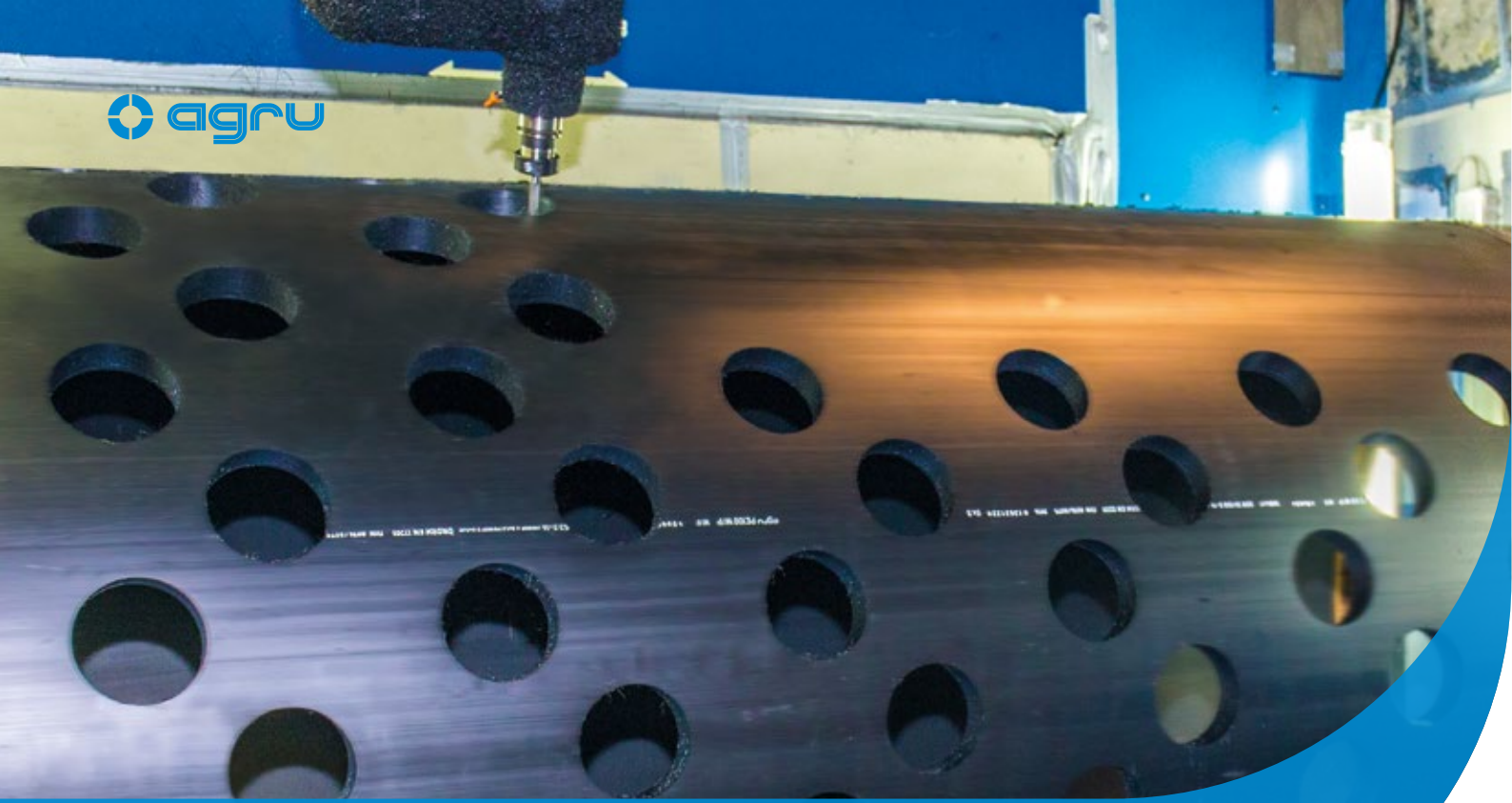


CUSTOM PARTS

MACHINED
FOR A PERFECT FIT





The Plastics Experts.

