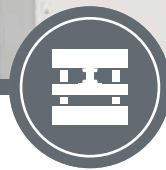
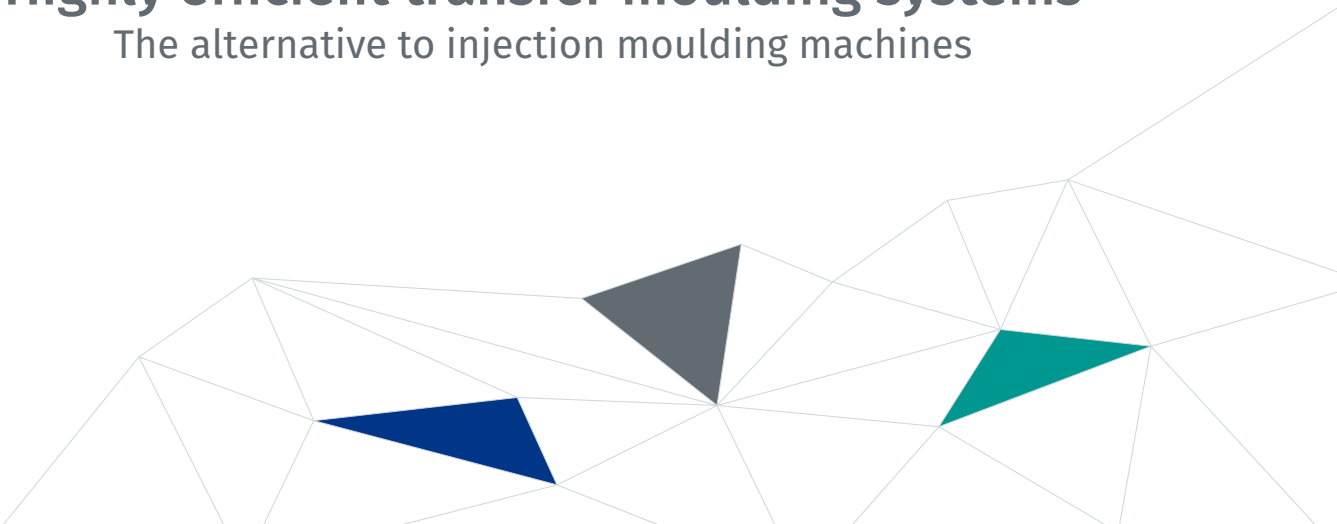


PRESS SYSTEMS



Highly efficient transfer moulding systems
The alternative to injection moulding machines



Transfer moulding of thermosetting plastics using fully automated and highly efficient transfer moulding systems – the alternative to injection moulding machines

The Boyke Group has unveiled a new system concept for the production of hybrid components consisting of thermosetting plastics – an innovative technological combination of plastification technology, a press system and automation



Fully automated transfer moulding production cell DHT100 with tool cleaning function, a pre-plasticising device and loading control

Boyke Technology presented the entire spectrum of thermoset processing, with particular focus on transfer moulding, at the 2016 K trade fair. “The various ways of referring to transfer moulding should not stop us from presenting our new systems at the K trade fair,” says CEO, Matthias Boyke, providing the backdrop to the key topic of transfer moulding. “When it comes to complex applications involving inserts, our customers are no longer able to achieve their objectives in an efficient manner using injection moulding machines. As a result, **there is a demand for new ideas and approaches.**” The particularly gentle process of injecting materials into cavities prevents damage to fragile components. “We are currently able to encase electronic components in a gentle manner using cavity pressure levels of around 30 bar - this would be **almost unimaginable** with injection moulding machines,” says Boyke, explaining the benefits of transfer moulding. “In addition, we are able to pre-heat large volumes of materials in a short period of time as a preparatory step – our pre-heating concepts using plasticisers are suitable for volumes up of to approx. 1.5 kg per minute.”

The system is fully automatic and involves the key process steps of material transportation, pre-heating, dosage, tool loading and cleaning as well as the actual injection or transfer moulding process. Nowadays, tasks are often more complex than one expects. Particularly in the case of large investments, flexibility, material substitution and the universal use of system technology are of paramount importance.

At this year’s K trade fair, the **Boyke Group** demonstrated the possibilities and applications that transfer moulding opens up. At the trade fair stand, the semi-automatic transfer moulding machine DH100 with 100t of closing force was used to demonstrate the transfer moulding process for thermosetting plastics using a hydraulic press. “We were able to demonstrate the most straightforward manufacturing process for transfer moulded components at our stand in combination with our plasticising screw, the PRH60,” explains Boyke, “although we also had the fully automated version with a robot, component pre-heating, material pre-heating and handling systems on show at the stand.”

