Cryogenic media-blast deflashing

Cryogenic drum deflashing

Washing and drying systems

AW

MASCHINEN- & ANLAGENTECHNIK

# TARGET GROUPS

MANUFACTURER OF RUBBER AND PLASTIC MOULDED PARTS AND NON-FERROUS METAL PARTS

**CONSISTENT MATERIAL CHARACTERISTICS**

**NO CHANGE TO THE SURFACE STRUCTURE**

**MAINTAINS THE SHAPE – WITHOUT WARPING**

**UNCHANGED COMPONENT DIMENSIONS**

# YOU KNOW THE REQUIREMENTS



You yourself know best what you need in order to optimise your production processes as well as possible. That's why you decide what you get from us. Bet on custom-made machines.

To fulfil your individual requirements as a manufacturer of rubber and plastic moulded parts and non-ferrous metal parts, we give you the highest level of flexibility. This means, that with us, you receive exactly the machine, that is precisely adapted to the requirements of your operation. You determine the specifications – we build the right system. In the design, size, capacity and accessories, that you require.

AW Maschinen- und Anlagentechnik offers you the full range: the entire production chain can be covered with our systems portfolio. First deflashing, then washing, and finally drying. In combination with our comprehensive spare parts service, you therefore benefit from the highest degree of reliability and the quickest possible readiness for use.

# THE INNOVATIVE MEDIA-BLASTING ANGLE ADJUSTMENT




**AWS: Optimal media-blasting results – patented.**
With the innovative and patented media-blasting angle adjustment, the processing times can be significantly reduced. By adjusting the blasting grain launch direction, the media-blasting operating area can be optimised for a wide range of requirements – exactly how you need it for your material.

(German patent number 10 2011 003 102)

# WHY WE ARE THE RIGHT PARTNER FOR YOU

**ECONOMICAL AND EFFICIENT** thanks to short media-blasting times and low consumption

**INNOVATIVE** thanks to cooperation with the University of Siegen and our own patent

**EXPERTISE AND COMPETENCE**
thanks to many years of professional experience

**LOW MAINTENANCE COSTS** thanks to high-quality and long-lasting wear parts made from modern materials

**CUSTOMER ORIENTED**
in development and finding solutions

**PRICE-PERFORMANCE RATIO**
convinces thanks to fairness

**FLEXIBLE**
thanks to individual customisation

# BENEFIT FROM OUR INNOVATIONS.

Constant progress with added value for our customers – that's how it works, day after day, with us. In the field of cryogenic deflashing, we see ourselves not only as a developer and producer but also as a pioneer in the matter of the individual solution-oriented approach. Based on our many years of knowledge, we build highly efficient systems which work to save resources based on intelligent technologies and thus make a contribution to the preservation and protection of the environment.

We simply want to offer our customers more: More performance, more experience, more service, more savings potential, more effective communication.

**SAVE TIME**

**SAVE ON NITROGEN**

**THE BEST DEFLASHING RESULTS**

**EXPERT ADVICE**

**ONE CONTACT PERSON**

**EXPERIENCED SERVICE**

**SHORT REACTION TIMES**

## DESIGN & DEVELOPMENT

„Anyone who stops improving has stopped being good." In accordance with this motto, we are constantly striving for further innovative developments which are optimally adapted to our customers' requirements. Working together with our customers and the in-house design and electrical planning department, we find the optimal solutions for high-performance and long-lasting products.

## PRODUCTION & TECHNICAL DEPARTMENT

Each of our machines and systems is precisely tested within the technical department. This allows us to check and optimise the process parameters. When producing our systems, we work with the latest materials and place a great deal of value on precision. The core components are manufactured and assembled in our factory.

## COMMISSIONING

Naturally we undertake the professional installation of your system. Our trained employees instruct you in detail in the operation after commissioning so that you are quickly able to operate your machines by yourself.

## SERVICE

You should be more than just satisfied with our products and services and take advantage of the benefits of a fixed contact person who is specifically responsible for looking after your interests. You benefit from short reaction times thanks to the use of our own service technicians and availability of spare parts – even from different manufacturers.

Certified in accordance with ISO 9001:2015

# YOUR COMPONENT– YOUR MATERIAL

# OUR SOLUTION

**ELASTOMERE (RUBBER) · PLASTICS (THERMOPLASTS AND DUROPLASTS)
FIBRE REINFORCED PLASTICS · ZINC · ALUMINIUM // MAGNESIUM
TITANIUM · COMPOUND MATERIALS · SINTERED MATERIALS
POLYURETHANE · FOAMS**

## CRYOGENIC DEBURRING – THE PROCESS

During cryogenic blasting deburring, the components to be processed are subcooled in a processing room with a suitable coolant, and therefore the burrs become brittle, and are blasted with a blasting medium. The aim of this is to remove the unwanted burrs from the components. These can be efficiently removed up to a thickness of 0.2mm – and even thicker according to the component composition.

Due to processing the components in a processing drum, additional deburring of the components takes place, due to their relative movement to each other. This procedure is also carried out without blasting medium, in systems with and without corresponding charge – e.g. steel balls. This is called cryogenic drum deburring. This is used for pre-deburring of components (separation of moulded parts and sprue elements) and for the deburring of polyurethane moulded parts. The process can also be used for complete deburring, according to quality requirement.

### PROCESS PARAMETERS FOR CRYOGENIC BLASTING DEBURRING:

- Temperature level (as a rule -20 °C to -150 °C)
- Drum speed (rolling speed)
- Cooling time
- Drum time (with and without blasting)
- Dropping speed of the blasting medium (shot blasting speed)
- Grain size of the blasting medium
- Blasting time
- Separation time

Due to the very cold temperature in the processing area, and the necessary accessory aggregates, icing is the biggest challenge in plant engineering, due to air humidity – particularly to guarantee continual 3 shift operation.

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# THE AWS PERFORMANCE FAMILY: RELIABLE, TAILOR-MADE.


AW offers innovative systems at fair prices. Economical, environmentally friendly, low-maintenance and user-friendly. With the best insulation values and optimal tightness. We search for tailor-made solutions according to your individual specifications and produce high-performance, long-lasting and high-quality systems.

- Compact design with the control cabinet on a forklift-adapted machine bed frame
- Insulated cryogenic cell with 120 mm thick walls
- Integrated 2-stage cyclone dust extraction
- Energy-conscious thanks to modern materials and innovative sealing designs
- Optimal flywheel geometry allows for the best media-blasting performance
- State-of-the-art forward-looking controls
- Continuous operation possible

MASCHINEN- & ANLAGENTECHNIK

# AWS 08

**AW 10**
**BATCH VOLUMES**
IN LITRES
10




## THE STANDARD FEATURES OF THE AWS 08

**PROCESSING DRUM**
> Removable basket with selectable perforation

**FLYWHEEL**
> Speed 1,000 – 10,000 rpm
> Blasting media launch speed up to 104 m/sec
> Active media-blasting angle adjustment

**CONTROLS**
> Siemens S7-1500 with KP 700 Comfort button panel

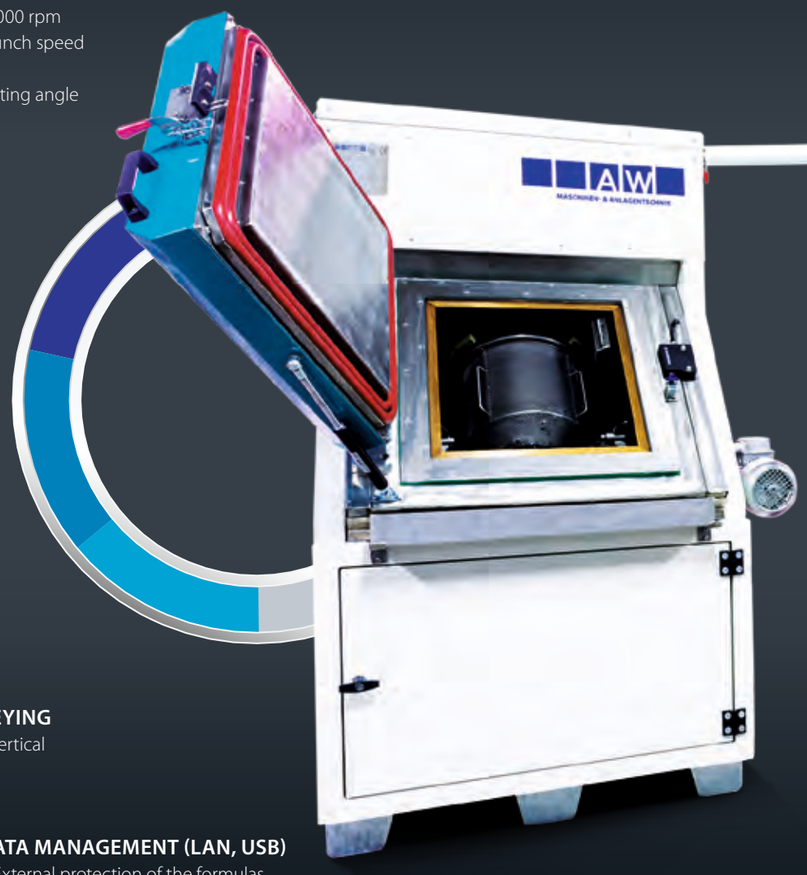
**DUST EXTRACTION EXHAUST SYSTEM**
> Integrated, isolated 2-stage cyclone dust extraction

**MOULDED PART COOLING**
> Temperatures as low as -150 °C

**INSULATION**
> 120 mm thick insulation cell
> 60 mm thick machine enclosure

**GRANULATE CONVEYING**
> Steplessly adjustable vertical screw conveyor

**DATA MANAGEMENT (LAN, USB)**
> External protection of the formulas
> Complete batch documentation

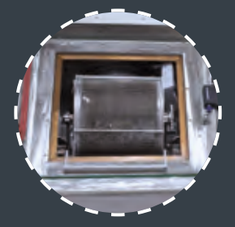



## OBJECTIVE

The AWS 08 is optimised for the economical cryogenic deflashing of batch volumes of up to 10 litres. As a result, it obtains optimal media-blasting results on a wide range of moulded part geometries. Thanks to the patented media-blasting angle adjustment, it is possible to flexibly employ the machine in two operating modes. In addition, frames for holding moulded parts or special components can be installed in the media-blasting areas in both media-blasting variants.