AGRU realises custom-tailored individual solutions that are among the best in the industry, both in economical and technological terms. The broad range of available thermoplastics, the product expertise of our application engineers, our high-quality production, and not least our global logistics network make AGRU your best partner for sophisticated plastics engineering.

The AGRU success story has been unfolding now for around seven decades. Founded back in 1948 by Alois Gruber senior, nowadays the company is one of the world's most important single-source suppliers for piping systems, semi-finished products, concrete protection liners and lining systems made from engineering plastics. Our ability to supply everything from a single source sets us apart. We use only top-grade thermoplastic polymers as our raw materials. When it comes to application-technical consulting, we are your best partner in the field.



ISO 9001 certificate



ISO 14001 certificate

Quality

At AGRU, customer satisfaction comes first. Technical consultations, training courses, welding instruction and expert supervision on site are essential parts. The AGRU quality assurance system is compliant with ISO 9001:2008 and its environmental management system fulfils ISO 14001:2004. This in turn ensures that the products comply with international norms, as monitored and evaluated on an ongoing basis by independent testing agencies standards.

The start-to-finish attention to quality ensures that the products meet and beat the strictest technical specifications, providing safe operation within gas, water and wastewater infrastructures.

CUSTOMIZED PARTS

Tailor-made plastics engineering

Our most important product is customer satisfaction. That's why we develop and fabricate individual solutions that provide our customers with a real economical and technological advantage. The first-rate AGRU quality is also the standard even for the most complex components and forms.

Tailor-made solutions

Tailored entirely to the specific requirements of your business

After an initial consultation with our plastics experts, they develop the custom part

- for any geometry, dimensions and pressure load
- precisely tailored to fulfil the requirements of the project
- in flawless technological execution in compliance with applicable standards

Exceptional variety of materials

Individual choice of material according to your needs

The best material for any requirement

- PE, PP, PVDF, ECTFE, FEP, PFA are available
- from economical PE to high-performance PFA

High economic efficiency

Cost-effective fabrication of technically sophisticated components

Engineering from the best in the industry

- provides great flexibility thanks to in-house toolmaking
- for robust solutions that endure years of continuous operation

One stop shopping

Application consulting, specific design and production

Consideration of the specific situation and standards

- flow analyses ensure optimal hydraulic properties
- for perfect operation and compatibility with AGRU products

High production quality

Semi-finished products and finished parts from one factory

A company certified according to ISO 9001 und ISO 14001

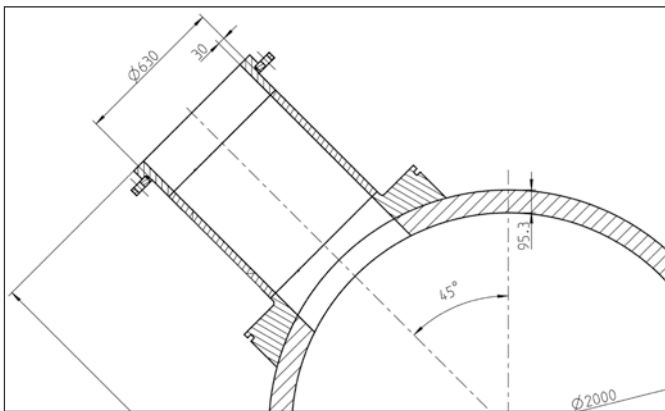
- that produces all semi-finished and intermediate products itself
- with state-of-the-art machines and 50 years of experience with plastics



