

APPLICATION TECHNOLOGY

—
Product Overview

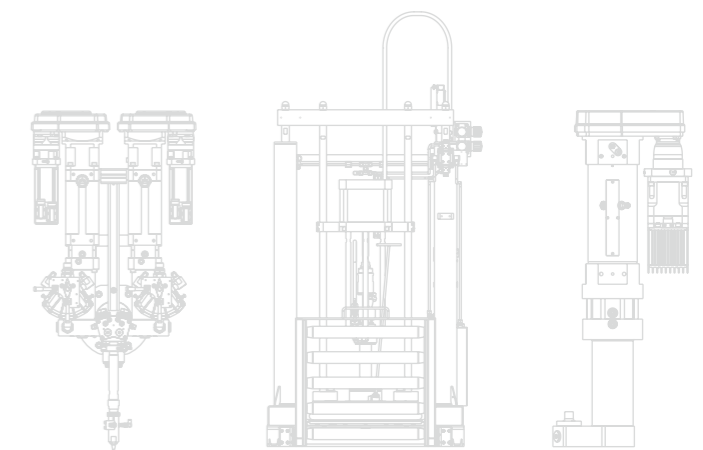


Lightweight design, multi-material mix, new design shapes or the development of electronic parts are just a few keywords for the constantly growing significance of glue and sealing materials in the industrial production for a wide range of industries. Whether the automotive industry, the solar industry, or wind power industry amongst other branches, glue connections are taking the place of conventional bonding processes, such as riveting or welding, as well as increasing the quality of the product and the range of capabilities.

ATN is one of the leading companies of industrial gluing technologies. Our high quality and economical products are based on long-standing experience as well as the constant development of products and the close collaboration with our customer. With the application technology of ATN, it is possible to process almost each material with capability of flowing. Depending on the characteristics of the material and the process or customer specifications, there are a variety of components and systems available to meet the requirements.

Our 17 departments with 44 competencies ensure a high level of expertise. With branches in the Spain, USA, Brazil, and China ATN guarantees faster response time for services and spare parts as well as local representatives. A 24/7 service hotline for emergency support and spare parts enables our customers to run their production with minimal downtime.

ATN – Passion for technology	1	Nozzle cleaning	11
Barrel pumps	2–3	Application control IFC	12
Electric volume doser	4–5	Material hoses	13
Dispenser	6	Primer equipment	14
2C-application system EVD	7	Mobile units	15
Applicators	8–9	Manual application systems	16
Application towers	10	RIM	17





THE TWO-TOWER RAM-PRESS SYSTEM

The two-tower ram-press system (ZRP) can carry gluing- and sealing materials as well as pottant from barrels holding between 20 liters and 1,000 liters. The combination of individual components depends on the properties of the materials that are to be processed and are also based on customer specifications.

GENERAL TECHNICAL DATA

- for transportation of materials with low or high viscosity
- pneumatic connection: 5-bar, filtered, dried, unoiled
- follower plate
 - diameter

ZRP 60	279 – 355 mm
ZRP 200	572 mm
ZRP 1000	1,000 mm
 - construction optimizes residual amount for low and medium viscosity materials
 - conical construction of 15° for high viscosity materials
 - teflon-coated
 - floating wiper ring to compensate barrel tolerances and max. material utilization

DISPLACEMENT PUMP

UP 80	80 cm ³ per double stroke	2.4 l/min*
UP 150	150 cm ³ per double stroke	4.5 l/min*
UP 260	260 cm ³ per double stroke	7.8 l/min*
UP 600	600 cm ³ per double stroke	18 l/min

(*at 30 double strokes/min)

- pressure ratios 11:1 – 72:1
- max. operating pressure 360 bar
- temperature range 0 – 100°C
- material viscosity from low to high viscosity

BASE PUMP / AIR MOTOR

- transformation ratio base pump/air motor

Base pump	Air motor			
	LM 125	LM 160	LM 250	LM 320
UP 80	35:1	57:1	-	-
UP 150	17:1	28:1	68:1	-
UP 260	11:1	18:1	44:1	72:1
UP 600	-	-	19:1	30:1

The application and the combination of pump and air motor depend on the material to be processed and is a case-to-case decision.

