

# Electrohydraulic forming

From Wikipedia, the free encyclopedia

captured 2/13/13

**Electrohydraulic forming** is a type of metal forming in which an electric arc discharge in liquid (Yutkin effect) is used to convert electrical energy to mechanical energy and change the shape of the workpiece. A capacitor bank delivers a pulse of high current across two electrodes, which are positioned a short distance apart while submerged in a fluid (water or oil). The electric arc discharge rapidly vaporizes the surrounding fluid creating a shock wave. The workpiece, which is kept in contact with the fluid, is deformed into an evacuated die.

The potential forming capabilities of submerged arc discharge processes were recognized as early as the mid 1940s (Yutkin L.A.). During the 1950s and early 1960s, the basic process was developed into production systems. This work principally was by and for the aerospace industries. By 1970, forming machines based on submerged arc discharge, were available from machine tool builders. A few of the larger aerospace fabricators built machines of their own design to meet specific part fabrication requirements.

Electrohydraulic forming is a variation of the older, more general, explosive forming method. The only fundamental difference between these two techniques is the energy source, and subsequently, the practical size of the forming event.

Very large capacitor banks are needed to produce the same amount of energy as a modest mass of high explosives - which is expensive for large parts. On the other hand, the electrohydraulic method was seen as better suited to automation because of the fine control of multiple, sequential energy discharges and the relative compactness of the electrode-media containment system.

## See also

- Ignitron

## References

Retrieved from "http://en.wikipedia.org/w/index.php?title=Electrohydraulic\_forming&oldid=495759505"

Categories: Metal forming

- 
- This page was last modified on 3 June 2012 at 12:20.
  - Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. See Terms of Use for details.  
Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a non-profit organization.