WITH SLIDE BENDING TO SHEET METAL PROFILES

Ideas on utilisation

During slide bending (Gleitziehbiegen) a metal strip is pulled by means of feed device by a forming die quasi-continuous. As a result, profiles in intermediate sizes over the cross section are variable and effectively produced in small quantities. Slide bending is an extension or addition to alternative profile manufacturing techniques like roll forming. In a joint project, for the first time, a production-related technology demonstrator for the slide bending of symmetrical, straight and defined bent sheet metal profiles was developed, manufactured and optimized. The demonstrator (Fig. 1) has a modular structure and consists of the base frame, the guide and greasing unit, the gripper and feed unit, the hydraulic unit, the tool unit (Fig. 2) and the controller. The demonstrator can be upgraded with additional modules such as a reel for material supply, a straightening unit, adjusting motors for the active elements of the tool and a cutting and depositing unit. The concept developed foresees the use of a modular tool system with which profile families with almost any floor work and flank heights can be produced by the uncomplicated replacement and adjustment of the active parts of the forming tool.

Figure 1: technology demonstrator.

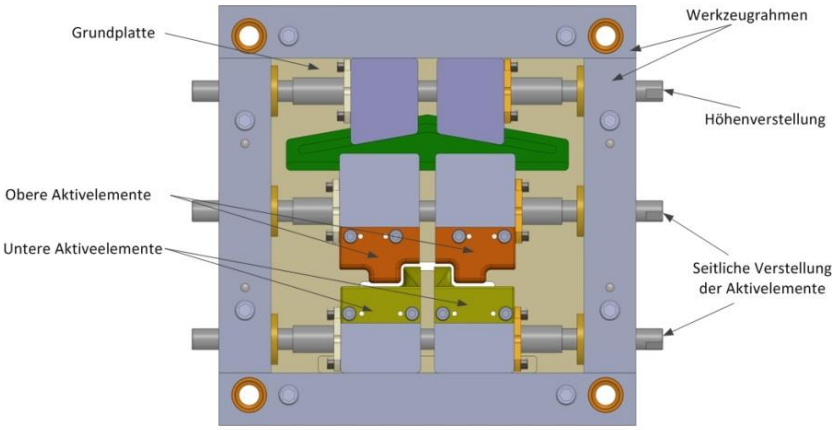

Figure 2: Basic structure of the tool unit with simulated hat-profile.

Potential adopters of technology

The profiles produced can be used in almost all industries. Examples include: vehicle construction, shipbuilding, wagon construction, plumbing, heating and furniture industry.

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Advantages of technology

For small and medium-sized companies, this results in the following advantages compared to alternative methods:

Profile manufacturers	Profile users
Effective production of small quantities	Variable profile lengths
Variety of profile families; production of different profile widths and flank heights for symmetrical profile cross sections	Processing of commercially available sheet metal materials
Load-adapted profiles (variable in cross-section)	
Low equipment and tool costs; Profile families can be produced with a tool	Additional elements (eg cutting and punching) can be generated in downstream processes
Small space requirement of the system	Different profile cross sections
Low set-up times due to exchangeable active parts in the forming tool	

Market and context of technology

Possible application scenarios in the economy are:

profile user	• buys profiles and processes them
profile manufacturer	• acquires a slide bending machine, creates profiles and market them
profile equipment manufacturer	• makes a sliding bending machine --> extended thus his portfolio
equipment manufacturer	• manufactures sliding and bending equipment and markets --> but it can also be the operator of the system
profile user and manufacturer	• buys the equipment from the manufacturer and produces the profiles for personal use

With regard to the realizable parameters such as higher speed, tolerance accuracy and reproducible quality, there is still a need for investigation and optimization. The system is adaptable to the specific application. One focus is on the greater individualization of profiles such. B. load-adapted profile cross sections, defined curvature and processing of blanks.

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