EXTENSIONS TWO-TOWER RAM PRESS

- heating of complete system or individual components
- traffic light system for status indication „Active“, „Ready“, „Empty“
- control panel for pump via the IFC smart box with keypad
- can be extended to be double barrel pump
- roll conveyors for barrel exchange (only ZRP 200)

ZRP-Series hydraulic

Technical data



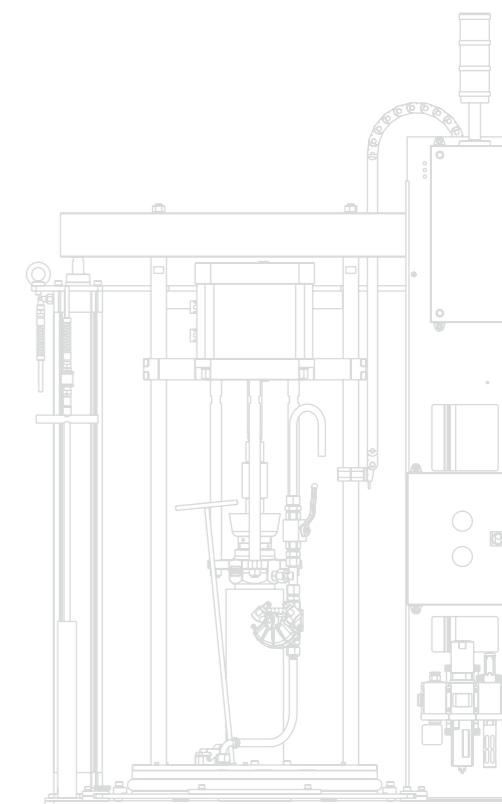
types	ZRP 200 HY
barrel size	200 Liters
press capacity	33 kN – 98 kN

ZRP-Series pneumatic

Technical data



types	ZRP 60 PN	ZRP 200 PN	ZRP 1000 PN
barrel size	20 – 60 Liters	200 Liters	1,000 Liters
press capacity	7.3 kN – 28 kN		





The ATN electric volume doser, part of the EVD series, has a doser volume of between 1.1 cm³ to 904 cm³ and processes materials with low and high viscosity, which permits a wide area of application. Viscosity independence allows for a high dosing accuracy and a repeat accuracy of over 99%. The adjustment of the material volume is continuous and is contingent on the speed-dependent regulation of the superior system (e.g. robot). Employing an offset or setting a specific value is possible through the doser controls.


The detailed visualization allows for a sentential control of the applied material quantity, fill level, temperature, pressure, torque, counter of the maintenance intervals and much more. In addition to a simple assembly and disassembly, the dosers of the EVD series are maintenance-friendly even during high usage.


EXTENSIONS ELECTRIC VOLUME DOSER EVD


- complete and heated system
- extension to dual system
- extension to 2C-system
- stainless steel finish


PROCESSIBLE PRODUCT PROPERTIES


- low and high viscosity
- highly filled materials
- abrasive materials
- shear sensitive materials
- aggressive materials


EVD 1.2	Technical data	
	net volume	1.10 cm ³
	max. flow rate	0.50 cm ³ /s
	resolution	0.07 cm ³ each motor revolution
	size (W/D/H)	105 x 189 x 470 mm
	weight	3.2 kg


EVD 11	Technical data	
	net volume	9.66 cm ³
	max. flow rate	4.91 cm ³ /s
	resolution	0.10 cm ³ each motor revolution
	size (W/D/H)	225 x 190 x 584 mm
	weight	9.3 kg