The AWS 08 particularly excels with small batches thanks to its speed, clean media-blasting results and its operating efficiency, as well as its flexibility in horizontal and vertical media-blasting operation.

## ONE MACHINE, TWO OPERATING MODES

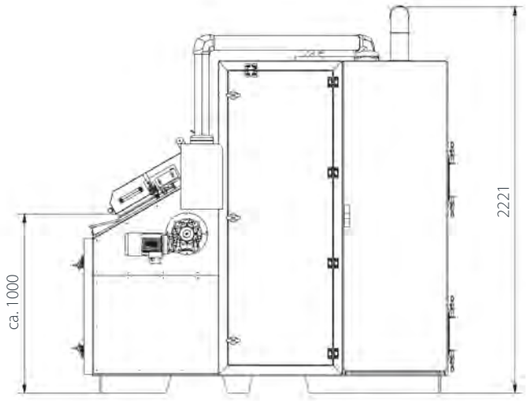


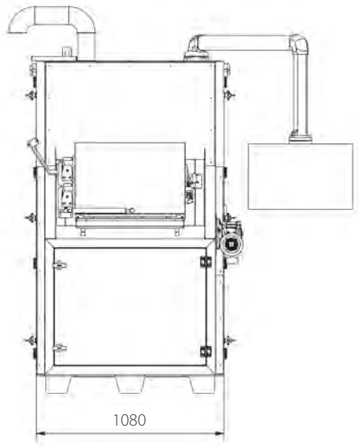
**Horizontal media-blasting operation**

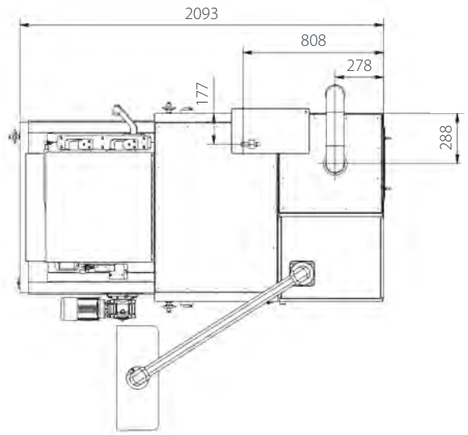
> Horizontal, closed removable basket (wire mesh cylinder)
> Gentle media-blasting process in closed basket system
> Optimal circulation of the components

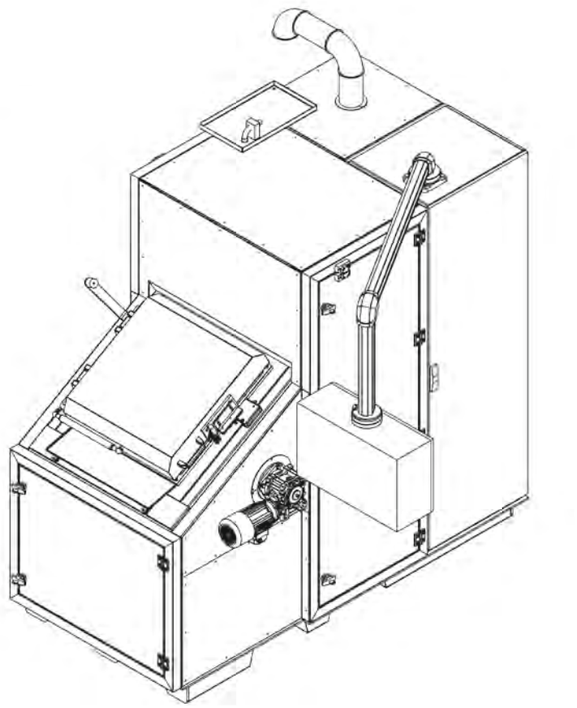
**Vertical media-blasting operation**

> Vertical open removable basket (perforated basket)
> High performance media-blasting with optimal blasting pattern
> Adjustment of the media-blasting angle to the fill level



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## TECHNICAL DETAILS FOR THE AWS 08

| | |
|---|---|
| Insulation | media-blasting area made from stainless steel cell with 120 mm PU foam insulation; additional machine enclosure with 60 mm Styrodur insulation |
| Access doors | left and right |
| Controls | Siemens S7-1500 with KP 700 Comfort button panel incl. barcode reader |
| Control cabinet positioning | as a unit with machines on floor palettes back right |
| Process documentation | data management via LAN and/or USB |
| Batch volumes | up to 10 litres |
| Basket volumes | vertical 24 litres // horizontal 22 litres |
| Basket geometry | vertical 8-sided // horizontal cylindrical |
| Basket speed | 8 – 50 rpm |
| Flywheel speed | 1.000 – 10.000 rpm |
| Blasting media launch speed | up to 104 m/sec |
| Blasting media | 0,3 – 1,5 mm polycarbonate |
| Blasting media supply | steplessly adjustable vertical spiral conveyor |
| Feeding door | manually operated |
| Dust extraction | integrated, isolated 2-stage cyclone dust extraction with service doors |
| Seals | low-wear metal alloy / special door seal |
| Compressed air supply | not required |
| Heat output | 300 Watts |
| Article memory | 4.000 items |
| Temperature regulation | PID regulator down to -150 °C |
| Construction | solid base plate incl. forklift slots |
| Weight | approx. 1.000 kg |
| Dimensions | 2.100 W x 1.100 D x 2.100 H |
| Electrical connection | 400/230/24 V/50 Hz/N/PE/3Ph/16A |
| Nitrogen input | 1/2", 4,5 bar |
| Exhaust | DN 100 |

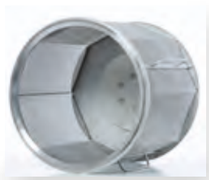
## AWS 08 DETAILS

### DATA MANAGEMENT

Simple and secure data handling with integrated USB and LAN interfaces. Formulas can be called up simply and securely using the barcode reader.

### QUICK-CHANGE BASKET SYSTEM

With the quick-change basket system for horizontal and vertical operation, baskets with freely selectable perforations/mesh widths are available. The media-blasting basket is mounted manually into the media-blasting system and is filled and emptied outside the machine. Set-up times can be minimised using additional baskets. Alternative receiving frames or basket structures are possible.



### ACTIVE MEDIA-BLASTING ANGLE ADJUSTMENT

The entire processing area can be media-blasted thanks to the patented active media-blasting angle adjustment.

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# AWS 20

**AW 20**
**BATCH VOLUMES**
IN LITRES
**30**




## THE STANDARD FEATURES OF THE AWS 20

**PROCESSING DRUM**
> Removable basket with selectable perforation

**FLYWHEEL**
> Speed 1,000 – 10,000 rpm
> Blasting media launch speeds of up to 131 m/sec
> Active media-blasting angle adjustment

**CONTROLS**
> Siemens S7-1500 with KP 700 Comfort button panel

**DUST EXTRACTION EXHAUST SYSTEM**
> Integrated, isolated 2-stage cyclone dust extraction

**MOULDED PART COOLING**
> Temperatures as low as -150 °C

**INSULATION**
> 120 mm thick insulation cell

**GRANULATE CONVEYING**
> Steplessly adjustable vertical and horizontal spiral conveyor

**DATA MANAGEMENT (LAN, USB)**
> External protection of the formulas
> Complete batch documentation

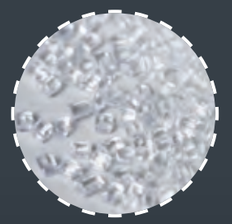
**EMPTYING SIEVE**
> External vibration sieve with magnetic oscillation technology
> Changeable sieve inserts


## OBJECTIVE

The AWS 20 is a media-blasting machine for the cryogenic deflashing of rubber or plastic moulded parts. The very well-insulated machine cell, in combination with 2-stage dust extraction, guarantees low nitrogen consumption with effective deflashing. Energy-efficient drives and high-quality materials, good media-blasting performance and thus short batch times, as well as low space requirements, are other features of the AWS 20.

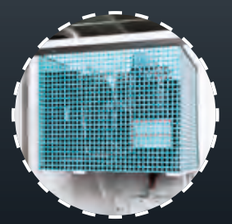
The S7-1500 controls, in combination with the button panel and barcode reader, allow for user-friendly operation of the system. The entry and saving or external saving of formula data records guarantee a high degree of reproducibility and security.

## SUSTAINABLE RELIABILITY



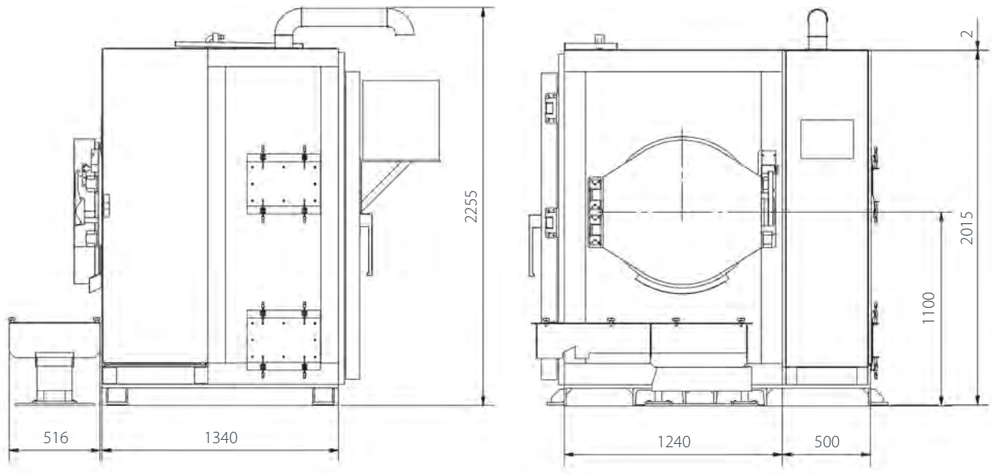
**Internal granulate sifting**

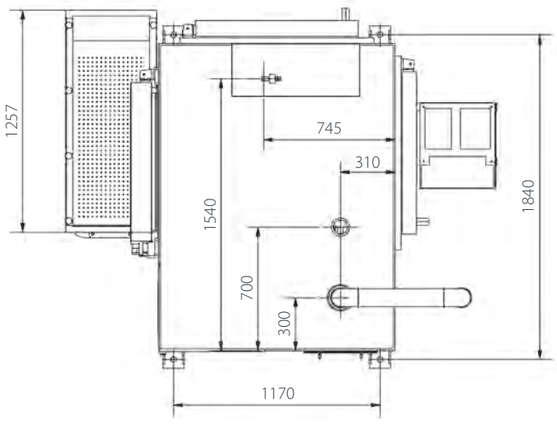
> Continuous separation of dust and residual flashing from the blasting media
> Blasting grain in the correct size and purity for effective abrasive media-blasting
> Sustainable, reproducible media-blasting performance even in multi-shift operation

