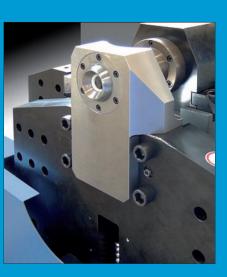


In 6-axis technology the complete bending head can rotate for twisting profiles. This is necessary to bend symmetric as well as asymmetric profiles.



By the optional measuring system bending programs can be created directly from CAD-data. After scanning the bending samples, the software calculates a program that makes the bended tube matching the part on CAD-data.

Bending head from a 3-axis-free-formbending machine. Due to the compact design small U-bends and frame parts can be realised.



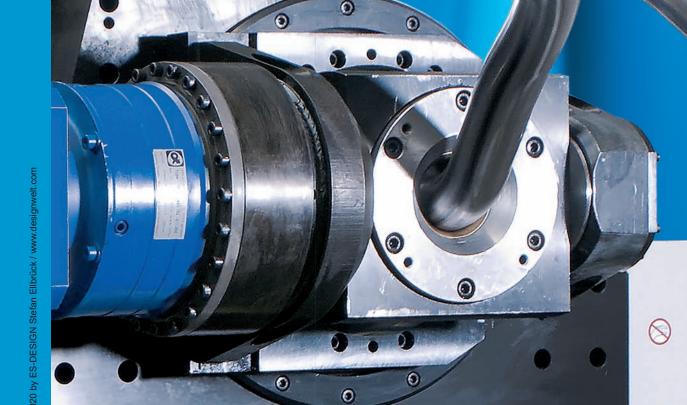
machine types:

3-axis machines Typ NPB	5-axis machines Typ NFB	6-axis machines Typ NSB
NPB030	NFB030	-
NPB040	NFB040	-
NPB050	NFB050	-
NPB060	NFB060	-
NPB090	NFB090	NSB 90

Further models on demand. We reserve the right for changes in the interest of technical progress, work safety or more economical production.

The main advantages of freeformbending over conventional bending (draw bending or stretch bending) are as follows:

- one set of tooling per round tube diameter or profile can bend different radii
- different radii can follow each other without straight.
- for bending operations with no straight between the bends, no special bending die and clamp die is necessary.
- sensitive material like aluminium and stainless steel can be bend with perfect sur face quality without scratches or clamp marks
- complicated bend geometries can be modified only by means of software without hardware changes (stretchbending).
- continuous pushing of the material instead of drawing guarantees almost no thinning of the outer bend. The forming ability of the material remains almost untouched and wallthickness can be reduced. All bend applications need a stable behaviour with no risc of failure.
- especially hydroforming operations can be effected in one step, without heat treat ment. Major changes in the shape can be effected by maintaining an even material structure in bending.
- CAD-data can be read by the Laser measuring system and transformed automatic
 ally in a bending program. After scanning the first sample the software automatically
 calculates the better next program. Feasibility studies as well as automated pro
 gramming are possible with this tool.
- conventional bending has the disadvantage of a lot of idle movement during ben ding. Freeformbending is much faster and can create a substantial higher output. Means that bend parts can be produced at lower cost.
- many customers run freeformbending machines with robot technology for automated loading and unloading.

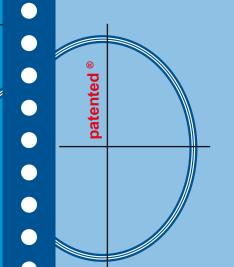




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