FLUID forming

FORM BALANCER

HYDROFORMING MACHINES

PRINCIPLE OF OPERATION OF THE FORMBALANCER

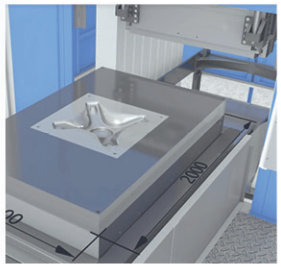
Hydroforming is a high-pressure deformation process that shapes metal sheets into a predefined geometry by using an oil-water emulsion under high pressure. Hydroforming is similar to the conventional deep-drawing technique. The specific difference between both forming methods is that the hydroforming process uses a fluid instead of a punch.

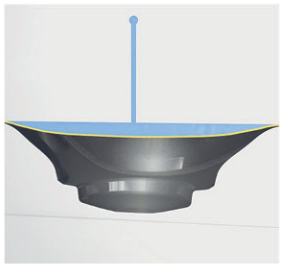
The range of materials that can be used on the FormBalancer is miscellaneous. Hydroformable materials range from aluminium alloys through steel and stainless steels to titan alloys. With excellent accuracy of form and surface finish, the quality of hydroformed components is in many cases significantly better than that of deep drawn components. Complex free-form contours, which often require several steps with conventional forming methods, can be produced without problem.

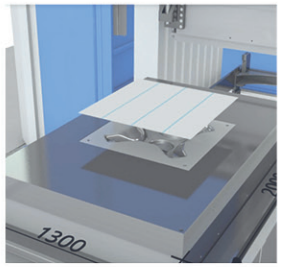
Hydroforming is used to form very thin metal sheets of 0.05 mm thickness but also 8 mm thick metal boards.

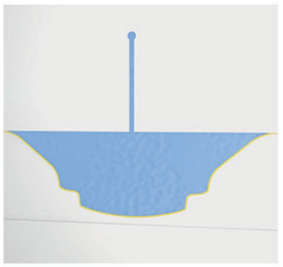
The component size depends on the worktable size of the FormBalancer and the tool dimensions. Finished sizes of formed components range from 50 mm x 50 mm to 1500 mm x 3000 mm. The maximum component depth that can be achieved is 600 mm.

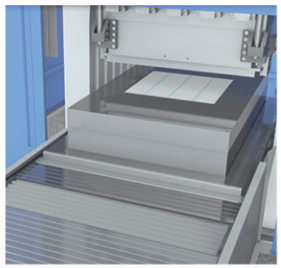
Component engineering is performed using simulation software for the hydroforming process. This simulation software helps reduce the prototype phase to a few weeks. Hence, it simultaneously contributes to a short development process from the design to the finished component.

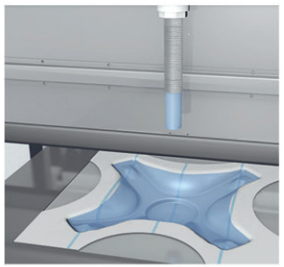


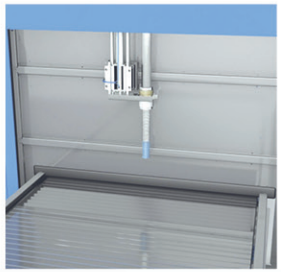


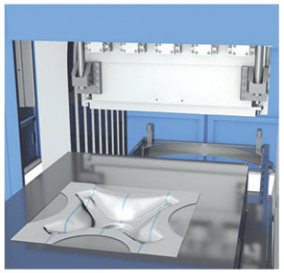










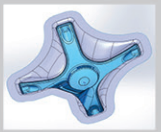


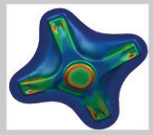
THE **MOST IMPORTANT FEATURES**

...OF HYDROFORMING WITH THE FORMBALANCER

→ Water replaces mechanical stamp

- only one half of the moulding box is required, no additional tools
- up to 80 % savings in tooling costs
- simple and fast production of tools





→ Deformation pressure up to 4000 bars

- steel, stainless steel, aluminium, titan, hastelloy etc. (0.05 to 8 mm metal sheet thickness)

→ Advantages of the hydroforming process

- outstanding manufacturing technique for prototypes and small batches
- complex contours can be produced without problem
- maximum dimensional stability
- excellent surface finish
- uniform distribution of sheet thicknesses

TECHNICAL **DATA** FORMBALANCER

The FormBalancer can be ADAPTED TO CUSTOMERS SPECIFICATIONS and SUPPLIED AS A TURNKEY SYSTEM at the site of the customer.

FormBalancer	Type **FB25**	Type **FB35**	Type **FB42**	Type **FB50**	Type **FB60**
Closing force (kN)	25.000	35.000	42.000	50.000	60.000
Table size (mm)	800 x 800	1.000 x 1.200	1.200 x 1.200	1.200 x 1.500	1.300 x 1.600
Forming depth (mm)	max. 300	max. 450	max. 500	max. 500	max. 550
Forming pressure (bars)	max. 4.000	max. 4.000	max. 4.000	max. 4.000	max. 4.000

FormBalancer	Type **FB80**	Type **FB80L**	Type **FB100**	Type **FB120**	Type **FB160**
Closing force (kN)	80.000	80.000	100.000	120.000	160.000
Table size (mm)	1.500 x 1.800	1.300 x 2.000	1.500 x 2.000	1.500 x 2.500	1.700 x 3.000
Forming depth (mm)	max. 600	max. 600	max. 600	max. 600	max. 600
Forming pressure (bars)	max. 3.000	max. 3.000	max. 3.000	max. 3000	max. 3000

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