From the idea to delivery

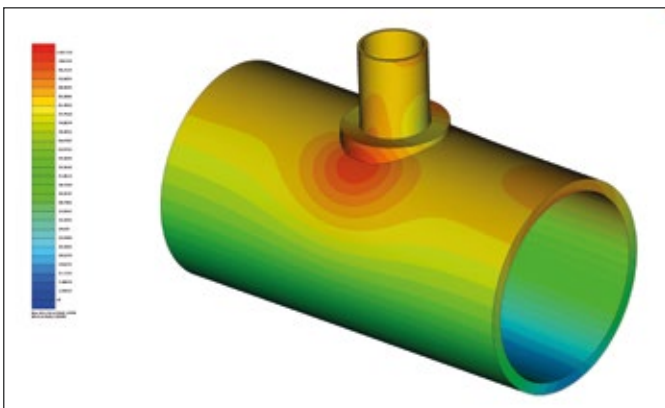
Consulting

AGRU plastics experts always seek the most economical solution and provide customers with professional advice in preliminary consultation. Our comprehensive, international project experience, our expert knowledge built up over more than 50 years, and our highly qualified plastics engineers work together to make each project a success.



Engineering

AGRU application engineers plan and calculate technically and economically optimised components. In the process, AGRU takes all applicable standards into consideration and beyond that also performs hydrodynamic component analysis and calculations. Our extensive practical experience plays a significant role in achieving perfect results.

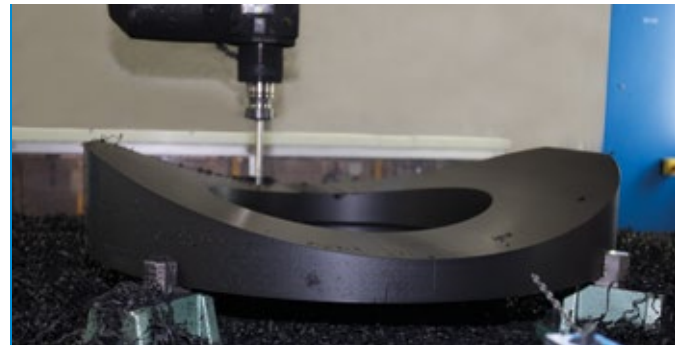


Design

AGRU's application engineering experts analyse the specific project requirements and create a 3D design of the technically and economically optimised solution. With the finite elements method the stress distribution inside the components is simulated. When a positive result has been achieved, material is allocated and fabrication commences on CNC machines.

Mechanical processing

From cutting and machining the material all the way to the finished component, AGRU fabricates all elements out of the chosen material in top quality and within very narrow tolerances. All necessary drilling, turning, milling and welding operations are performed with state-of-the-art machines. Our in-house tool-making provides the necessary flexibility for extrusion and injection moulding.



Welding

Whether butt welding, electrofusion, socket fusion, hot gas welding, extrusion welding or infrared welding, AGRU has helped to develop the various welding methods. For more than 50 years, joining thermoplastics has been one of the core competencies of highly qualified and certified plastics processing engineers.



Efficient logistics

AGRU manages the complex logistics chain down to the last detail. Efficient worldwide logistics services and user training ensure the maximum customer benefit. The plastics experts even provide just-in-time delivery around the globe.



Materials

Polyethylene (PE 100 / PE 100-RC)

PE 100 is the most economical solution when it comes to the safe transportation of gas, water or sewage. Because of its good resistance to chemicals, radioactivity and ultra-violet radiation, combined with high flexibility, low density and a relatively low material price, PE is the ideal solution for many applications. PE 100-RC material is an advanced development representing state-of-the-art material technology. It achieves an enormous increase in resistance to stress-induced cracking and point loads in comparison to conventional PE 100. Upon request, AGRU will fabricate the complete component out of PE 100-RC.



Polypropylene (PP)

PP is the best material for industrial applications at higher temperatures. Greater stiffness and mechanical strength, as well as increased creep rupture strength compared to HDPE, make use in applications up to 100 degrees Celsius possible. Its chemical resistance is comparable to that of PE 100.