EVD 80	Technical data	
	net volume	76.30 cm ³
	max. flow rate	28.70 cm ³ /s
	resolution	0.57 cm ³ each motor revolution
	size (W/D/H)	217 x 442 x 992 mm
	weight	19 kg


EVD 100	Technical data	
	net volume	92.15 cm ³
	max. flow rate	13.40 cm ³ /s
	resolution	0.27 cm ³ each motor revolution
	size (W/D/H)	298 x 329 x 723 mm
	weight	18 kg

EVD 155	Technical data	
	net volume	147.26 cm ³
	max. flow rate	44.90 cm ³ /s
	resolution	0.90 cm ³ each motor revolution
	size (W/D/H)	261 x 424 x 1064 mm
	weight	40 kg

EVD 350	Technical data	
	net volume	350 cm ³
	max. flow rate	96.21 cm ³ /s
	resolution	1.92 cm ³ each motor revolution
	size (W/D/H)	261 x 376 x 1137 mm
	weight	72 kg

EVD 550	Technical data	
	net volume	470.46 cm ³
	max. flow rate	26.20 cm ³ /s
	resolution	0.52 cm ³ each motor revolution
	size (W/D/H)	374 x 399 x 870 mm
	weight	72 kg

EVD 560	Technical data	
	net volume	559.23 cm ³
	max. flow rate	80.20 cm ³ /s
	resolution	1.92 cm ³ each motor revolution
	size (W/D/H)	245 x 476 x 1515 mm
	weight	68 kg

EVD 850	Technical data	
	net volume	850.00 cm ³
	max. flow rate	77 cm ³ /s
	resolution	1.54 cm ³ each motor revolution
	size (W/D/H)	396 x 395 x 1016 mm
	weight	70 kg

Dispenser



The ESP dispenser system allows for a gentle and pulsation-free continuous transportation of materials in variable directions independent from viscosity variations (material transportation or dosing). The high dosing accuracy allows for a repeat accuracy of over 99% and prevents a material cluster from point- or bead-dosing at start-up and shut-down. Leakage and stringing of material is avoided due to the controllable pullback.


The piloting of the dispenser is carried out by a digital interface, fieldbus or dispenser control with convenient visualization. In addition to a simple assembly and disassembly, the valve-free dispenser of the ESP series is maintenance-friendly even during high usage.


GENERAL PROPERTIES

- inlet pressure 0 – 20 bar
- doser pressure max. 0 – 20 bar
- temperature 0 – 40 °C
- revolution speed max. 200 U/min-1

PROCESSIBLE PRODUCT PROPERTIES

- low and high viscosity
- aggressive materials
- abrasive materials
- shear sensitive materials

ESP 30	Technical data	
	flow constant	0.15 ml/r
	min. flow rate	0.15 ml/min
	max. flow rate	30 ml/min

ESP 80	Technical data	
	flow constant	0.4 ml/r
	min. flow rate	0.4 ml/min
	max. flow rate	80 ml/min

2C-application system EVD



THE PROCESSING OF 2C MATERIALS

The hardening of 2C materials, especially adhesives, depends on certain factors and environmental influences. This includes temperature, moisture and light. By manipulating the 2C mixing ratio, the hardening speed can be adjusted according to the process.

The 2C EVD application system offers precise dosing and a homogenous mixing of the two initial components. The application system can be freely configured according to the mixing ratio from the single doser of the EVD doser series. The adjustment of the mixing ratio is continuous and changes to the application

parameters are executed immediately. The mixing of components is reliable and cost-efficient with easily replaceable static and static-dynamic or dynamic mixing insets.

The 2C-application system is available as an individual stationary unit or attached to the 6th axis of the robot.

You can find a detailed description and areas of operation of the EVD doser on page 4–5.



The final components in the immediate gluing process are our applicators. The customer may choose between various applicators for the application of round beads, profile beads or area material application. The selection is restricted by the process specifications – stationary or attached to a robot – and the properties of the material. These considerations influence form and assignment of the applicators.

