-Foaming. The initial components are carried by separate circulation pumps that are operated by low pressure and, only right before the application, charged with high pressure. Both materials are mixed in a molding tool before they are precisely applied by the applicator.

The blending of the material components happens during the application. Before that stage, they follow the circuit to the material container of the cell.

The chemical reaction, polyaddition, creates a new substance out of these two components – a polyurethane foam material. Depending on the reaction this substance presents itself as foam or isotope material. In the chemical process following the addition of water, CO₂ is created which influences the compactness of the foam.

If the ratio of components is adjusted correctly, there will be no side products. The chemical reaction (R=Reaction) takes

place right after the blending in the mixing chamber of the applicator, which means that the applicator applies or injects a mixed material jet (I=Injection). In the mold (M=Mold), the reaction is continued and the polyurethane hardens. PUR-Systems that are relevant for the RIM-process show a high reactivity, calling for a fast mixing and application process. The selection of the doser technology, the application pressure and the type of nozzle depends on the output and the viscosity of the processed material.

CELL TECHNOLOGY

The 2K-application system for the RIM area utilizes the ATN doser technology. This tested and proven technology assures accuracy no matter the material output as well as a stable and tailored-to-suite material dosage. A continuous material flow guarantees that, no matter the type of application, no material standstill occurs and that the optimal prepared material is available at any time.



RIM PERIPHERY

Material supply

The material supply of the 2K-applicator system assures a continuous feed of the succeeding modules. The material supply is available in 2 sizes:

EFE0200 for 200 liter barrels
EFE1000 for 1,000 liter IBC

Extensions

- fluid level detection
- stirrer system
- air dryer
- piggyback system

Applicator cleaning

To remove possible stains, ATN offers a fully mechanical operating cleaning station for applicators.

RIM RECIRCULATION SYSTEM

To achieve the necessary properties of the 2K materials, the components need to have precise conditioning. The conditioning and the supply condition of the materials for the succeeding modules is accomplished by the recirculation system (the material is circulating whether or not there is an application). This assures an optimally prepared material for processing. The circuit system operates with low pressure, thus having a positive effect on noise emission and life expectancy of the equipment.

Structure

- This module is currently available in two sizes:
- circuit module with a 50 liter storage (MKS-50-Serie)
 - circuit module with a 280 liter storage (MKS-280-Serie)

Features

- continuous material circulation
- integrated heat exchanger for compact design
- filtration
- pipe heating

Extensions

- fluid level detection
- stirrer system (for one or both components)
- air dryer
- external temperature control
- redundant design for increase process stability and decreased downtimes
- encapsulation



RIM DOSER

The electrical powered volume doser offers the best regulation and dosing properties for the initial materials and additional components and aggregates are not needed.

Because material-carrying part and the power unit are separate maintenance is easy. The applicator is continuously supplied with the initial conditioned materials by the doser unit (PUR applicators with Isocyanate and Polyol).

During the application, the dosers realizes the pressure build-up to up to 200 bar and assure the facilitation of the necessary material quantity. The dosers have a narrow shape which enables them to be placed in close vicinity of the applicators.

Standard volume doser for RIM application

EVD 80

- material quantity between 5–120 cm³ 2K-material
- output per shot max. 50 ccm/s

EVD 155

- material quantity between 5–250 cm³ 2K-material
- output per shot max. 85 ccm/s

EVD 560

- material quantity between 10–900 cm³ 2K-material
- output per shot max. 190 ccm/s

Additional doser sizes are available upon request.



RIM APPLICATOR

The RIM applicator is based on the counter-current injection principle with the mixing by turbulent currents. During the material insert, the components are brought together in a small mixing chamber by the nozzles (cross-section between 0.2 and 1.0 mm).

Because of the incurring flow speed of up to 350 m/s, the components hit each other straight on and are mixed homogeneously.

During the standstill, the applicator is flushed continuously.

Functions and properties

- high-pressure mix by utilizing the countercurrent injection principle
- shot volumes meet industrial conditions and requirements
- process stable at 10 Gramm
- dosing deviation < 2%
- outer nozzle diameter 6 mm
- weight 3 kg
- dimensions (L/B/H) 450 x 450 x 2000 mm

Manual application

A handle makes the manual operating of the applicator possible. On the control section, the customer may choose from up to 10,000 saved mixture recipes.

For automated operation, the applicator can be attached to a robot or the manipulator with a flange.