“**The press itself is gradually moving out of the limelight,**” explains Rainer Bockemühl, who is responsible for Sales and is the automation specialist at **Boyke Technology**. “We are focussing our efforts to a greater and greater extent on the secondary processes that occur in the production cell.” The outstanding properties of thermosetting plastics brought about primarily by the cross-linking of molecular chains are not, however, without their challenges. In contrast to thermoplastic materials, it is not easy to re-heat the system and turn the material into a plastic state. “If we reach the start-up point, which sets the cross-linking process in motion, too early, this causes significant procedural problems.”

A wealth of experience over the past 15 years

The internal timing of the fully automated cells must be 100% accurate. These requirements do not exist in the field of thermoplastics, whereas it is only possible to change the properties of thermosetting plastics to those of thermoplastics with great difficulty and outlay. “It is not surprising that we are currently experiencing a form of renaissance with regard to thermosetting plastics,” says Boyke. “The automotive industry is, once again, relying heavily on epoxy or phenolic resin-based compounds. **Thanks to our new system concepts, we are approaching the level of productivity we are accustomed to with the injection moulding machine,** yet with the key advantage that intermediate processes such as tool cleaning can be integrated more easily and at a lower cost. When the overall concept works smoothly, our performance in economic efficiency analyses is often better than our technological competitor, the “injection moulding machine”, when it comes to complex production processes. The employees at **Boyke Technology** simply roll their eyes when they hear the claim that “presses are slow”.

Boyke Technology sees itself as a traditional niche market supplier and service provider for the entire production process. “From long glass fibre-reinforced thermoset compound processing to finding solutions for complex production processes – we come up with innovative solutions.” The manufactured components range from high voltage insulators to synchroniser rings in gear construction, brake pistons to sheathed circuit boards or electrical coils. High levels of abrasion and wear on screws and cylinders in the field of thermosetting plastics are phenomena that **Boyke Wear Technology GmbH**, the Group’s very own wear technology specialist, is very familiar with. **The company has amassed a wealth of experience in the processing of highly filled materials over the past 15 years.** “This experience is now being incorporated into the engineering process - to the benefit of our customers.”

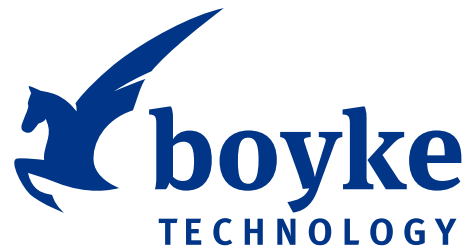
Strengthened screws or specially coated screws in combination with extremely wear-resistant bimetallic cylinders, which are both used in Boyke’s pre-plasticising devices, **allow for a long service life and guarantee high process reliability,**” explains Hans-Peter Boyke, CEO of the wear technology business unit of the **Boyke Group**. “The plasticising systems used in our latest systems were designed in conjunction with **Boyke Wear Technology GmbH (BWT)** and tailored to the material being processed. **We can give the customer everything – except a standardised product,**” explains Boyke.



With our “**Total Manufacturing Competence (TMC)**” approach, we have moved our focus away from the design or transfer process and back onto a **holistic view of the entire process.** “The complexity of the components, the number of process steps and the tremendous pressure to constantly ready new production processes for series production while performing successfully on the market have led us to describe our criteria for success in our new conceptual approach, TMC. This enables us to quickly identify technical risks, hidden process costs or unavoidable delays in the project.” We find time and again that thermosetting plastics projects are not discussed in enough detail. This causes significant problems at the project implementation stage because most of our clients’ employees come from a thermoplastics background. As a result, projects for the automotive industry and the electronics industry, amongst others, are very comprehensive and even address issues such as the material transportation container, suitable storage conditions due to minimum shelf-life difficulties and fully automated deburring and subsequent annealing. **Thermosetting plastic is a demanding material** – the entire process focuses on details.”

The **Boyke Group** employs 50 people and focuses its efforts on extrusion technology, wear protection and spare parts, as well as the fields of press technology and production systems.

In addition to hydraulic press systems with press forces of 5 – 800 t, **Boyke now supplies entire production cells** for manufacturing thermosetting plastic components and hybrid components consisting of, for example, metal and thermosetting plastic. The **Boyke Group’s** portfolio also includes application-specific extruders with screws or pistons and production lines for special applications in addition to the renewal of screws and a spare parts supply service for the plastics industry.



EXTRUSION SYSTEMS

WEAR TECHNOLOGY

PRESS SYSTEMS

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