DECISIVE FACTORS FOR THE SELECTION AND CONFIGURATION OF AN APPLICATOR:

- area of operation
- viscosity of material
- application shape of material (e.g. profile bead, round bead, wide seam etc.)
- properties of material
- stationary or attached to a robot

EXTENSIONS

- heating
- nozzle Extension
- crash-Protection*
- pressure Sensors*
- needle monitoring*

*not available for all applicators

AKK VN6-A



Technical data	
shape of bead	round bead
nozzle diameter	0.5 – 2.5 mm
weight	0.6 kg
positioning	attached to robot or stationary

AKK VN8-A



Technical data	
shape of bead	round bead
nozzle diameter	1.0 – 5.5 mm
weight	3.1 kg
positioning	attached to robot or stationary

AKK PR



Technical data	
shape of bead	round bead
nozzle diameter	according to customer specifications
weight	10 kg
positioning	last axis on robot

AKK PE



Technical data	
shape of bead	round bead
nozzle diameter	according to customer specifications
weight	30 kg
positioning	stationary e.g. application tower

AKK DB



Technical data	
shape of bead	round bead
nozzle diameter	according to customer specifications
composition	nozzle block with 4 individual nozzles, extendable
positioning	attached to robot or stationary

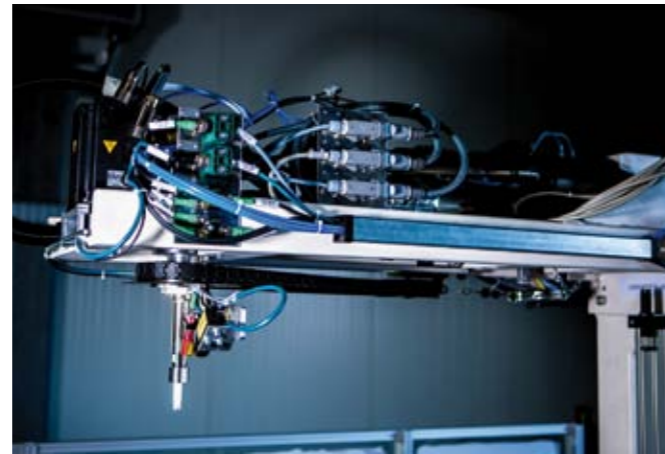
AKK MULTI NOZZLE APPLICATOR



Technical data	
shape of nozzle	flat stream, airless, wide-slot
angle of application	90°, 45°, 0°
weight	3.4 kg
positioning	last axis on robot

Application towers

For the stationary material application with partially or fully automated units, ATN offers various application towers. Configuration, functions and components can be individually adjusted according to customer preferences and process specification. This includes the integration of various processes such as cleaning and primer application with the application tower.



APPLICATION TOWER FOR PRIMER

GENERAL INFORMATION

- for the application of bonding agent (primer)
- material feed with pressure barrel
- spray, brush or felt application with spraying unit, membrane valve or dispenser
- flushing and cleaning unit for regular cleaning
- application unit can be swung around for maintenance

EXTENSIONS

tolerance compensation
 extension of application tower for primer with two heads
 combination of primer and cleaning head

APPLICATION HEAD GLUING

GENERAL INFORMATION

- material dosing with EVD volume doser
- material application with 1K-application head or 2K-application system
- application of profile – or round beads

EXTENSIONS

application head can be swung around*
 automatic moveable nozzle cleaning station (pneumatic cleaning or nonwoven cleaning)*
 stationary cleaning station on packaging band*
 height compensation of application unit for product tolerances*
 quality control of glue bead*
 extension of application tower to primer unit*

(*not available for all towers)

APPLICATION HEAD GLUING

ATK VDF

application	round and profile bead
position	nozzle pointed down
max. number of dosers	4
features	many extension options, e.g. cleaning and primer unit as well as different automated nozzle cleaning systems

