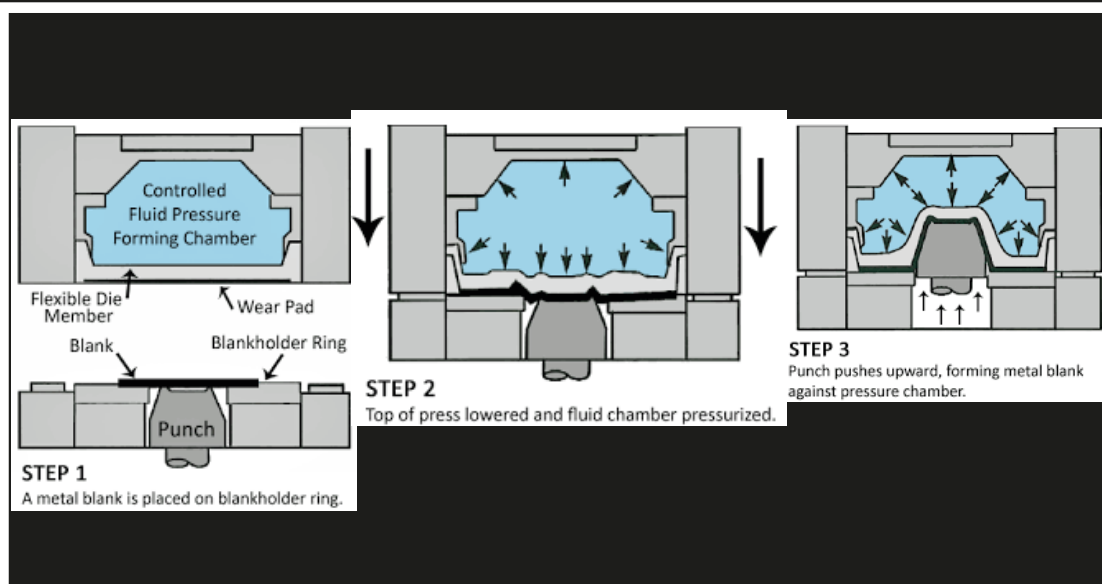


Hydroforming

Hydroforming is a metal fabricating and forming process which allows the shaping of metals. it is a specialized type of die moulding that utilizes highly pressurized fluid to form the metal. there are two classifications of hydroforming, these

are sheet hydroforming and tube hydroforming.

Hydroforming is mostly used by automotive manufactures as it is cheap and easy.



Sheet Hydroforming

Sheet hydroforming uses one cast and a punch. the metal sheet gets pushed into place between the punch and the cast, the punch then uses the heat and force to push the metal into the die. as this happens water runs out between the upper surface of the die and the sheet metal. this will reduce frictional force that's produced during the process.

Advantages

hydroforming allows seamless bonding and increased part strength. during the process hydroforming is able to maintain a high quality surface of the material and doesn't leave any blemishes which cuts post production time. compared to metal stamped and welded parts it is more lightweight, lower cost per unit and has a higher stiffness to weight ratio.

Tube Hydroforming

Tube hydroforming uses two sheets that have been welded at the edges together and then uses liquid that gets forced inside of the two sheets to create internal pressure in order to make the two sheets into a 3d tube. The sheets will be placed into a two sided die that's split. The metal will then be forced by the external pressure to take the form of the die.

Cost

Machine equipment for Hydroforming ranges from 10,600 to 35,000 for top of the range machines. this is an expensive investment but the machine will be able to pay for itself in a couple of years and also has thousands of replacement parts which can keep it running for 40 or more years. the materials are relatively low cost too when bought in bulk.

Materials used

- Steel
High tensile strength and strong
- Stainless steel
Anti-corrosion and quite strong
- Copper
Electrical and heat conductor very easy to work with
- Aluminum
Heat conductor and great strength to weight ratio
- Brass
strong and wear-resistance

All of these materials can be used in both the sheet hydroforming process and the tube hydroforming process. The materials used depends purely on the type of product being made, i.e car parts will typically be made out of aluminum.

Suppliers

- Jones Metal Products Company
877-526-7234
- The MuShield Company
03108-5045
- California hydroforming
888-789-5912
- Nemesis Metals
888-842-1395
- Tech Tube
610-491-8000