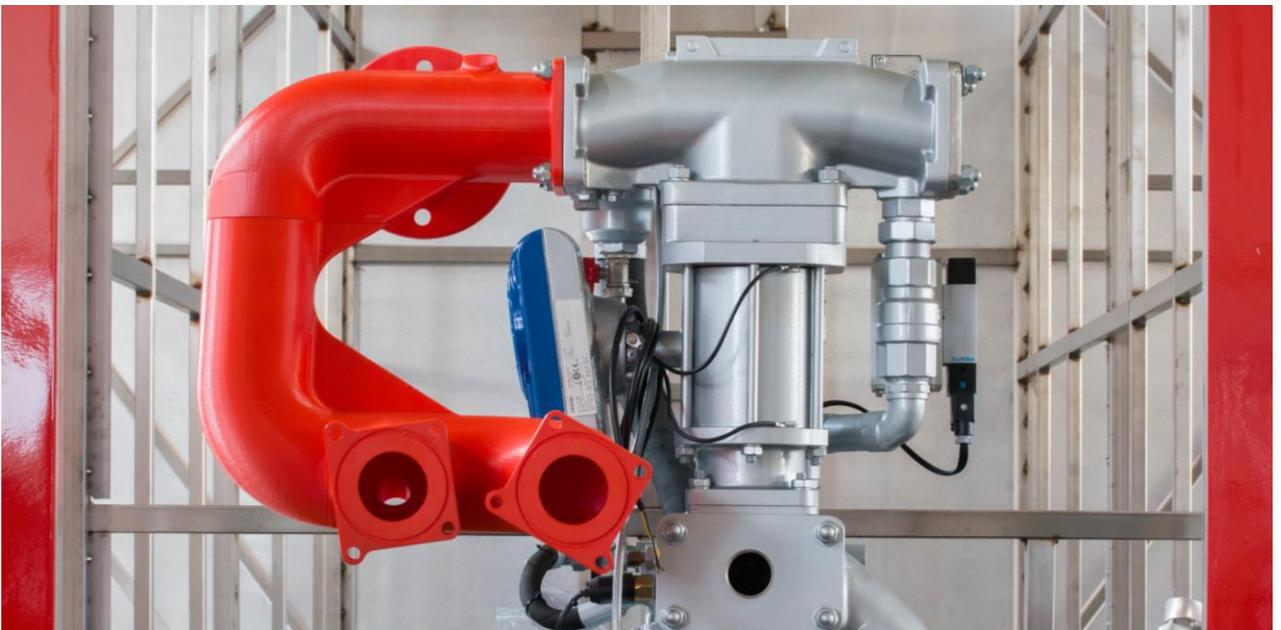


Verification of the prototype: fire engine's manifold 3D printout i.e how Bocar saved time and money.

Company: Bocar is a company manufactures fire engines with custom undercarriages and provides its customers with over 100 vehicles every year. It has over 25 years of experience in the production of specialized cars.

Project: Creation a life-size 3D model of the manifold using 3D printing technology.



Purposes:

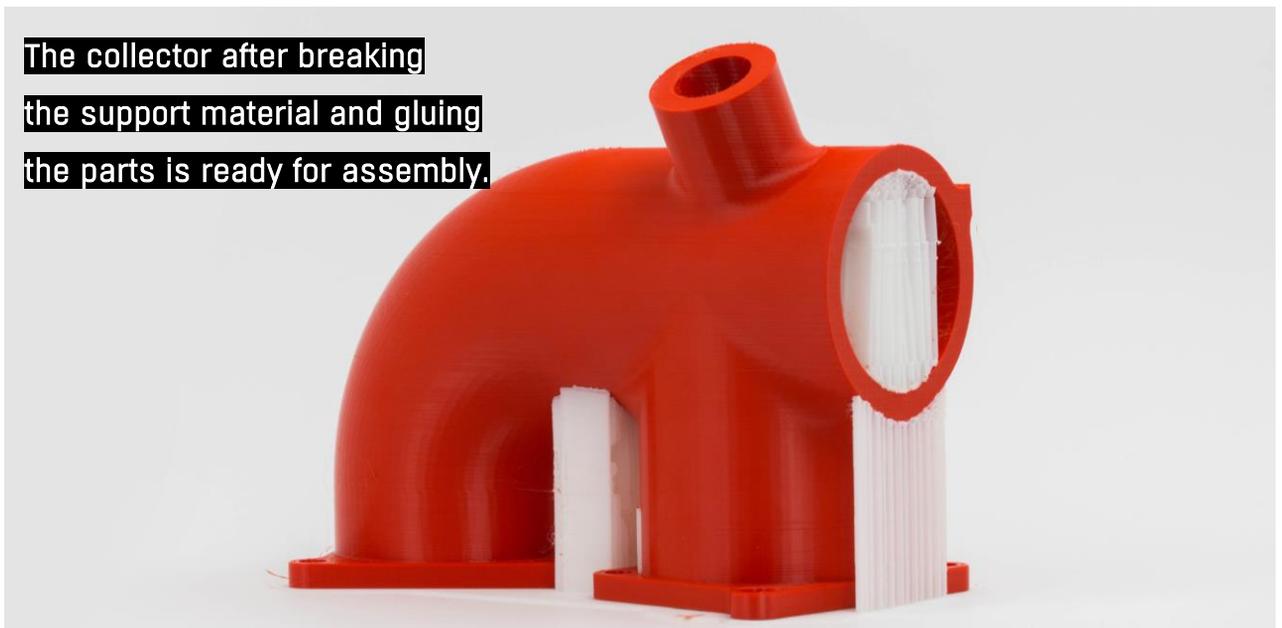
1. Preparing a 3D model at a lower costs – no need to create molds.
2. Saving time at the stage of creating a prototype.
3. Checking the ergonomics of the model through its assembly on a fire truck.