ATK DDS

application	round and profile bead
position	nozzle pointed up
max. number of dosers	2
features	maintenance friendly, excellent part handling

ATK DUR

application	round and profile bead
position	nozzle pointed up
max. number of dosers	3
features	maintenance friendly, upside down application

ATK DB

application	round bead
position appl. nozzle	nozzle pointed down
max. number of dosers	4
features	up to 3 nozzle beams with 4 application nozzles (area application) respectively, nozzles can be operated independently

Nozzle cleaning

To be able to guarantee a stable and high-grade glue bead, as well as to avoid contamination through residual material, ATN offers various nozzle cleaning systems for our application process.



PNEUMATIC NOZZLE CLEANING

COMPOSITION AND FUNCTIONS

- material residuals are removed with compressed air
- 6 jet nozzles
- 3 compressed air tanks
- fast airing valves
- disposable collection in standard trash bag in casing
- stainless steel finish
- almost noiseless
- cost-efficient cleaning

OPTIONS

stationary or attached to the application tower
 possible combinations of nozzle cleaning and flushing process at the work station
 quick exchange coupling

FLEECE NOZZLE CLEANING

COMPOSITION AND FUNCTIONS

- assembly on basic frame
- cleaning materials paper or fleece
- length and width according to customer preference
- automated detection of cleaning material (stock, intact paper trail)
- simple refill

OPTIONS

possible combinations of nozzle cleaning and flushing process at the work station
 stationary or mobile – attached to the application tower assembly on glide system between flushing process and fleece nozzle cleaning with stationary application point
 hanger for collection container

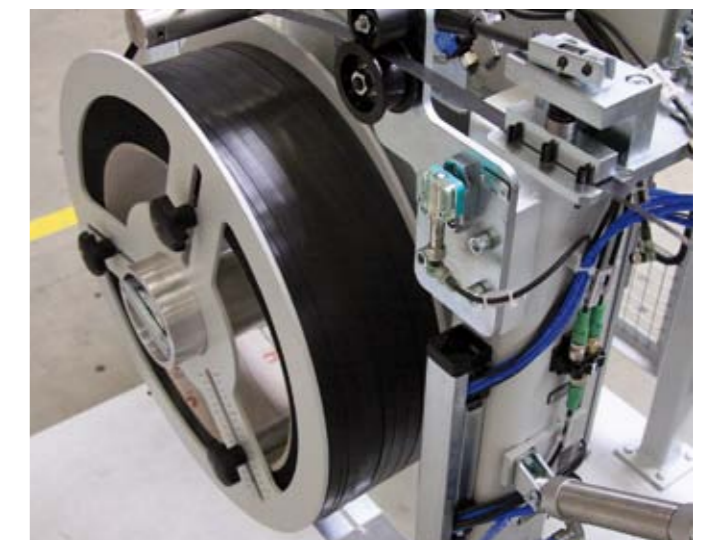
PACKING TAPE UNIT

COMPOSITION AND FUNCTIONS

- assembly on basic frame
- cleaning material is regular plastic packing band
- automated cutting of used packing band
- regulation with external unit (SPS)

OPTIONS

combined unit for purge and packaging band unit in one



Application control IFC



The ATN IFC application controls system (independent flow control) is made up of one IPC with 12" Touch Display (screen resolution of 800x600 pixel). The IFC system controls and monitors all vital parameters and components of the application process. All processes are visualized on the display and components can be easily controlled.

COMPOSITION AND FUNCTIONS

- the system includes a switch cabinet with IPC and control panel
- simple intuitive operation
- freely adjustable and configurable systems for all types of applications
- parameterization of all relevant process parameters (e.g. volume flow, pressure, temperature)
- remote control for HMI systems via network
- extensive logging and diagnosis capabilities
- connection to production networks possible

TECHNICAL DATA

Intel® Atom™ Prozessor

fanless design

2x USB (1x USB 3.0, 1x USB 2.0)

2x Ethernet 10/100/1000 Mbit

CAN-Interface

multibus module for integration in main network

(e.g. Profibus, Profinet, Ethernet/IP, CAN)

Material hoses

Materials are carried from the barrel pump or a cleaning system to the doser and application mechanism through a solid pipe system or flexible material hoses of variable diameter.