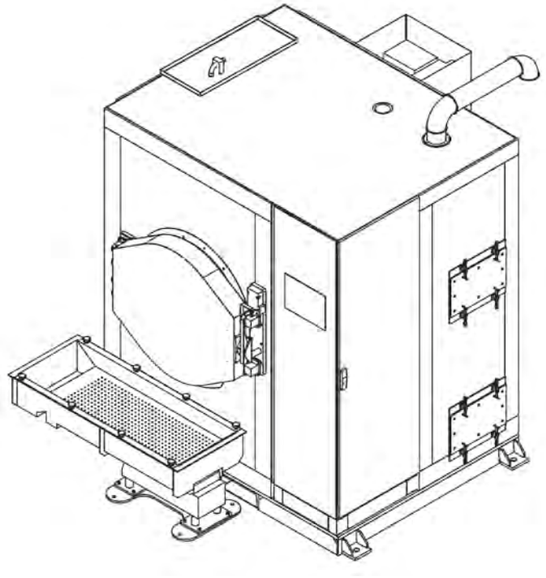


**Additional cooling**

> Cooling and absorbing of moisture within the machine
> Compensation for the air humidity which enters during the loading and unloading process
> Minimisation of the set-up and auxiliary process times for downtimes of more than 8 hours



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## TECHNICAL DETAILS FOR THE AWS 20

| | |
|---|---|
| Insulation | efficient stainless steel cryogenic cell with 120 mm thick walls, exterior powder coated in RAL9002, interior stainless steel |
| Access doors | left and back |
| Controls | Siemens S7-1500 with KP 700 Comfort button panel incl. barcode reader |
| Control cabinet positioning | as a unit with machines on floor palettes front right |
| Process documentation | data management via LAN and/or USB |
| Batch volumes | up to 30 litres |
| Basket volumes | 67 litres |
| Basket geometry | cylindrical with roller rails |
| Basket speed | 5 – 30 rpm |
| Flywheel speed | 1.000 – 10.000 rpm |
| Blasting media launch speed | up to 131 m/sec |
| Blasting media | 0,5 – 1,5 mm polycarbonate |
| Internal sieving | two sieve inserts (0,5 – 0,75 mm PC // 1 – 1,5 mm PC) |
| Blasting media supply | steplessly adjustable vertical and horizontal spiral conveyor |
| Feeding door | manually operated |
| Dust extraction | integrated, isolated 2-stage cyclone dust extraction with service doors |
| Seals | low-wear metal alloy / special door seal |
| Compressed air supply | not required |
| Heat output | 1.500 Watts |
| Article memory | 4.000 items |
| Temperature regulation | PID regulator down to -150 °C |
| Construction | solid base plate incl. forklift slots |
| Weight | approx. 1.500 kg |
| Dimensions | 1.900 B x 1.800 D x 2.300 H |
| Electrical connection | 400/230/24 V/50 Hz/N/PE/3Ph/32A |
| Nitrogen input | 1/2", 4,5 bar |
| Exhaust | DN 100 |

## AWS 20 DETAILS

### DATA MANAGEMENT

Simple and secure data handling with integrated USB and LAN interfaces. Formulas can be called up simply and securely using the barcode reader.

### PROCESSING BASKET

The basket can be swapped and a variety of basket perforations are therefore available. Tailored exactly to your requirements according to the moulded part sizes. Loading occurs manually using the loading aid provided through the manually operated exterior door and the two-part interior door. The basket is automatically emptied onto the emptying sieve by means of the integrated roller rails.

### ACTIVE MEDIA-BLASTING ANGLE ADJUSTMENT

The patented active media-blasting angle adjustment allows the media-blasting operating area to be adjusted automatically within the processing basket.

### EMPTYING SIEVE

The external vibration sieve works with frequency-controlled modern magnet oscillation technology. This allows the supply and sieve speeds to be set optimally. As standard, the emptying sieve is single-level with a changeable sieve so you can respond to a variety of moulded parts. We can also offer customised multi-level emptying sieves.

MASCHINEN- & ANLAGENTECHNIK

# AWS 40

**AW 40**
**BATCH VOLUMES**
IN LITRES
**60**




## THE STANDARD FEATURES OF THE AWS 40

**PROCESSING DRUM**
> Removable basket with selectable perforation

**FLYWHEEL**
> Speed 1,000 – 10,000 rpm
> Blasting media launch speeds of up to 157 m/sec
> Active media-blasting angle adjustment

**CONTROLS**
> Siemens S7-1500 with KP 900 Comfort button panel

**DUST EXTRACTION EXHAUST SYSTEM**
> Integrated, isolated 2-stage cyclone dust extraction

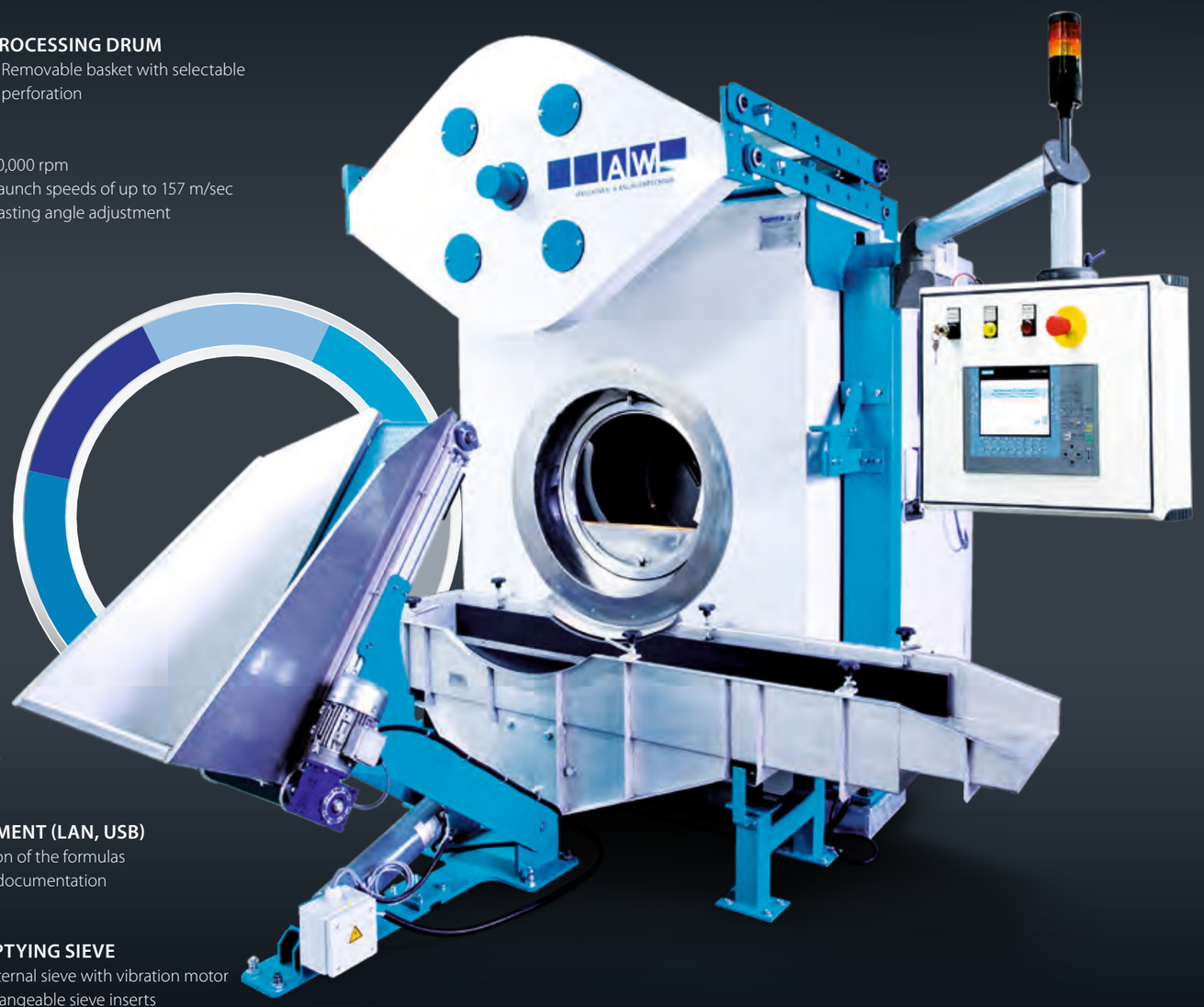
**MOULDED PART COOLING**
> Temperatures as low as -150 °C

**INSULATION**
> 120 mm thick insulation cell

**GRANULATE CONVEYING**
> Steplessly adjustable vertical and horizontal spiral conveyor

**DATA MANAGEMENT (LAN, USB)**
> External protection of the formulas
> Complete batch documentation

**EMPTYING SIEVE**
> External sieve with vibration motor
> Changeable sieve inserts

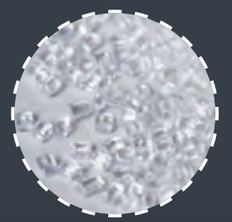


## OBJECTIVE

The AWS 40 is a media-blasting machine for the cryogenic deflashing of rubber or plastic moulded parts. The very well-insulated machine cell, in combination with 2-stage dust extraction, guarantees low nitrogen consumption with effective deflashing. Loading occurs fully automatically via a motor-operated door. Furthermore, the AWS 40 features energy-efficient drives, high-quality materials, great media-blasting performance and thus low batch times, as well as low space requirements.