High-end materials

PVDF

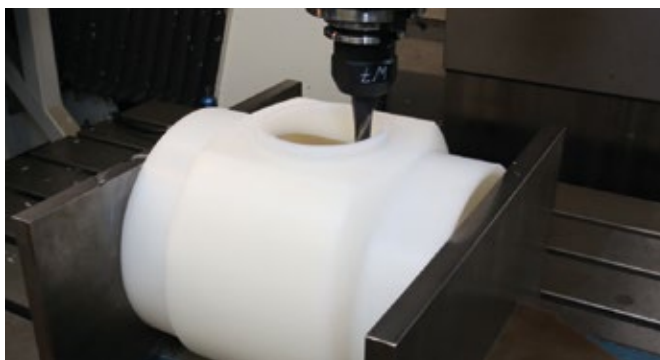
AGRU PVDF is a high crystalline, non-reinforced plastic that combines good mechanical, thermal and electrical properties with excellent chemical resistance. The high purity and surface quality of the components make it the ideal material for high-end applications in the semiconductor, pharmaceutical, life science and photovoltaic industries.

The products can also be produced in high-purity quality or with conductive properties.



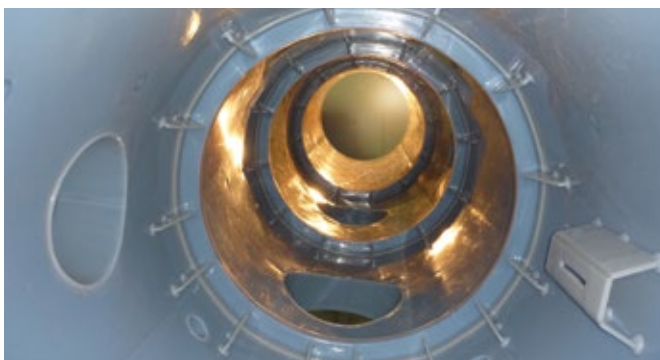
ECTFE

ECTFE possesses a unique combination of properties that are the result of its chemical structure – a copolymer with ethylene and chlorotrifluoroethylene arranged alternately. ECTFE demonstrates excellent resistance against the corrosive influence of heat, strong radiation and weathering. The material has a high impact resistance and reveals almost no property changes across a broad range of temperature, making it particularly well-suited for demanding industrial applications.



FEP

The fully fluorinated PFA and FEP plastics are also a new addition to the AGRU product range. They achieve the highest corrosion resistance among the various plastic materials. FEP ensures reliable performance over the enormous range of temperatures between -190°C and +205°C, and can therefore be used in numerous industrial applications.



PFA

PFA is the highest-grade plastic in the AGRU portfolio. It is suitable for a broad spectrum of applications due to its resistance against almost any medium and temperature employment range between -190°C and +260°C. It can also be manufactured in high-purity quality for ultra-pure water applications.