Depending on the material, the pipe systems and the hoses can be unheated or heated up to 150°C. With the heated option, the heat output and temperature are visualized, monitored and controlled by the doser or system controls.

Hose and pipe length are offered in various sizes and are only restricted by technical concerns (e.g. pressure loss of system)



HOSE DN 13	Technical data	
	unheated	yes
	heated up to 100 °C	150 W/m
	heated up to 150 °C	290 W/m
	attachable to robot	yes

HOSE DN 16	Technical data	
	unheated	yes
	heated up to 100 °C	200 W/m
	heated up to 150 °C	350 W/m
	attachable to robot	yes

HOSE DN 25	Technical data	
	unheated	yes
	heated up to 100 °C	300 W/m
	heated up to 150 °C	400 W/m
	attachable to robot	yes

HOSE DN 32	Technical data	
	unheated	yes
	heated up to 100 °C	300 W/m
	heated up to 150 °C	400 W/m
	attachable to robot	yes



ATN offers several application solutions for cleaning and activating surfaces with a wet-chemical process and all other proven and tested products, which are used in the automotive and other industries. Since they are developed as Plug&Play systems, these components can be modified to customer specifications and can be integrated in any automated production process. ATN also offers complete automated concepts for implementation.

Only the basics for the applicable components are listed. You can find detailed information on our website www.atngmbh.com – „Application technology for cleaning and activating“.

APPLICATION PROCESS

There are three separate techniques when it comes to the application of a cleaner, primer or activator. The selection is made based on the element, the surface and the processed material.

SPRAYING

- suitable for uneven and rough surfaces
- spraying with a spray head
- wide area of application
- free of wear and tear
- risk of overspray

FELTING

- application with a soaked felt piece
- felt wears and needs to be replaced
- also suitable for wiping after spray application
- limited application area
- crisp and clean application

BRUSHING

- suitable for even and smooth surfaces
- application with a soaked brush
- brush deteriorates and needs to be replaced
- limited application area
- crisp and clean application

DISPENSER ESP

Dispenser ESP 30 and ESP 80 are used for material transportation with a wet chemical process.

You can find detailed information about the ESP dispenser series on page 6 of this brochure.

SPRAY HEAD

The spray head doses and applies the primer. High-pressured spray material is delivered to the spray head. The control piston, operated by compressed air, first opens the spray air valve and, with a minor delay, the material nozzle. After the application, the material spray head is shut first and then the spray air valve to avoid leakage of the material nozzle. The spray material is pulverized via compressed air.

TECHNICAL DATA

material pressure max.	12 bar
atomizer pressure max.	8 bar
weight	380 g

ADJUSTABLE FACTORS

- selection of air and material nozzle
- atomizer
- material pressure
- needle travel

MATERIAL SUPPLY

The primer material supply mainly consists of the four components of the pressure vessel, diaphragm pump, load cell and buffer tank.

PRESSURE CONTAINER

- available in different sizes between 1l and 45l
- pressurization using dry air or nitrogen (optionally controlled by proportional valve)
- stirrer system and circulation connector are optional

MEMBRANE PUMP

- located within the return path
- permanent circulation of primer material

WEIGHING CELL

- fluid level detection
- alternatively via sensors (depends on barrel configuration)

SURGE DRUM

- protection for an uninterrupted production

ATN offers several different application units for the manual non-stationary application of 1C- and 2C-materials. These systems are suitable for 20 to 200 liter barrels and have swivelling gallow for weight unloading of the material hose and the application pistol.

