

APPLIED QUALITY SOLUTIONS

Composites Applications made by VOGEL, Switzerland

COMPOSITES APPLICATIONS

VOGEL moulds and machines AG is a dedicated manufacturer of moulds, presses and meter, mix and dispense systems used in processing of thermosets (e.g. epoxy resins, silicones, polyurethanes).

VOGEL's long experience in designing the full range of equipment to manufacture thermoset parts in the electrical, electronic, automotive and medical industry makes the step into the composites and wind energy sector a logical consequence. VOGEL delivers turnkey composites manufacturing lines for complex composites parts produced by vacuum infusion and compression moulding to resin transfer moulding RTM and all its variations.

As single point of contact we support the full product creation process. Latest CAE tools are used to support customers with their part design to develop customized moulds and production lines. Prototyping, manufacturing of trial parts and pre-series, process optimization trials and customer trainings are offered in our perfectly equipped facilities.

Over 40 years of experience in the thermoset industry, hundreds of successful industry projects, in house engineering and manufacturing know-how at the best technical level and, most importantly about 200 highly motivated, excellently qualified and experienced professionals make us your partner of choice.

RESIN TRANSFER MOULDING (RTM) PRESSES

We are developing and manufacturing hydraulic presses in a wide range of sizes and configurations for the specific demands of each client.

- Vertically operating presses in upstroke and downstroke configuration
- Horizontally working presses
- Clamping force of 10'000 kN and higher
- Quick Mould Changing system QMC
- Directly or indirectly heated moulds
- Mould fixing plates of variable size
- High precision presses with excellent energy efficiency



VOGEL moulds and machines AG

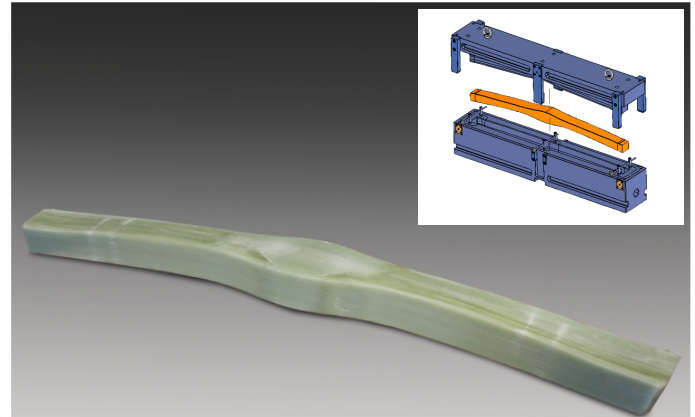
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MOULDS

VOGEL's mould design takes into account the typical characteristics of thermoset processing in order to avoid product defects like dry spots, displacement of fibres (fibre wash), shrink holes, incomplete curing or exothermic temperature overloading to mention the most common.

Mould cavity pressure sensors and dielectric cure sensors to flow sensors are used in our moulds to "in situ" track these key factors in process optimization and production monitoring resp. control (e.g. closing of vacuum valves, closing risers and overflows, controlling pack/hold pressure). Our "smart" moulds allow to easily identify characteristic process phases such as evacuation, filling and curing and to make production more cost-effective resp. to ensure quality.



Prototype of a composites leaf spring produced by resin transfer molding (RTM) and the CATIA V5 designed mould by courtesy of IFC Composite GmbH.

METER, MIX AND DISPENSE SYSTEMS DOSKOCOMPOSITES

VOGEL's mixing/metering machinery range covers all composites applications, from resin transfer moulding RTM and vacuum infusion to filament winding and pultrusion up to adhesive and sealing applications.

Wherever reactive resin systems are processed, this is where our design for preparation, mixing and dosing is implemented. Based on our long experience and in close cooperation with users, material suppliers and testing labs, we have permanently developed and perfected our mix and metering systems.

To name just the latest of our innovations let us introduce our newly developed equipment to apply sticky spray for fibre positioning. This sticky spray applicator allows to deliver the binder directly out of a 25 kg hobcock and to spray it onto the fibres to be fixed and is designed to support e.g. wind and automotive customers.

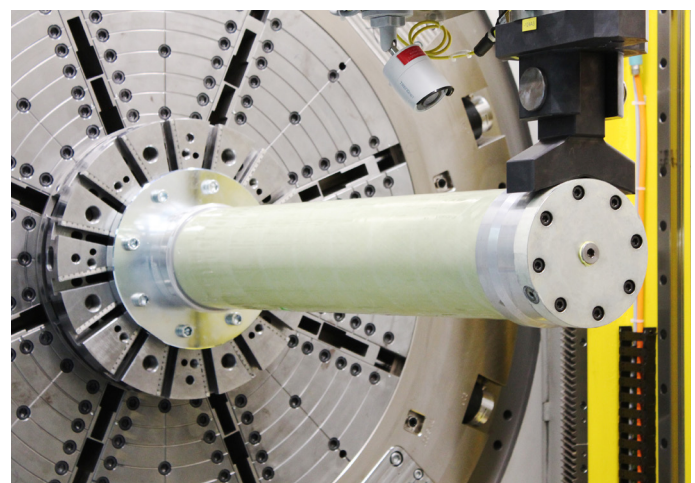


PEGASUS 5000 TESTING SYSTEM

The Pegasus 5000 batch testing system represents a multi-functional equipment that has been developed according to the customer's individual needs for the quality assurance of GFK tubes for hollow insulators of most various types.

This unique technology allows to fully automatically combine all quality checks. This means, the Pegasus 5000 does a bending, pressure and leak test all in one go. A bending die is used to test the flexibility of the GFK tubes in a first instance, the next step is to check the pressure resistance of the component in a vacuum chamber.

Finally, a leakage test using helium completes the procedure. This „all-in-one“ solution contributes to reducing the time and work efforts involved significantly.



TECHNOLOGIES

- Resin Transfer Moulding RTM
- Vacuum-Supported RTM resp. Compression RTM
- Compression Moulding
- Metering and Mixing of reactive systems
- Vacuum Infusion
- Fully automated, combined testing of hollow composites structures

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