

## RAKU-PUR® Spray Moulding Technology

The manufacturing process for multi-layer components

- 1. Construction of an open mould**
- 2. The first spraying: Creation of the compact outer skin**
  - » The application of the material can be done using either a high or low pressure process
  - » The material is ideally sprayed using a robot technology
  - » The sprayed skin has an optically beautiful, very smooth surface
    - » Easy to clean
    - » Food safe
    - » Light-stability is adjustable
  - » The curing takes place in less than 1 minute
  - » The layer thickness is between 1 – 2 mm
- 3. The second spraying: mechanical strengthening of the outer skin**
  - » The application of the strengthening layer can be done in a low or high pressure process
  - » Simultaneous spraying of fibreglass or natural fibres is possible
  - » The material also doesn't drip when spraying on vertical surfaces
  - » The high impact resistance of the material ensures the protection of the outer sprayed skin
  - » The curing is finished in less than 1 minute
  - » The layer thickness is between 5 – 15 mm
- 4. Optional: The backfilling with rigid foam**
  - » The material can be foamed into the closed mould using a high pressure mixing-head
  - » This ensures high mechanical stability, good heat insulation and an ideal, light-weight construction
  - » The rigid foam has an excellent adhesion to the previous layers
- 5. Demoulding or deflashing the component**

## RAMPF Giessharze worldwide.



**RAMPF Group Japan, K. K.**  
 Oriental Shin-Osaka Building 7F  
 Nishinakajima 7-1-26, Yodogawa-ku  
 Osaka, 532-0011, Japan  
 T +81 (0) 6 6101-0769  
 F +81 (0) 6 6101-0770  
 E info@rampf-group.jp

**RAMPF Group, Inc.**  
 P.O. Box 930 352  
 50714 Century Ct.  
 Wixom, Mi 48393, USA  
 T +1 (248) 295 0223  
 F +1 (248) 295 0224  
 E info@rampf-group.com  
 www.rampf-group.com

**Service worldwide:**  
 Further sales partners can be found under  
[www.rampf-giessharze.com](http://www.rampf-giessharze.com)

**RAMPF (Taicang) Ltd.**  
 Taicang Economy Development Area  
 No. 8 North Lou Jiang Road,  
 Taicang 215400, Jiangsu Province  
 P.R.China  
 T +86 (0) 512 5328 5051  
 F +86 (0) 512 5328 5060  
 E info@rampf-group.com.cn  
[www.rampf.com.cn](http://www.rampf.com.cn)

Headquarters  
**RAMPF Giessharze GmbH & Co. KG**  
 Albstr. 37  
 D-72661 Grafenberg

T +49 (0) 7123 9342-0  
 F +49 (0) 7123 9342-2444  
 E info@rampf-giessharze.de  
[www.rampf-giessharze.de](http://www.rampf-giessharze.de)



## RAKU-PUR® Spray Moulding Technology

Efficient and highly flexible process for the production of complex large components



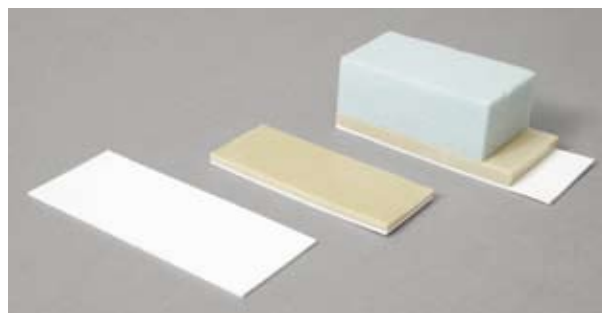
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Picture: Fahr-Deutz

## RAKU-PUR® Spray Moulding



New technology –  
Highest efficiency

### The technology

Spray Moulding is a new technology for cost-effective production of large and complex parts. Due to the low investment in machines and moulds, the process is well suitable for the production of small to medium amounts of parts.

The polyurethane system is sprayed onto a structural part or into an open mould applying a high or low pressure process. The application can be multilayered. The thickness of the layers can vary from very thin to thick and can be compact or foamed. The mould-near spraying opens new possibilities for styling and ensures efficient material use with low overspray.






The layers can be mechanically strengthened by spraying the material together with fibre glass fibres or by inserting natural fibre mats or lamellae or honeycomb structures. In this way the material characteristics are optimally adapted to the required characteristics.

### Your advantages with RAKU-PUR Spray Moulding:

- » Cost optimization due to short demould times and low amount of waste (overspray)
- » No labour intensive thermal post processing and hand laminating
- » Required time for the process is short: Depending on the number of layers the process varies from only a few minutes to maximum 20 minutes
- » Use of natural fibres from renewable raw materials possible
- » Effective and cost-efficient method due to the spraying in open mould halves or onto construction parts and curing under environmental conditions
- » Cutting unit in the mixing head enables the use of various lengths of fibreglass
- » Cost efficient substitution of classical fibreglass, strengthened polyester laminates or epoxy resins
- » The solvent and styrol free technology has ecological advantages and guarantees improved work place hygiene
- » The movement of the spraying-head is controlled manually or by robot

## RAKU-PUR® Spray Moulding Technology

Your application – Your advantages

					
<b>Application</b>	Connecting parts for sewage pipes like e.g. » shaft lining » shaft base	Large constructionparts in small series, e.g. motor bonnets for land machines	Isolation panels/ sandwich elements with backfilled rigid foam	Strengthening of deep drawn components like » Bath tubs » Shower tubs	Strengthening of light components: » Trunk floors » Spare wheel covers » Hat racks » Light furniture
<b>Requirement</b>	» Hydrolytical and chemical resistance » High mechanical strength (impact resistance) » Good adhesion characteristics	» Hydrolytical and chemical resistance » High mechanical solidity (impact resistance) » Light- and temperature-resistant » Must be easy to clean	» Good insulation effect » Good adhesion of the individual layers to each other » Smooth surface » Light resistant	» High temperature-resistance » Good bonding to acrylic resins/ABS » High mechanical strength	» Weight reduction » Mechanical strength » High load bearing capacity
<b>Solution &amp; Advantages</b>	<b>Multi layer system:</b> 1st layer: closed compact surface effects resistance to sewage and media 2nd layer: Strengthened with fibres, results in high impact resistance » Time savings: The layers can be applied "wet-on-wet" » Size of the construction parts is individually adjustable » Even low numbers of pieces can be produced cost-efficiently	<b>Two layer system:</b> 1st layer: closed compact surface effects resistance to water and oil, is light-stable and easy to clean 2nd layer: Strengthened with fibres, results in high impact resistance » Time savings: The layers can be applied "wet-on-wet" » Size of the construction parts is individually adjustable » Even low numbers of pieces can be produced cost-efficiently	<b>Three layer system:</b> 1st layer effects a smooth, closed surface and is light-stable and food safe 2nd layer effects high thermal and mechanical stability 3rd layer of rigid foam effects good insulation » All three layers are sprayed into one mould » Fast curing and therefore short cycle times	<b>Strengthening layer:</b> » High mechanical resistance » High rigidity » Cost-efficient	<b>Strengthening layer:</b> » High mechanical resistance and load bearing capacity through strengthened elements » Use of natural fibres obtained from renewable raw materials possible » Easy construction method due to the use of honeycomb structures