The S7-1500 controls, in combination with the button panel and barcode reader, allow for user-friendly operation of the system. The entry and saving or external saving of formula data records guarantee a high degree of reproducibility and security.

## SUSTAINABLE RELIABILITY



**Internal granulate sifting**

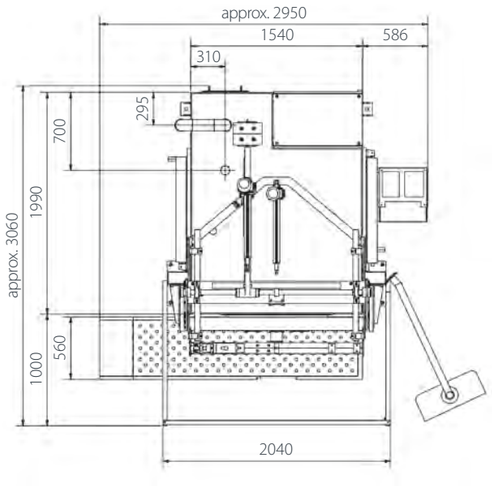
> Continuous separation of dust and residual flashing from the blasting media
> Blasting grain in the correct size and purity for effective abrasive media-blasting
> Sustainable, reproducible media-blasting performance even in multi-shift operation

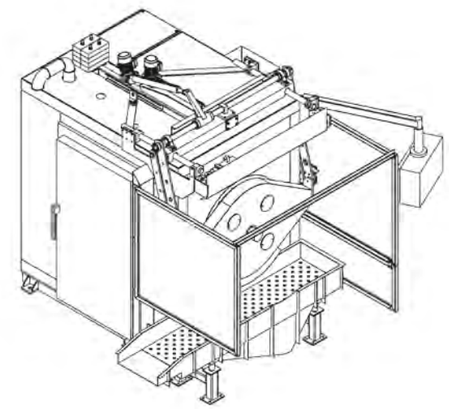
**Additional cooling**

> Cooling and absorbing of moisture within the machine
> Compensation for the air humidity which enters during the loading and unloading process
> Minimisation of the set-up and auxiliary process times for downtimes of more than 8 hours

## AWS 40 WITH FULLY AUTOMATED LOADING DOOR

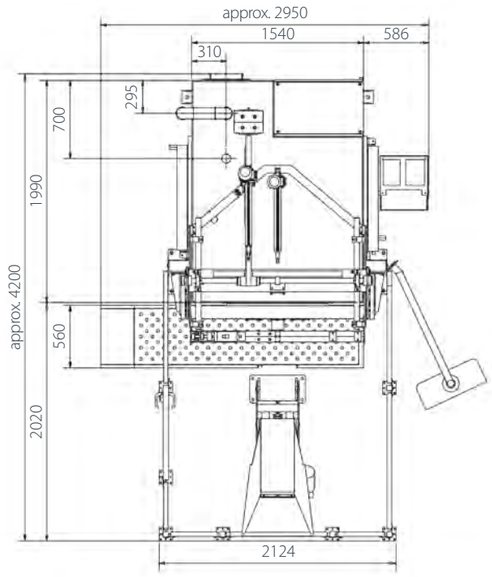
The motor-operated automatic loading door, in combination with the light gate provided, quickly moves between open and closed. It can consequently reduce set-up times in semi-automatic operation.

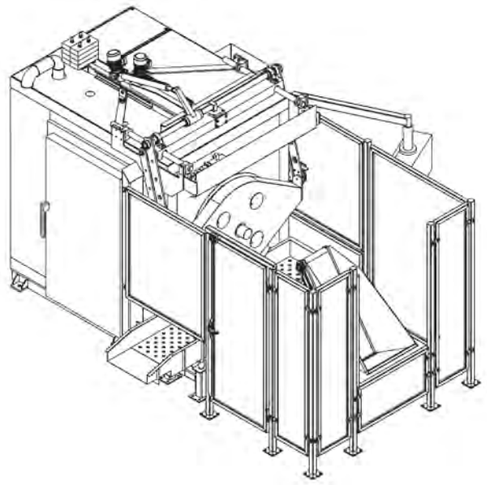


## AWS 40 WITH FULLY AUTOMATED LOADING DOOR AND LOADING

Fully automated operation of the machine can be implemented here. The moulded parts to be media-blasted are automatically fed into the machine via a conveyor belt system. Emptying after the end of the batch and refilling then occurs automatically. This can also be combined with upstream and downstream conveyor technology through to batch tracking by means of barcodes or RFID technology. In combination with the safety technology supplied, we naturally comply with all of the safety regulations here.





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## TECHNICAL DETAILS FOR THE AWS 40

| | |
|---|---|
| Insulation | efficient stainless steel cryogenic cell with 120 mm thick walls, exterior powder coated in RAL9002, interior stainless steel |
| Access doors | left and right |
| Controls | Siemens S7-1500 with KP 900 Comfort button panel incl. barcode reader |
| Control cabinet positioning | as a unit with machines on floor palettes back right |
| Process documentation | data management via LAN and/or USB |
| Batch volumes | up to 60 litres |
| Basket volumes | 150 litres |
| Basket geometry | cylindrical with roller rails |
| Basket speed | 5 – 40 rpm |
| Flywheel speed | 1.000 – 10.000 rpm |
| Blasting media launch speed | up to 157 m/sec |
| Blasting media | 0,5 – 1,5 mm polycarbonate |
| Internal sieving | two sieve inserts (0,5 – 0,75 mm PC // 1 – 1,5 mm PC) |
| Blasting media supply | steplessly adjustable vertical and horizontal spiral conveyor |
| Loading door | operated manually or automatically by an electric motor |
| Loading | swivelling conveyor belt |
| Dust extraction | integrated, isolated 2-stage cyclone dust extraction with service doors |
| Seals | low-wear metal alloy / special door seal |
| Compressed air supply | not required |
| Heat output | 1.700 Watts |
| Article memory | 4.000 items |
| Temperature regulation | PID regulator down to -150 °C |
| Construction | solid base plate incl. forklift slots |
| Weight | approx. 4.318 kg |
| Dimensions | 2.500 B x 3.000 D x 2.800 H |
| Electrical connection | 400/230/24 V/50 Hz/N/PE/3Ph/50A |
| Nitrogen input | 1/2", 4,5 bar |
| Exhaust | DN 100 |

## AWS 40 DETAILS

### DATA MANAGEMENT

Simple and secure data handling with integrated USB and LAN interfaces. Formulas can be called up simply and securely using the barcode reader.

### PROCESSING BASKET

The basket can be swapped and a variety of basket perforations are therefore available. Tailored exactly to your requirements according to the moulded part sizes. Loading occurs manually or automatically through the fully automated loading door. The basket is automatically emptied onto the emptying sieve by means of the integrated roller rails.

### ACTIVE MEDIA-BLASTING ANGLE ADJUSTMENT

The patented active media-blasting angle adjustment allows the media-blasting operating area to be adjusted automatically within the processing basket.

### EMPTYING SIEVE

The external vibration sieve works with frequency-controlled modern vibration motor technology. This allows the supply and sieve speeds to be set optimally. As standard, the emptying sieve is single-level with a changeable sieve so you can respond to a variety of moulded parts. We can also offer customised multi-level emptying sieves.

MASCHINEN- & ANLAGENTECHNIK

# AWS 60 // AWS 60+

**AWS 60**
**BATCH VOLUMES**
IN LITRES
120

**AWS 60+**
**BATCH VOLUMES**
IN LITRES
150




## THE STANDARD FEATURES OF THE AWS 60

**PROCESSING DRUM**
> Removable basket with selectable perforation

**FLYWHEEL**
> Speed 1,000 – 10,000 rpm
> Blasting media launch speeds of up to 167 m/sec
> Active media-blasting angle adjustment

**CONTROLS**
> Siemens S7-1500 with KP 900 Comfort button panel

**DUST EXTRACTION EXHAUST SYSTEM**
> Integrated, isolated 2-stage cyclone dust extraction

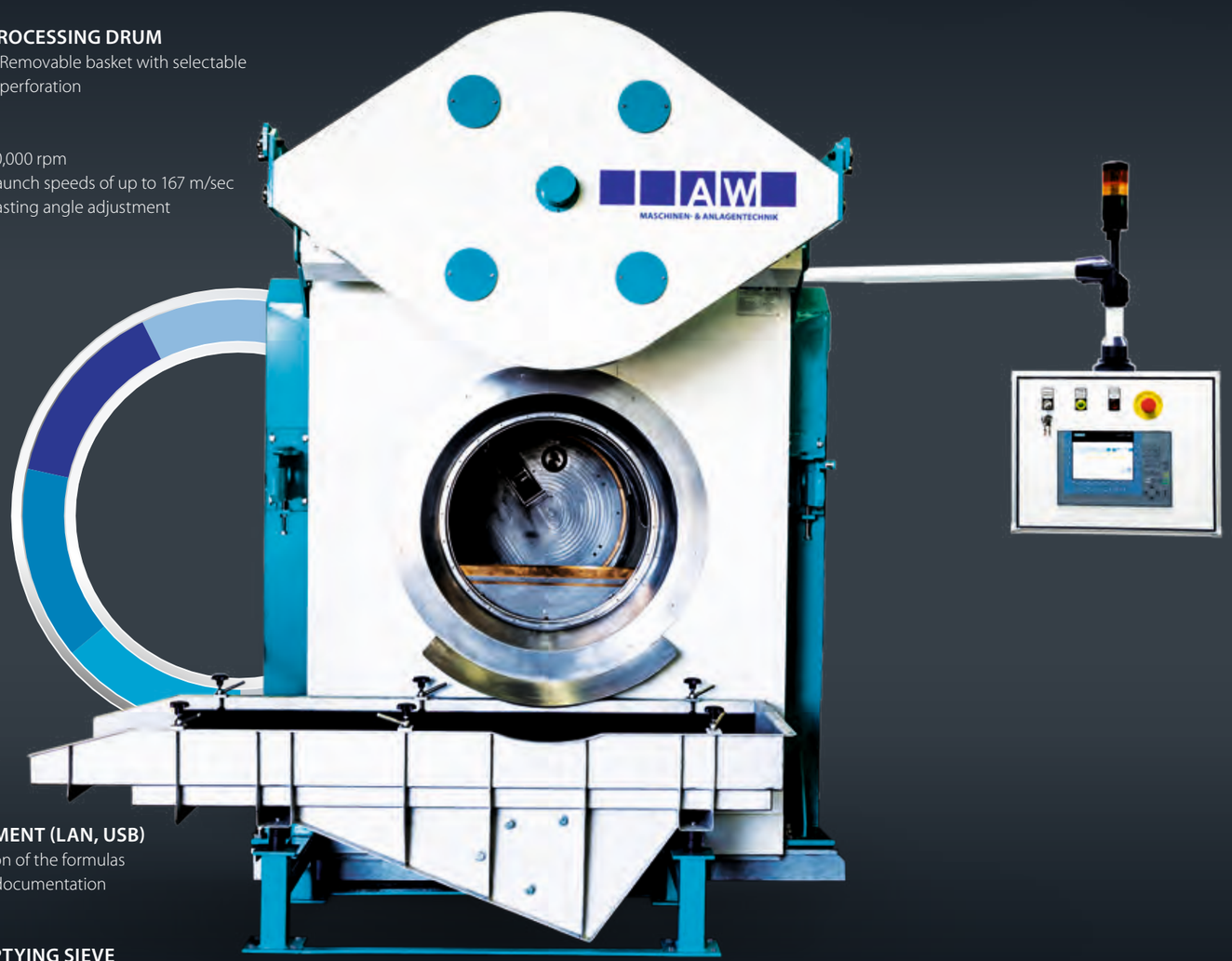
**MOULDED PART COOLING**
> Temperatures as low as -150