MOBILE 1C-APPLICATION UNIT

size (W/D/H)	1200 x 1000 x 2600 mm
weight	aprox. 300 kg
electrical connection	230 VAC (heating only)
pneumatics connection	5 bar, filtered, dried, unoiled, via spiral coiled tube and plug connection
carriage	4 rollers, 2 rollers breakable and steerable
pumps	two-pillar ram-press ZRP 60 or ZRP 200
base pump	UP 80, UP 150, UP 250
application pistol	1C-manual application pistol
flow rate	2.4 – 7.8 l/min

MOBILE 2C-APPLICATION STATION

size (W/D/H)	1810 x 1000 x 2600 mm
weight	approx. 600 kg
electrical connection	400 VAC (with CEE-plug)
pneumatic connection	5 bar, filtered, dried, unoiled, via spiral coiled tube and plug connection
carriage	4 rollers, 2 rollers breakable and steerable
pumps	two pillar-ram-press ZRP 60 or ZRP 200
dosing	doser system 2C-EVD
application pistol	2C-manual application pistol (with pneumatic retraction control)
mixing ratio	of 1:1 up to 100:3
operation	ifc „smart“ volume flows, adjustable

EXTENSIONS

dosing unit can be compiled individually
 upgrade package from ZRP 200 to hobcock barrels
 upgrade to automatic dosing head
 heating system up to 80°C



Manual application systems



Whether it is as a backup for the automated application cell or for general use, the ATN manual application systems are the best solution. The requirements of the application process determine whether a stationary system or a mobile unit works best.

MANUAL APPLICATION PISTOL HAP RR

- application round bead
- operation-friendly application pistol with ergonomically design
- material carrying parts are made of stainless steel
- scope of application: low to medium viscosity sealing and adhesive materials
- exchangeable nozzle
- weight according to customer specifications, between 0.4 – 0.6 kg
- operating pressure up to 415 bar

MANUAL APPLICATION PISTOL HAP PR

- application profile bead
- operation-friendly application pistol
- rotary drive for orientation of profile nozzle
- scope of application: low to medium viscosity sealing and adhesive materials
- exchangeable nozzle
- weight 1.5 kg

MATERIAL PRESSURE REGULATOR – MDR

- pressure range from 35 – 250 bar
- pressure adjustment mechanic or pneumatic
- inlet connection $\frac{3}{4}$ "
- outlet connection $\frac{1}{2}$ "

EXTENSIONS

heatable

Reaction Injection Molding System – with the RIM System (which fills cavities with the 2C foam), ATN offers its tested and proven doser technology. For the material feed of the PUR foam, ATN has developed a new, patented system. Detailed information regarding this process and the design of the unit can be found in the „Polyurethane-Mixing-Technology“ folder.

MATERIAL SUPPLY

- EFE0200 for 200 liter barrels
- EFE1000 for 1000 liter IBC

EXTENSIONS FOR MATERIAL SUPPLY

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

RIM RECIRCULATION SYSTEM

STRUCTURE

- circuit module with a 50 liter storage (MKS-50-series)
- circuit module with a 280 liter storage (MKS-280-series)

FUNCTIONS

- 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

RIM DOSER

Standard Volume Doser for RIM Application
EVD 350

- material quantity between 10 – 450 cm³ 2C-material
- output per shot max. 190 ccm/s

Further characteristics of the dosing can be found on pages 4–5. Additional doser sizes are available upon request.

RIM APPLICATOR

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

APPLICATOR CLEANING

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

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.

GERMANY

Oppach · Dresden

SPAIN

Valencia

BULGARIA

Ruse

HUNGARY

Budapest

USA

Chattanooga

BRAZIL

São Paulo

CHINA

Changchun · Shanghai · Beijing · Wuhan

HEADQUARTER

ATN Hölzel GmbH

Brunnenstraße 3

02736 Oppach, Germany

Phone: +49 35936 3350

Fax: +49 35936 335 2000

E-mail: kontakt@atngmbh.de