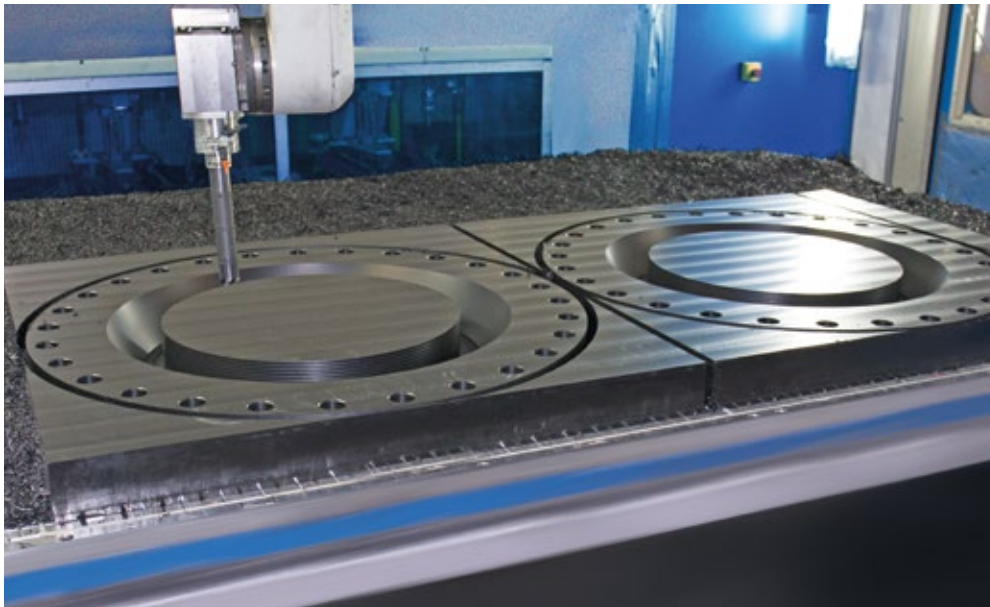


Production spectrum

Pipes and fittings

AGRU produces pipes and customized fittings out of the following materials and with these dimensions:

PE: OD 20 mm – OD 2500 mm	PVDF: OD 20 mm – OD 400 mm
PP: OD 20 mm – OD 1600 mm	ECTFE: OD 20 mm – OD 160 mm



Semi-finished products

AGRU semi-finished products for custom parts are available in the following types:

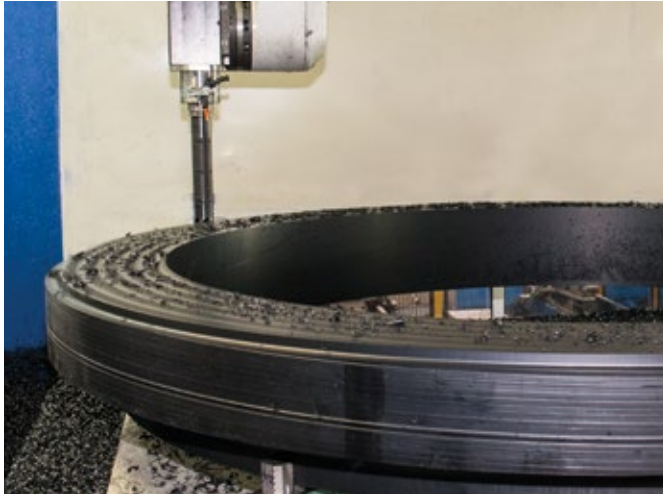
Sheets:

PE/PE 100-RC: 20–120 mm
PPH/PPR: 20–120 mm
PVDF: 20–50 mm
ECTFE: 2–30 mm
PFA: 1.5–20 mm

Round bars:

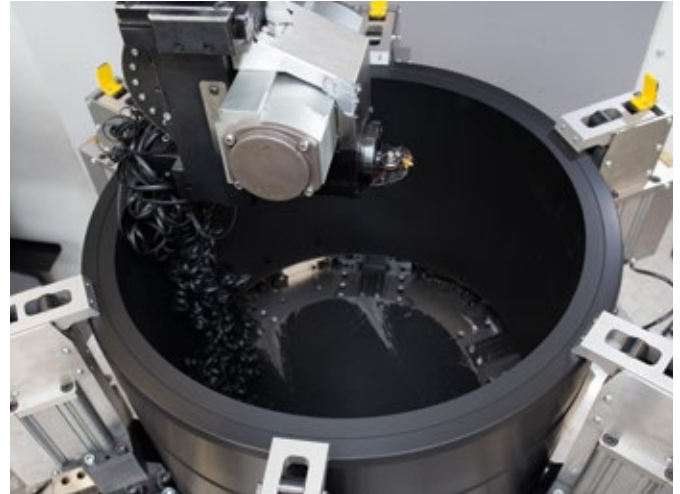
PE 100-RC/PPR: 15–640 mm
PVDF: 20–325 mm
ECTFE: 25–65 mm
PFA: 20–100 mm

Mechanical processing



3 and 5-axis CNC milling machines

Round parts up to 2600 mm diameter.
Maximum travel distance 3000 x 2600 x 2000 mm.