**INSULATION**
> 120 mm thick insulation cell

**GRANULATE CONVEYING**
> Steplessly adjustable vertical and horizontal spiral conveyor

**DATA MANAGEMENT (LAN, USB)**
> External protection of the formulas
> Complete batch documentation

**EMPTYING SIEVE**
> External sieve with vibration motor
> Changeable sieve inserts

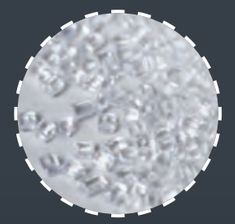



## OBJECTIVE

The AWS 60 is a media-blasting machine for the cryogenic deflashing of rubber or plastic moulded parts. The very well-insulated machine cell, in combination with 2-stage dust extraction, guarantees low nitrogen consumption with effective deflashing. Loading occurs fully automatically via a motor-operated door. Energy-efficient drives and high-quality materials, good media-blasting performance and thus short batch times, as well as low space requirements, are other features of the AWS 60.

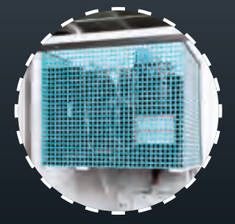
The S7-1500 controls, in combination with the button panel and barcode reader, allow for user-friendly operation of the system. The entry and saving or external saving of formula data records guarantee a high degree of reproducibility and security.

## SUSTAINABLE RELIABILITY



**Internal granulate sifting**

> Continuous separation of dust and residual flashing from the blasting media
> Blasting grain in the correct size and purity for effective abrasive media-blasting
> Sustainable, reproducible media-blasting performance even in multi-shift operation

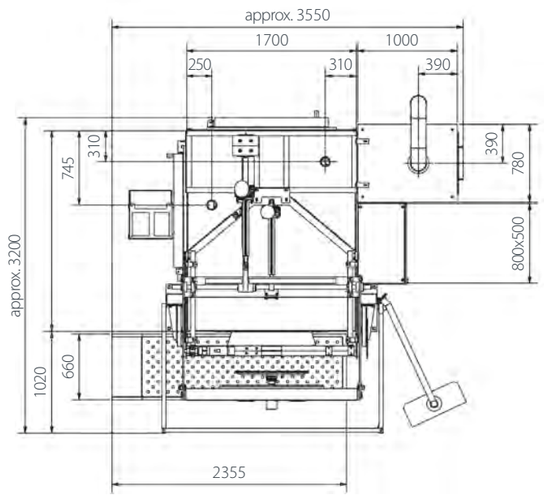


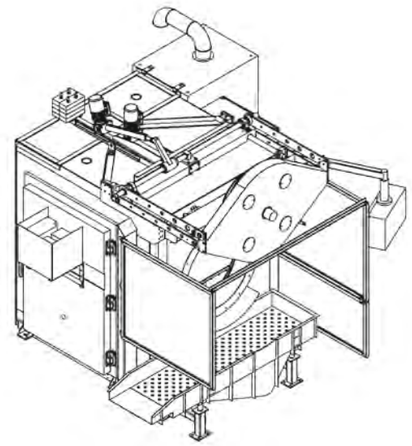
**Additional cooling**

> Cooling and absorbing of moisture within the machine
> Compensation for the air humidity which enters during the loading and unloading process
> Minimisation of the set-up and auxiliary process times for downtimes of more than 8 hours

## AWS 60 WITH FULLY AUTOMATED LOADING DOOR

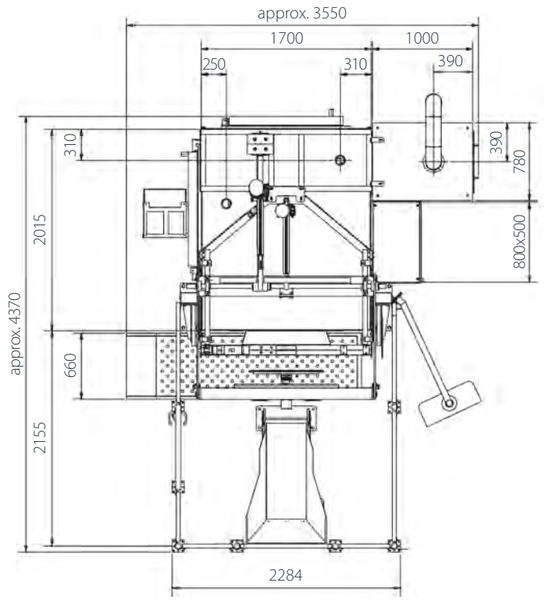
The motor-operated automatic loading door, in combination with the light gate provided, quickly moves between open and closed. It can consequently reduce set-up times in semi-automatic operation.

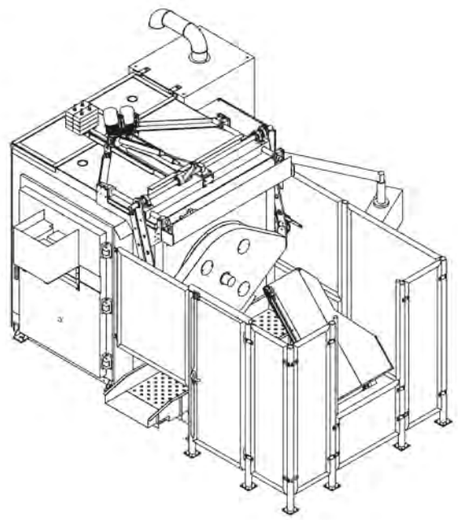


## AWS 60 WITH FULLY AUTOMATED LOADING DOOR AND LOADING

Fully automated operation of the machine can be implemented here. The moulded parts to be media-blasted are automatically fed into the machine via a conveyor belt system. Emptying after the end of the batch and refilling then occurs automatically. This can also be combined with upstream and downstream conveyor technology through to batch tracking by means of barcodes or RFID technology. In combination with the safety technology supplied, we naturally comply with all of the safety regulations here.





AW MASCHINEN- & ANLAGENTECHNIK

## TECHNICAL DETAILS FOR THE AWS 60 and AWS 60⁺

| | |
|---|---|
| Insulation | efficient stainless steel cryogenic cell with 120 mm thick walls, exterior powder coated in RAL9002, interior stainless steel |
| Access doors | left and back |
| Controls | Siemens S7-1500 with KP 900 Comfort button panel incl. barcode reader |
| Control cabinet positioning | as a unit with machines on floor palettes right |
| Process documentation | data management via LAN and/or USB |
| Batch volumes | up to 120 litres (AWS 60⁺: up to 150 litres) |
| Basket volumes | 310 litres (AWS 60⁺: 352 litres) |
| Basket geometry | cylindrical with roller rails |
| Basket speed | 5 – 30 rpm |
| Flywheel speed | 1.000 – 10.000 rpm |
| Blasting media launch speed | up to 167 m/sec |
| Blasting media | 0,5 – 1,5 mm polycarbonate |
| Internal sieving | two sieve inserts (0,5 – 0,75 mm PC // 1 – 1,5 mm PC) |
| Blasting media supply | steplessly adjustable vertical and horizontal spiral conveyor |
| Loading door | operated manually or automatically by an electric motor |
| Loading | swivelling conveyor belt |
| Dust extraction | integrated, isolated 2-stage cyclone dust extraction with service doors |
| Seals | low-wear metal alloy / special door seal |
| Compressed air supply | not required |
| Heat output | 1.900 Watts |
| Article memory | 4.000 items |
| Temperature regulation | PID regulator down to -150 °C |
| Construction | solid base plate incl. forklift slots |
| Weight | approx. 4.500 kg |
| Dimensions | 3.350 B x 4.200 D x 3.300 H (AWS 60⁺: Dimensions on request) |
| Electrical connection | 400/230/24 V/50 Hz/N/PE/3Ph/50A |
| Nitrogen input | 1/2", 4,5 bar |
| Exhaust | DN 150 |

## AWS 60 and AWS 60+ DETAILS

### DATA MANAGEMENT

Simple and secure data handling with integrated USB and LAN interfaces. Formulas can be called up simply and securely using the barcode reader.

### PROCESSING BASKET

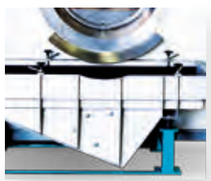
The basket can be swapped and a variety of basket perforations are therefore available. Tailored exactly to your requirements according to the moulded part sizes. Loading occurs manually or automatically through the fully automated loading door. The basket is automatically emptied onto the emptying sieve by means of the integrated roller rails.

### ACTIVE MEDIA-BLASTING ANGLE ADJUSTMENT

The patented active media-blasting angle adjustment allows the media-blasting operating area to be adjusted automatically within the processing basket.

