**Classification of thermoplastics compression moulding**

1. Fibre manufacturer
2. Textile manufacturer
3. Manufacturer of semi-finished products
4. Thermocuring
5. Moulding
6. Testing, joining, surface treatment
7. Recycling

The industrialisation of processes for the mass production of fibre-reinforced plastics (composites) has begun. The focus is on resin transfer moulding (RTM) and compression moulding processes (long-fibre-reinforced compounds, prepreg, organic sheet, etc.) for surface structures and structural components.

Typical applications for thermoplastic compression moulding are components for aircraft and car manufacturing that have to be both light and stable. However, the thermoplastic matrix is such that the components cannot normally be exposed to high temperatures.

The basic principle of the entire process is the separation of the impregnation process during composite manufacture from the moulding process in the press.

When forming the semi-finished product, which comes in sheets, machinery manufacturers can draw on a wealth of experience from the conversion of conventional plastics. They must however take the changed properties, especially flow and drooping behaviour, into account if they are to obtain high-quality components.

The cycle time for thermoplastic compression moulding is determined primarily by the heating and cooling time of the thermoplastic. All other processes can be accelerated e.g. using appropriate forms of automation.

**Process characteristics:**
- Complex three-dimensional components possible
- Semi-finished products can be stored indefinitely at room temperature
- Relatively short cycle times
- Geometry limited by mouldability of the semi-finished product
- Good surface quality on both sides (depending on tool)
- Finishing (cutting, edge processing) required, but some may be integrated into the press
- Components easy to weld
- Conversion of high temperature thermoplastics (e.g. PEEK) for high operating temperatures relatively expensive
- Sophisticated plant technology (even sheet warming, handling of warmed sheet, moulding press, etc.)
- Manufacturing may be automated
- High investment costs for high level of automation

**VDMA Forum Composite Technology**

The Forum Composite Technology is made up of nine VDMA associations bringing together machinery manufacturers’ skills in the conversion of fibre composites. As central contact point for the industry, the forum is the interface to all firms, associations and institutes involved in the manufacturing or conversion process and the application of composites, offering all partners a platform for cross-technology exchanges.

**The Forum is chiefly concerned with:**
- Markets and customers: cooperation and exchange between associations, clusters and other customer-industry organisations
- Exhibitions: as sponsor of the COMPOSITES EUROPOLME, the forum is establishing an important trade fair in Germany
- Understanding the process: fostering innovative ability based on a common understanding of the process along the entire supply chain
- Research: networking of research and industry to promote pre-competitive research
- Public relations: joint articulation of interests and concerns of the entire industry
- Sourcing service: the Forum’s member companies present their range of products and the services they offer at the Composite Arena

**Further flyers available on these topics:**
- Resin transfer moulding (RTM)
- Processing of thermosetting semi-finished products

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**Supply chain for the manufacture of fibre-reinforced products**

http://composites.vdma.org

www.composite-arena.com
For glass mat production, (un)cut glass rovings are laid on a conveyor belt and set and stabilised by needling. Alternatively, woven
and/or non-woven fabrics, knitted fabrics, braids or crocheted fabrics are prepared for use in organic sheets.

**Relevant machine groups**

**Machines for the production and treatment of fibres**
- Machines for the production of carbon fibres
- Machines for the production of glass fibres
- Machines for the production of textile fibres
- Machines for the production of metallic fibres
- Machines for the production of polymer fibres
- Machines for the production of inorganic fibres

**Accessories**
- Multiaxial warp knitting machines
- Warping machines
- Warp knitting machines
- Multiaxial warp knitting machines
- Weaving machines
- ACCESSORIES

**Machines for composite processing**

**Handling technology**
- Robots
- Other handling equipment
- Equipment for linking and transport
- Measurement and test systems
- Test systems for fibres, yarns, fabrics, on-line
- Test devices for fibres and filaments, off-line
- Test devices for staple fibre and filament yarns, off-line
- Test devices for composites and fabrics, off-line
- Cages and precision measuring equipment
- Measuring machines
- Machine vision and optical sensors
- Test devices for contaminants

Sourcing service: www.composite-arena.com