

## Second Laureate Research & Development

Scientific Committee  
**Mechanics**

### Research Work Title

#### Design and fabrication of the flow forming machine



##### Representatives

**Mahdi Vatani,  
Mohammad Sadegh  
Heydarzadeh (Ph.D.)**

##### Executive Organization

Ideh Pardazan Vatan Company

### Abstract

Flow-forming is an advanced modern manufacturing process that is used mostly for producing precise thin-wall cylinders. In a flow-forming process, usually, a precise thick-walled cylinder is used as a blank and put over a mandrel. The Mandrel starts rotating by utilizing 3 or 4 rotating rollers applying pressure to the blank, the blank is drawn over the mandrel and takes the shape of it like metal drawing and ironing process. Therefore, in this process, a thick-wall short cylinder is converted to a thin-walled long cylinder. It is possible to achieve 75 to 90 percent thickness reduction is possible in this cold working process. Due to the high amount of cold work done, the finished part has a very fine-grain structure and its yield strength increases more than 2 to 3 times more.

Ideh pardazan Vatan co. has started its efforts and research for the fabrication of flow forming machines since 2012 and continually developed its models. As a result of this high investment in research and development, the fabrication and utilization of the largest flow-forming machine of the world were accomplished by this company in 2019. This huge machine called Monster FCH2100/3400 is capable of flow-forming parts up to 2100 mm in diameter and 3400mm in the forward and 12000 mm in the backward direction. Valuable innovations introduced in this machine have made it more flexible than its competitors.