### EMPTYING SIEVE

The external vibration sieve works with frequency-controlled modern vibration motor technology. This allows the supply and sieve speeds to be set optimally. As standard, the emptying sieve is single-level with a changeable sieve so you can respond to a variety of moulded parts. We can also offer customised multi-level emptying sieves.



MASCHINEN- & ANLAGENTECHNIK

# THE AWT CONCEPT: DEFLASHING WITHOUT MEDIA-BLASTING.

## SOLUTION-ORIENTED, FLEXIBLE AND RELIABLE:

Since it's ultimately all about the finished, flawless product, we build our drum deflashing machines exactly to your specifications. Of course, they're always energy efficient and user-friendly.


- Compact, process-optimised design
- Fully automated loading and emptying
- Innovative agglomerate management
- Various drum geometries
- Welded insulation cell with 120 mm of insulation
- LN2 direct spraying procedure allows for the shortest cooling times
- State-of-the-art forward-looking controls
- Modular structure, individual customisation possible
- Fully automated operation
- Multi-level emptying sieve with agglomerate return and residual flashing separation
- Conveyor system for automatic agglomerate feeding
- Integrated cyclone dust extraction and additional extraction

# AWT 300 // AWT 300+

**AWT 300**
**BATCH VOLUMES**
IN LITRES
300

**AWT 300+**
**BATCH VOLUMES**
IN LITRES
400




## DIE STANDARDS DER AWT 300

**BEARBEITUNGSTROMMEL**
> Variante wählbar
(zylindrisch oder eckig)

**STEUERUNG**
> Siemens S7-1500 mit Tastenpanel
KP 900 Comfort

**ABGASSYSTEM ENTSTAUBUNG**
> Integrierte, isolierte Zyklonentstaubung
> Zusatzabsaugung

**FORMTEILKÜHLUNG**
> Temperaturen bis -150 °C
> LN2-Direkteinsprühung

**ISOLIERUNG**
> 120 mm starke Isolierzelle

**BEISCHLAG-MANAGEMENT**
> Automatische Beischlagsrückführung
> Optimale Separierung

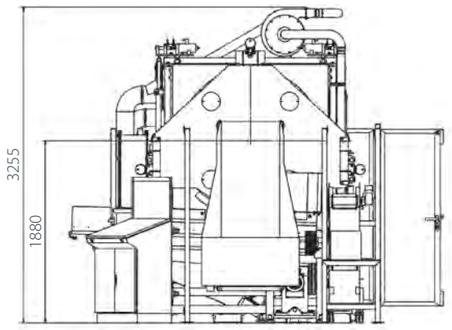
**DATENVERWALTUNG (LAN, USB)**
> Externe Sicherung der Rezepturen
> Lückenlose Chargendokumentation

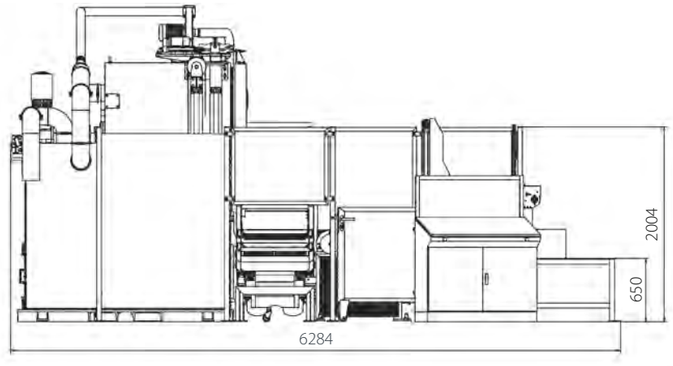
**ENTLEERSIEB**
> Externes Sieb mit Vibrationsmotor
> Austauschbare Siebeinsätze
> Mehrstufig

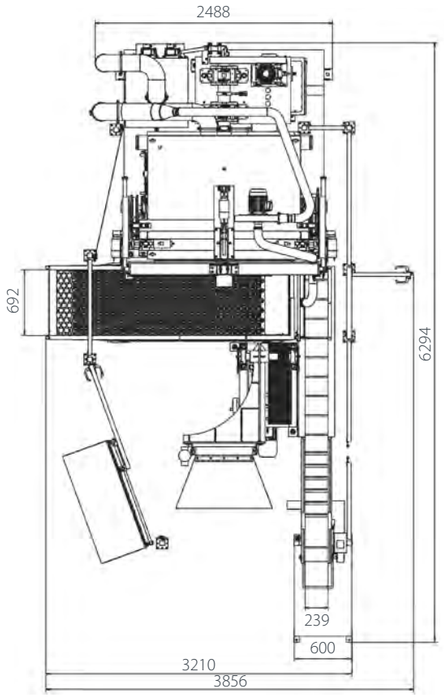
## ZIELSETZUNG

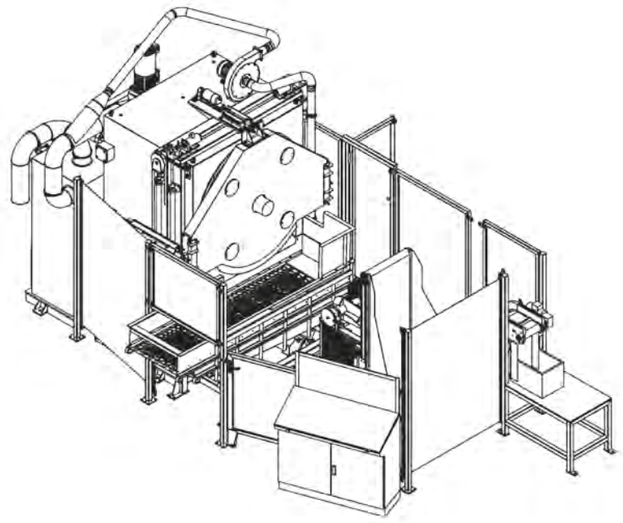
Die AWT 300 bietet eine optimale Lösung für die kryogene Trommelentgratung von Gummi- und PUR-Elastomer-Formteilen. Durch eine auf Ihr Produkt optimierte Trommelgeometrie und der innovativen LN2-Direkteinsprühung können hier in kürzesten Zeiten bei minimiertem Stickstoffverbrauch beste Entgratungsergebnisse erzielt werden. Hochwertig verarbeitete Materialien und eine sehr robuste Bauweise bieten dem Anwender ein Maximum an Sicherheit.

Die AWT 300 ist geeignet für große Volumen und wird durch Stahlkugelbeischlag zur Vorentgratung von Gummiformteilen oder zur Endbearbeitung von PUR-Elastomer-Bauteilen verwendet. Die S7-1500 Steuerung in Verbindung mit einem modernen HMI Tastenpanel und Barcodelesegerät ermöglicht eine bedienerfreundliche Handhabung der Anlage.



## TECHNICAL DETAILS FOR THE AWT 300 and AWT 300⁺

| | |
|---|---|
| Insulation | welded stainless steel cell with 120 mm PU foam insulation |
| Controls | Siemens S7-1500 with KP 900 Comfort button panel incl. barcode reader |
| Control cabinet positioning | as a console |
| Process documentation | data management via LAN and/or USB |
| Batch volumes | up to 300 litres (AWT 300⁺: up to 400 litres) |
| Drum volumes | 540 litres (AWT 300⁺: 950 litres) |
| Drum geometry | cylindrical or square with roller rails |
| Drum speed | 5 – 60 rpm |
| Loading door | operated manually or automatically by an electric motor |
| Loading | swivelling conveyor belt |
| Dust extraction | integrated, isolated cyclone dust extraction with service door |
| Seals | low-wear metal alloy / special door seal |
| Compressed air supply | not required |
| Heat output | 9.700 Watts |
| Article memory | 4.000 items |
| Temperature regulation | PID regulator down to -150 °C |
| Construction | solid base plate incl. forklift slots |
| Weight | approx. 3.500 kg |
| Dimensions | 2.900 B x 6.300 D x 3.300 H (AWT 300⁺: Dimensions on request) |
| Electrical connection | 400/230/24 V/50 Hz/N/PE/3Ph/50A |
| Nitrogen input | 1/2", 4,5 bar |
| Exhaust | DN 175 |

## AWT 300 and AWS 300⁺ DETAILS

### DATA MANAGEMENT

Simple and secure data handling with integrated USB and LAN interfaces. Formulas can be called up simply and securely using the barcode reader.

### PROCESSING DRUM

The overhung processing drum can be implemented as a cylindrical or square drum according to the customer's requirements. The solid mounting allows for maintenance-free operation of the drive system. The innovative door seal achieves the longest possible service life and optimal sealing of the processing area.

### LN2 DIRECT SPRAYING

The vacuum insulated and central liquid nitrogen direct spraying allows for the shortest cooling times and low nitrogen consumption.

### EMPTYING SIEVE

The external, multi-level vibration sieve works with frequency-controlled vibration motor technology. The moulded parts and residual flashing are separated efficiently thanks to the changeable sieve inserts. The agglomerate (steel balls) is separated automatically. Additional extraction carries dust-like residual flashing particles into the integrated cyclone.

### AUTOMATIC LOADING

The loading door is opened and closed at high speed by an electric motor. The moulded parts to be deburred are automatically fed into the machine via a conveyor belt system. Emptying after the end of the batch and refilling then occurs automatically. This can also be combined with upstream and downstream conveyor technology through to batch tracking by means of barcodes or RFID technology. In combination with the safety technology supplied, we naturally comply with all of the safety regulations here.

MASCHINEN- & ANLAGENTECHNIK

# THE AWW RANGE: WASHING AND DRYING.

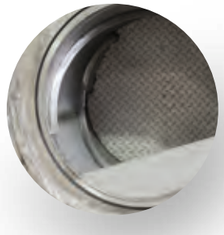
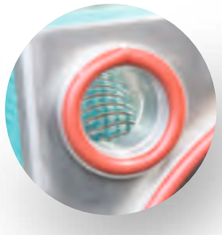

In order to fully cover the process chain for the manufacturing of rubber and plastic moulded parts, you can get modern and efficient washing and drying systems from us. Our washing machine design is based on tried and tested technology.