Why 3D printing technology?

During the process of rapid prototyping, it is still very hard to obtain impeccable product, especially when we focus on its ergonomics. Thanks to the 3D printer, the company is capable of preparing a model which is identical to its real archetype. It makes it possible for different departments of the company to introduce particular changes even during the early design stage. Bocar uses 3D printers to create composites made of plastic materials, their task is streamline production processes and generate savings.

Challenge

The use of 3DGence printers to verify the vacuum manifold, which is one of the elements creating hydraulic system of a pump compartment inside fire engines. Pre-made mould of such manifold shall be an alternative to manual welding of pipes, elbows and collects. Obtaining much greater accuracy in produced systems, and what follows, in a lower failure frequency.



3D printer: 3DGence INDUSTRY F340

Material: ABS + HIPS

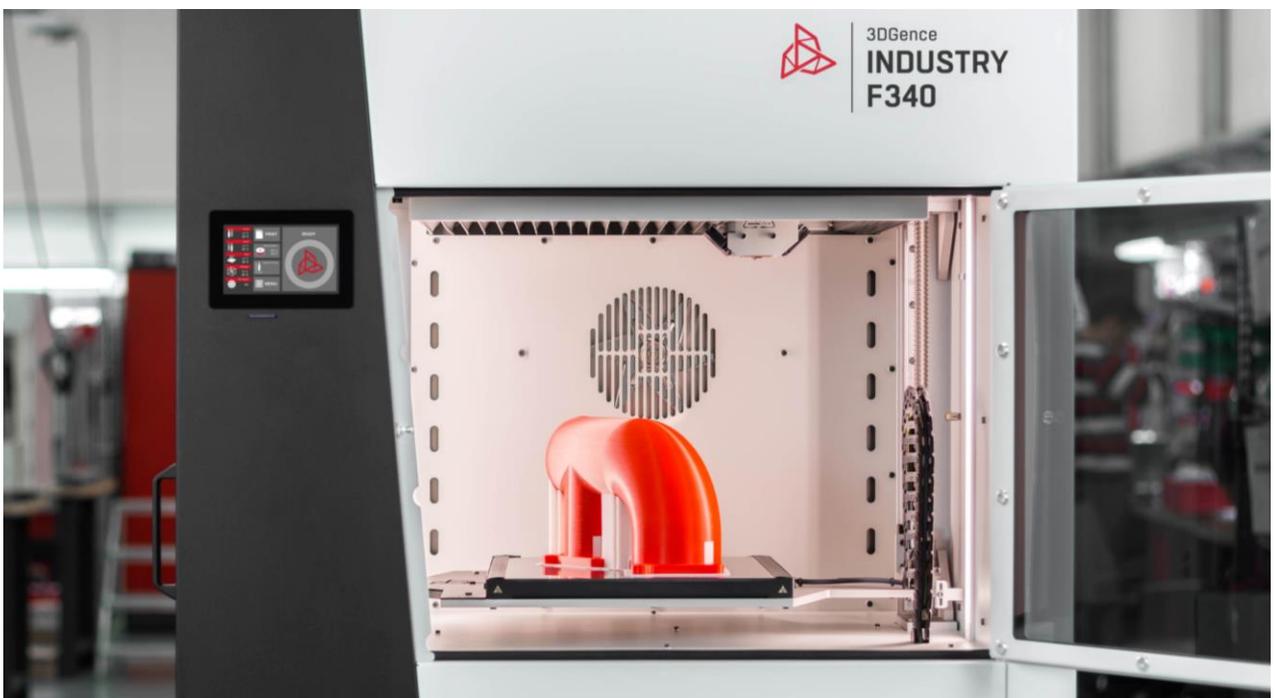
Dimension: 600x500x500 mm

models consists of three combined elements

Purpose 1: **Saving money**

If a company decides to buy a 3D printer, the final cost of printing a model includes only the amount of money spent on a particular material (around 25€ for kg) plus electricity costs.

The only waste material you get during the entire printing process, is the support material which is then 10% of the whole model weight. The price for preparing a 3D printed model is incomparably lower than producing it through chill-moulding process.



Purpose 2: **Saving time**

The preparation of a new chill form can take even several months and the company has to pay for it additionally. Owning a 3D printer significantly improves the process of creating the necessary part. Creating 3D printout of fire engine's manifold takes around 10 days

Purpose 3: Test of ergonomics

3D printing technology allows physical examination of every project assumption on a virtual model. 3D printed vacuum manifold was installed in a particular vehicle. Thanks to it Bocar company had an opportunity to check its ergonomics that is, the functionality and durability of this prototype. Moreover the installation of the model was used as a training for workers who are responsible for the assembly of pre-made elements.



Conclusions

Bocar company used industrial 3D printer – 3DGence INDUSTRY F340 to print a life-size 3D model of the manifold with the ABS material. 3D printout helped to verify the prototype of the component mounted on a fire truck. Manufacturer of specialized cars, thanks to 3D printing technology, saved time, money and could check the ergonomics of the part needed. All project goals have been achieved.