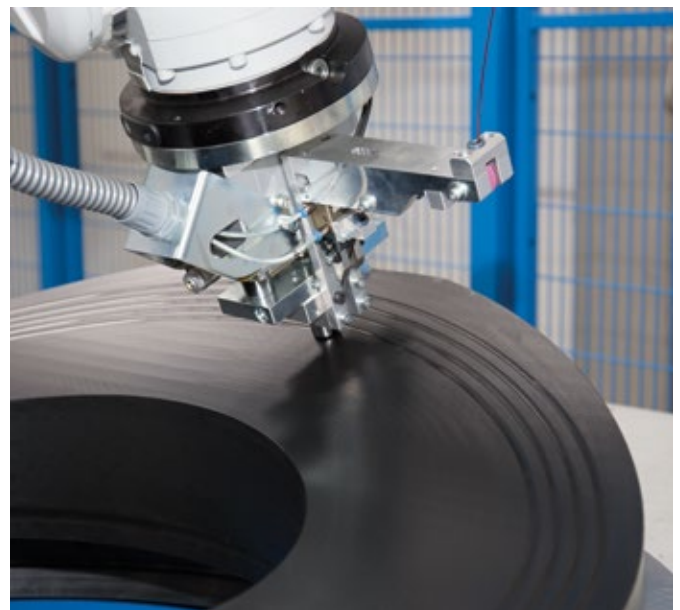
CNC turning machines

Round parts up to 1600 mm diameter.
Maximum travel distance 1700 x 700 mm.



High-performance large pipe saws

For cutting off sections of large pipes up to OD 2500 mm.
Diagonal cuts of various angles are possible.



CNC production machine for heating wire insertion

For electro-socket fittings up to OD 1600 mm.



Component with OD 1600 mm for a seawater intake

The custom components made of PE 100 were prefabricated and delivered to the construction site. Thus the construction could be installed reliably and on schedule.

References



Diffusor OD 2000 mm

The heated cooling water is returned to the ocean. In order to prevent any impairment to the sea life, it flows out of a diffusor in measured amounts. To this end, topload saddles were welded on top of the large SDR 21 pipe with an OD of 2000 mm at AGRU, and thus delivered prefabricated and ready for quick installation to the construction site.



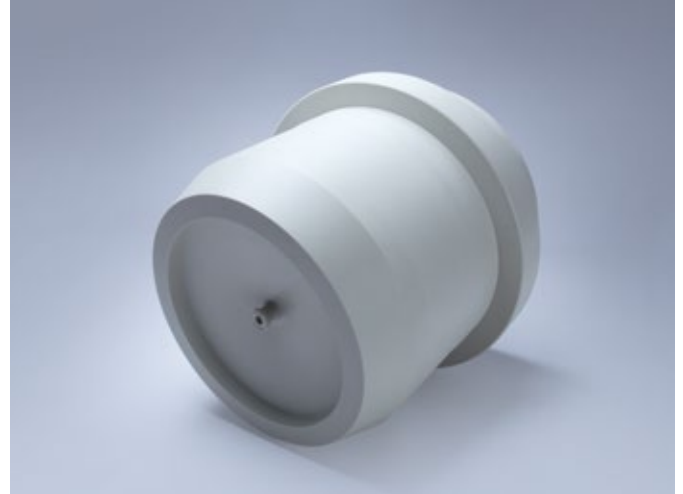
Segmented fittings for large pipes

Segmented fittings are also available for large pipes. For example, bends with all radii and diameters needed for the project can be fabricated to the exact millimetre and shipped per just-in-time delivery to any location.

Machined fittings



PE 100-RC round bar material is machined to create fittings that fully meet pressure class requirements.



AGRU created this highly complex filter housing by milling it out of a PP round bar.

Fluoroplastics

Upon request, AGRU also fabricates custom fittings out of PFA, PVDF and ECTFE fully and partially fluorinated plastic materials. Thanks to this broad range of materials, we can provide the ideal material for any application.





The Plastics Experts.

Your distributor

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