- > High pressure rinsing
- > Batch volumes from 20 to 40 litres
- > Water temperature from 20 to 60 °C
- > Drying at up to 90 °C
- > Drum speed max. 60 rpm
- > Removable basket system

MASCHINEN- & ANLAGENTECHNIK

# AWW 20

**BATCH VOLUMES**
IN LITRES
**20**

## THE STANDARD FEATURES OF THE AWW 20

**CONTROLS**
> Siemens S7-1500 with TP 700 Comfort touch panel

**WATER HEATING**
> Using a flow heater
> 20 °C – 60 °C, steplessly adjustable

**DRYING**
> High pressure ventilator and heat register
> 30 °C – 90 °C, steplessly adjustable

**HOUSING**
> Sound-insulating enclosure

**PROCESSING DRUM**
> Perforated removable basket

**DRUM SPEED**
> 7 – 60 rpm

**DATA MANAGEMENT (LAN, USB)**
> External protection of the formulas
> Complete batch documentation

## OBJECTIVE

The simple and robust construction offers an economical solution for washing and drying components here. And this with optimal process documentation. The S7-1500 controls, in combination with a modern HMI touch panel and barcode reader, allow for user-friendly operation of the system.

We also manufacture machines with individual batch volumes and moulded part requirements according to your remit.

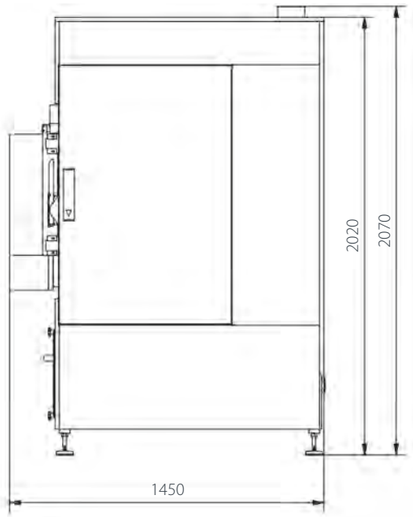
## CONSTANTLY CLEAN

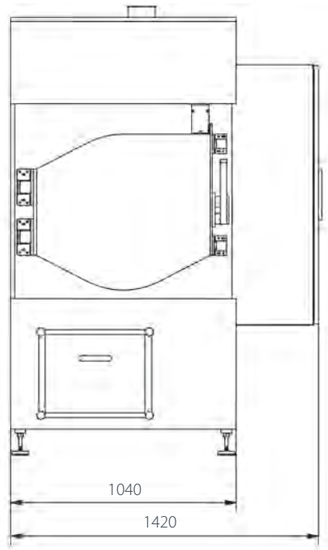
**High pressure rinsing**

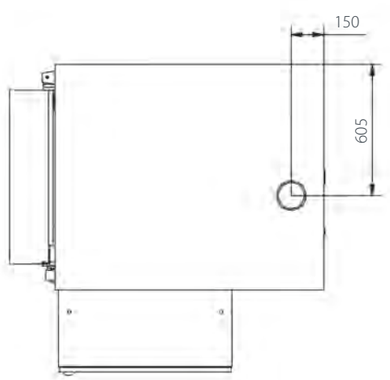
> High performance pendulum nozzle up to 200 bar
> Integrated high-pressure pump
> Low water consumption with optimal cleaning efficiency

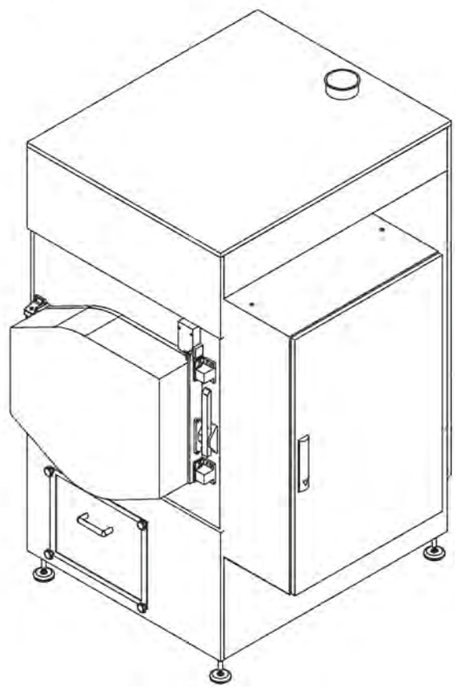
**Dosing pumps**

> 2 integrated dosing pumps freely programmable
> 2 reservoirs (e. g. washing agent, silicone oil, antistatic agent)



MASCHINEN- & ANLAGENTECHNIK

## TECHNICAL DETAILS FOR THE AWW 20

| | |
|---|---|
| Housing | sound-insulating enclosure |
| Controls | Siemens S7-1500 with TP 700 Comfort touch panel incl. barcode reader |
| Control cabinet positioning | integrated into the side of the housing |
| Process documentation | data management via LAN and/or USB |
| Batch volumes | up to 20 litres |
| Basket volumes | 84 litres |
| Basket geometry | cylindrical with roller rails |
| Basket speed | 7 – 60 rpm |
| High pressure rinsing | high pressure pendulum nozzle up to 200 bar |
| Feeding door | manual |
| Water temperature | 20 °C – 60 °C, steplessly adjustable |
| Drying temperature | 30 °C – 90 °C, steplessly adjustable |
| Dosing pumps | 2 dosing pumps incl. reservoirs (washing agent, silicone oil, antistatic agent, etc.) |
| Seals | low-wear sprung PTFE seal / special door seal |
| Compressed air supply | not required |
| Article memory | 4.000 items |
| Construction | solid base frame with levelling foot, suitable for forklifts |
| Weight | approx. 600 kg |
| Dimensions | 1.500 B x 2.200 D x 2.100 H |
| Electrical connection | 400/230/24 V/50 Hz/N/PE/3Ph/50A |
| Water connection | 1/2“ |
| Waste water connection | 2“ |
| Exhaust | DN 120 |
| Heat output | 16 kW |

## AWW 20 DETAILS

### DATA MANAGEMENT

Simple and secure data handling with integrated USB and LAN interfaces. Formulas can be called up simply and securely using the barcode reader.

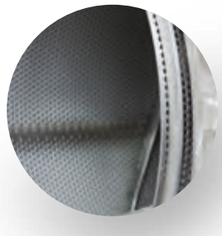
### PROCESSING BASKET

The basket can be swapped and a variety of basket perforations are therefore available. Tailored exactly to your requirements according to the moulded part sizes. Loading occurs manually via the manually operated exterior door. The basket is automatically emptied by means of the integrated roller rails.

MASCHINEN- & ANLAGENTECHNIK

# AWW 40

**BATCH VOLUMES**
IN LITRES
**40**




## THE STANDARD FEATURES OF THE AWW 40

**CONTROLS**
> Siemens S7-1500 with TP 700 Comfort touch panel

**WATER HEATING**
> Using a flow heater
> 20 °C – 60 °C, steplessly adjustable

**DRYING**
> High pressure ventilator and heat register
> 30 °C – 90 °C, steplessly adjustable

**HOUSING**
> Sound-insulating enclosure

**PROCESSING DRUM**
> Perforated removable basket

**DRUM SPEED**
> 7 – 60 rpm

**DATA MANAGEMENT (LAN, USB)**
> External protection of the formulas
> Complete batch documentation

## OBJECTIVE

The simple and robust construction offers an economical solution for washing and drying components here. And this with optimal process documentation. The S7-1500 controls, in combination with a modern HMI touch panel and barcode reader, allow for user-friendly operation of the system.

We also manufacture machines with individual batch volumes and moulded part requirements according to your remit.

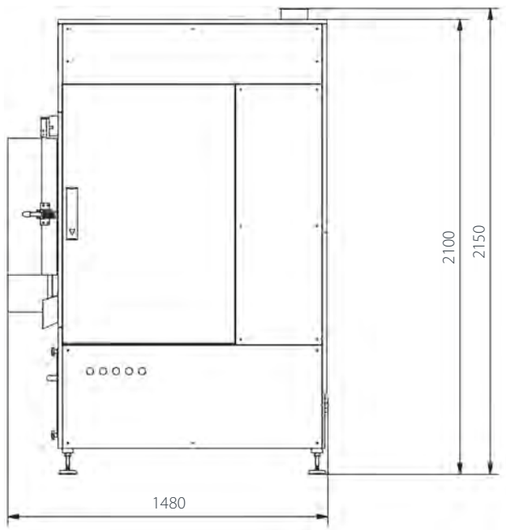
## CONSTANTLY CLEAN

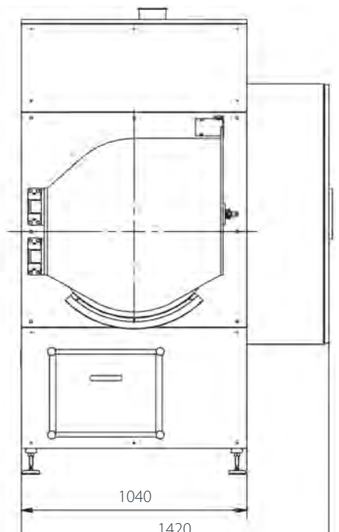
**High pressure rinsing**

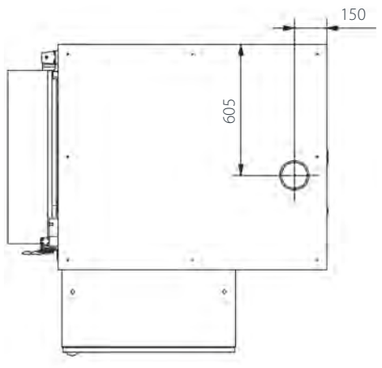
> High performance pendulum nozzle up to 200 bar
> Integrated high-pressure pump
> Low water consumption with optimal cleaning efficiency

