

Progressive stamping-moulding – a reliable engineering innovation

Progressive stamping-moulding is a further development of the established reel-to-reel process. In this process the two production steps of the stamping of a metal strip and partial overmoulding are combined in a single machine to create a finished component.

Progressive stamping-moulding was developed 20 years ago by Kummer GmbH. Today this production process stands for excellent process reliability, high cost-effectiveness, and top quality. This is made possible by our innovative strength and

more than 40 years of production expertise.

High quality through closed production process

The process of progressive stamping-moulding integrates a number of working steps in a closed process. This includes the automatic mechanical processing of lead frames in a progressive sequence (with stamping, bending, etc.) and complete or partial overmoulding with plastic. As a result, the component is stamped, bent and overmoulded in an encapsulated

process. Optical and electro-mechanical sensors integrated in the process constantly monitor the production process and quality of the components. The integration of these processes in a single tool reduces the risk of quality losses which, for example, can occur with a conventional process involving a number of stand-alone machines. The model of the multi-functional tool enables the minimisation of production tolerances. Therefore, the production of high-precision overmoulded stamped parts is possible without additional costs.



Progressive stamping-moulding

Innovation for bonding processes

One of our strongest arguments: a tour of our plant

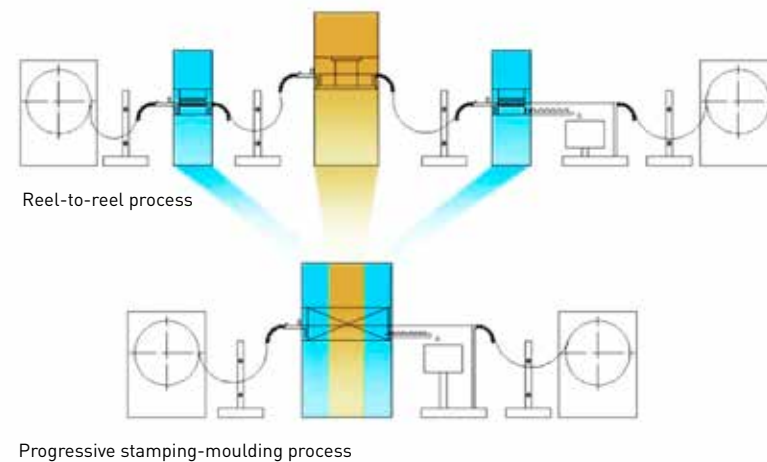
Do you wish to become our customer or do you have a technical production challenge for us? Then we invite you to visit us to experience our working procedures and core values. We are looking forward to the opportunity of convincing you.

Email: info@kummer-gmbh.de

from right to left

- Coil with metal strip
- Progressive stamping-moulding machine with the working steps of stamping, bending, and 2 times overmoulding, here with a 16 cavity tool
- Reel with the finished product

Unequalled economy and excellent quality are the outstanding features of the progressive stamping-moulding process



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The advantages at a glance

- Higher quality and process reliability as the complete production cycle (stamping, overmoulding, bending) takes place within a closed tool.
- An injection moulding machine can be universally used by changing the tool. If a different product is to be produced, this only results in the costs for the corresponding tool. This leads to improved economy in relation to a conventional reel-to-reel process.
- Excellent delivery reliability. In the event of machine failure, the complete tool can easily be transferred to a second standard machine.
- With progressive stamping-moulding the closing force of the injection moulding machine is used to form the parts. This largely enables the forming of parts without additional costs.



Innovative technology for process reliability

The core idea of this innovation is that the closing force of the injection moulding machine can also be used to form parts. The result is a fully automatic production process which contributes towards the forming of parts without extra costs.



Improved economy through intelligent process

The advantage of progressive stamping-moulding is that only a single tool is required for the complete production process. This considerably reduces the time required for tool changes and the production time. The machine can also be used for other applications. The changeover to a different product is achieved simply by changing the tool. Consequently, the unit costs per part are reduced.

The passage of the stamping strip illustrates the complex sequence of working steps which take place in a machine with progressive stamping-moulding. The individual working steps are as follows:



Positioning
of the electroplated strip

Stamping
Stamping out the connection web

Bending to position
before the plastic overmoulding process

Plastic overmoulding
of the lead frame

First bending after the overmoulding
Bending of the complete connector pins

Second bending
Pre-bending of the sensor chamber

Third bending
Final bending of the component

16-cavity tool

We produce injection moulding tools with up to 16 cavities for progressive stamping-moulding in our own mould making shop. This means higher volumes and greater economy.

Finished component

Complex component overmoulded without automation (4 bending steps before overmoulding of the strip, 3 further bending steps after overmoulding)



Possible applications for progressive stamping-moulding



Pump control unit

Material: PET GF35 / 200,000 pieces
Special feature: ELO pin connector overmoulded on stamped strip without automation



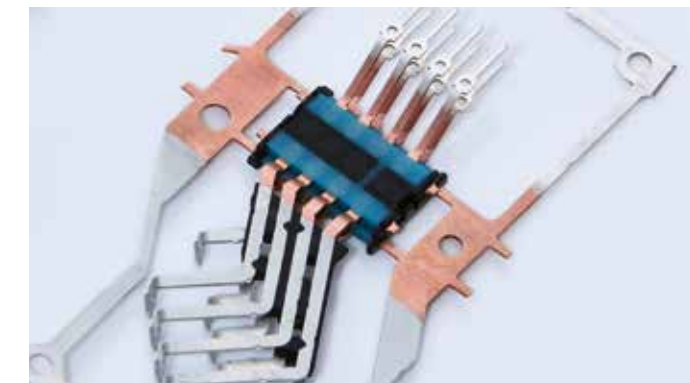
Test plug for electrical engineering

Material: PA66 6 GF30 / > 5 million pieces
Special feature: 16-cavity tool, 2K overmoulding, plug connector folded 3 times without metal connection to the strip



Pressure sensor for truck

Material: PBT GF 30 / 1.5 million pieces
Special feature: coined square pin 0.6 x 0.6 mm with feed-in directly from stamping strip, overmoulded on the lead frame



Exhaust gas treatment for diesel

Material: PBT GF30 / > 500,000 pieces
Special feature: 2K overmoulding on stamped strip. Connector with two rows of pins snapped together on the stamped strip and completely overmoulded



Valve control

Material: PA66 GF35 / > 100,000 pieces
Special feature: electroplated strip with 230 mm width, bent and overmoulded



Engine contact

Material: PPS / > 2 million pieces
Special feature: ELO pin press-fit technology bent on strip and overmoulded with 100% vision control