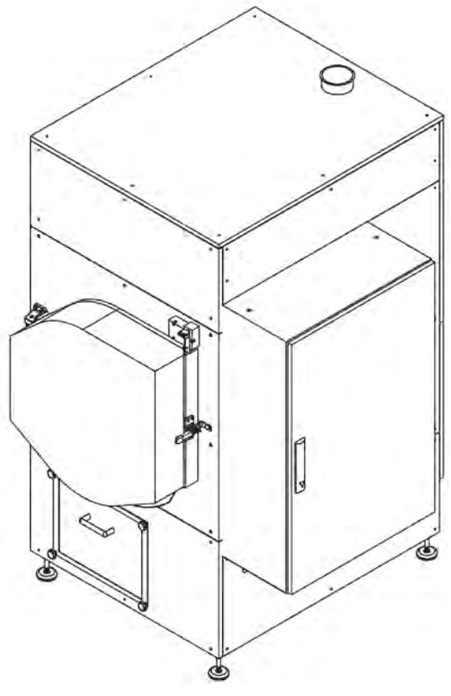
**Dosing pumps**

> 2 integrated dosing pumps freely programmable
> 2 reservoirs (e. g. washing agent, silicone oil, antistatic agent)



MASCHINEN- & ANLAGENTECHNIK

## TECHNICAL DETAILS FOR THE AWW 40

| | |
|---|---|
| Housing | sound-insulating enclosure |
| Controls | Siemens S7-1500 with TP 700 Comfort touch panel incl. barcode reader |
| Control cabinet positioning | integrated into the side of the housing |
| Process documentation | data management via LAN and/or USB |
| Batch volumes | up to 40 litres |
| Basket volumes | 146 litres |
| Basket geometry | cylindrical with roller rails |
| Basket speed | 7 – 60 rpm |
| High pressure rinsing | high pressure pendulum nozzle up to 200 bar |
| Feeding door | manual |
| Water temperature | 20 °C – 60 °C, steplessly adjustable |
| Drying temperature | 30 °C – 90 °C, steplessly adjustable |
| Dosing pumps | 2 dosing pumps incl. reservoirs (washing agent, silicone oil, antistatic agent, etc.) |
| Seals | low-wear sprung PTFE seal / special door seal |
| Compressed air supply | not required |
| Article memory | 4.000 items |
| Construction | solid base frame with levelling foot, suitable for forklifts |
| Weight | approx. 660 kg |
| Dimensions | 1.500 B x 2.300 D x 2.200 H |
| Electrical connection | 400/230/24 V/50 Hz/N/PE/3Ph/50A |
| Water connection | 1/2“ |
| Waste water connection | 2“ |
| Exhaust | DN 120 |
| Heat output | 16 KW |

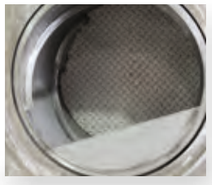
## AWW 40 DETAILS

### DATA MANAGEMENT

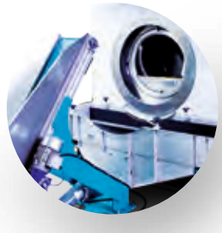
Simple and secure data handling with integrated USB and LAN interfaces. Formulas can be called up simply and securely using the barcode reader.

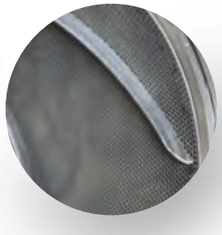
### PROCESSING BASKET

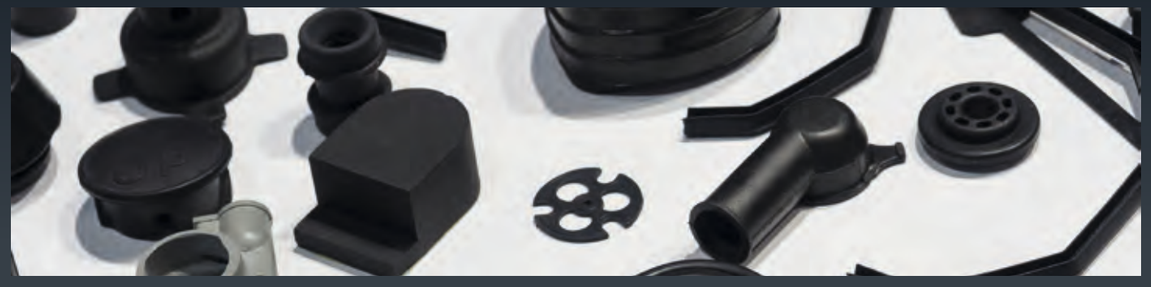
The basket can be swapped and a variety of basket perforations are therefore available. Tailored exactly to your requirements according to the moulded part sizes. Loading occurs manually via the manually operated exterior door. The basket is automatically emptied by means of the integrated roller rails.



# DETAILS ABOUT THE PROCESS OF CRYOGENIC DEBURRING





## REFRIGERANT

As a rule, liquid nitrogen is used as a refrigerant, which boils at -196°C (77 K) in this aggregate condition. The clear, colourless liquid has a density of 807 g/l at the boiling point. The label for liquid nitrogen is LN.

The liquid nitrogen is sprayed onto the components to be processed, via nozzles in the processing area. Due to a temperature sensor in the processing area, and an upstream liquid nitrogen valve, the temperature is regulated in there.

The liquid nitrogen is provided by an appropriately insulated tank. The expansion rate from liquid to gaseous state is 1:691. This means that corresponding excess pressure occurs in the processing area. The use of liquid nitrogen as a refrigerant has proven itself in practice, as it is simple and field tested – and therefore can be provided cheaply.

Theoretically, only the burrs should be cooled with the refrigerant, in order to be able to separate them mechanically. In practice however, the components are completely cooled, particularly in the edge zone. The brittleness of most materials increases with the falling temperature.

## PROCESSING AREA

In the processing area, round and polygonal drums and alternative belt troughs are used. Here, the components are cooled, mixed and blasted.

The mixing serves to feed the refrigerated components in the working direction of the blasting medium. Also, due to the mixing, a relative movement of the components takes place, where abrasion of the burrs also occurs.

The drums are the perforated variants, to transport the abrasion (burr residues) and the blasting medium out of the processing area. At this point, the expansion rate of the liquid nitrogen must also be considered. The gas that develops here must be dissipated. This occurs through the perforated processing drum. In the processing drum, the components are conveyed into an area, via roller rails, during the rotating movement, where the refrigerated components are transported in the working direction of the blasting medium. In doing so, the components are mixed.

At the same time, the components are transported out of the processing drum with these roller rails, after processing, if it is horizontally aligned. With the process parameter of speed of the processing drum, the rolling behaviour and the optimum mixing of the components must be considered. According to the machine structure, it will be blasted into the drum, or blasted through the outer drum wall, made of wire mesh.

## BLASTING MEDIUM

With cryogenic deburring, steel shot or polycarbonate granulate is used as a blasting medium. With steel shot, a granulation of 0.3–0.4mm is used. Due to the high specific weight of 7.85 kg/ $dm^3$, a very high kinetic energy can be achieved here.
Due to the steel abrasion, the parts can be easily soiled, which is why washing is necessary.

Furthermore, the wear to the components guiding the blasting medium (screws, blasting wheel etc.) is very high, and wear protection materials such as hard manganese steel are used. However, these also only have a limited service life.

Polycarbonate granulate can be acquired in various forms (Pentacorn, cylindrical, cuboid) and the following granulations are used:
**0.3 mm · 0.5 mm · 0.75 mm · 1 mm · 1.5 mm**

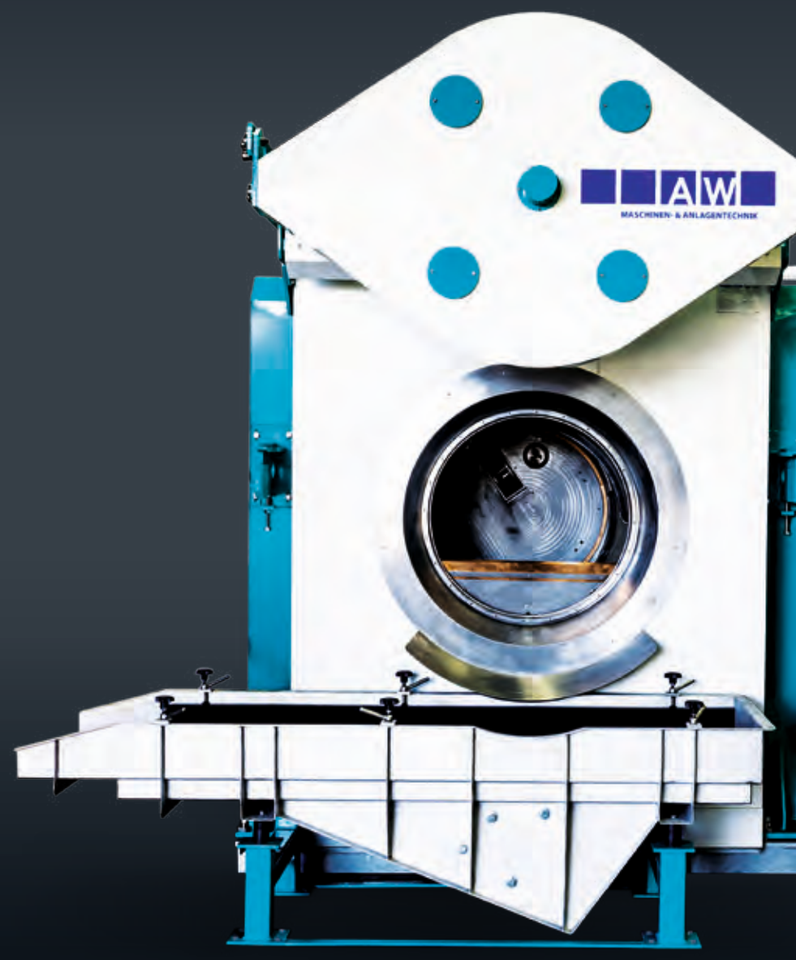
According to the burr composition and required deburring quality, these different granulates are used. With smaller granulates, a better deburring with less residual burrs can be achieved.

Polycarbonate has a very low moisture absorption, a density of 1.02 kg/dm° and a good low temperature resistance of up to -150 °C.

The system wear to the machine is very low with polycarbonate. In the deburring system, residual burrs are cleaned off the revolving granulate in a two step vibration screen. Smaller granulate particles (wear) are also removed here. Impact speed, blasting distance, blasting impact angle and blasting medium throughput, coverage level and exposure time are influences on the blasting result.

## BLASTING WHEEL

The acceleration of the blasting medium can occur pneumatically via a gas flow (mostly pressurised air), and mechanically with a blasting wheel. The speed of the blasting wheel determines the kinetic energy of the granulate.



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