XI INTERNATIONAL CONFERENCE
INDUSTRIAL ENGINEERING AND ENVIRONMENTAL PROTECTION 2021
IIZS 2021, October 07-08, 2021, Zrenjanin, Serbia

MOLD CAVITY LAYOUT DESIGN

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The poster presents an approach for plastic part design and its manufacture. Based on the geometric product specifications of the part, the authors design runner system and determinate associated injection molding parameters. The injection molding parameters are calculated using numerical simulation. The more favorable variant of the two proposed runner systems will initiates the based geometry of the mold cavity.

INTRODUCTION

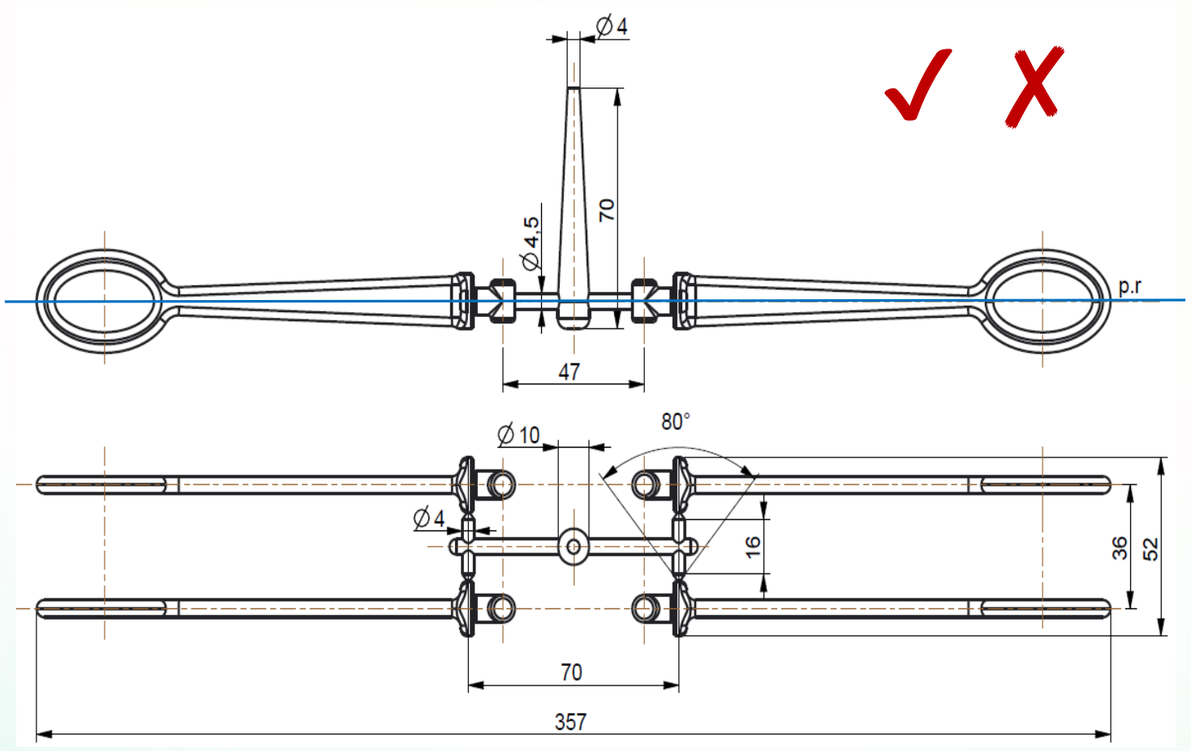
The plastic injection molding is a cyclic process. There are four significant stages in the process. These stages are filling, packing, cooling and ejection.

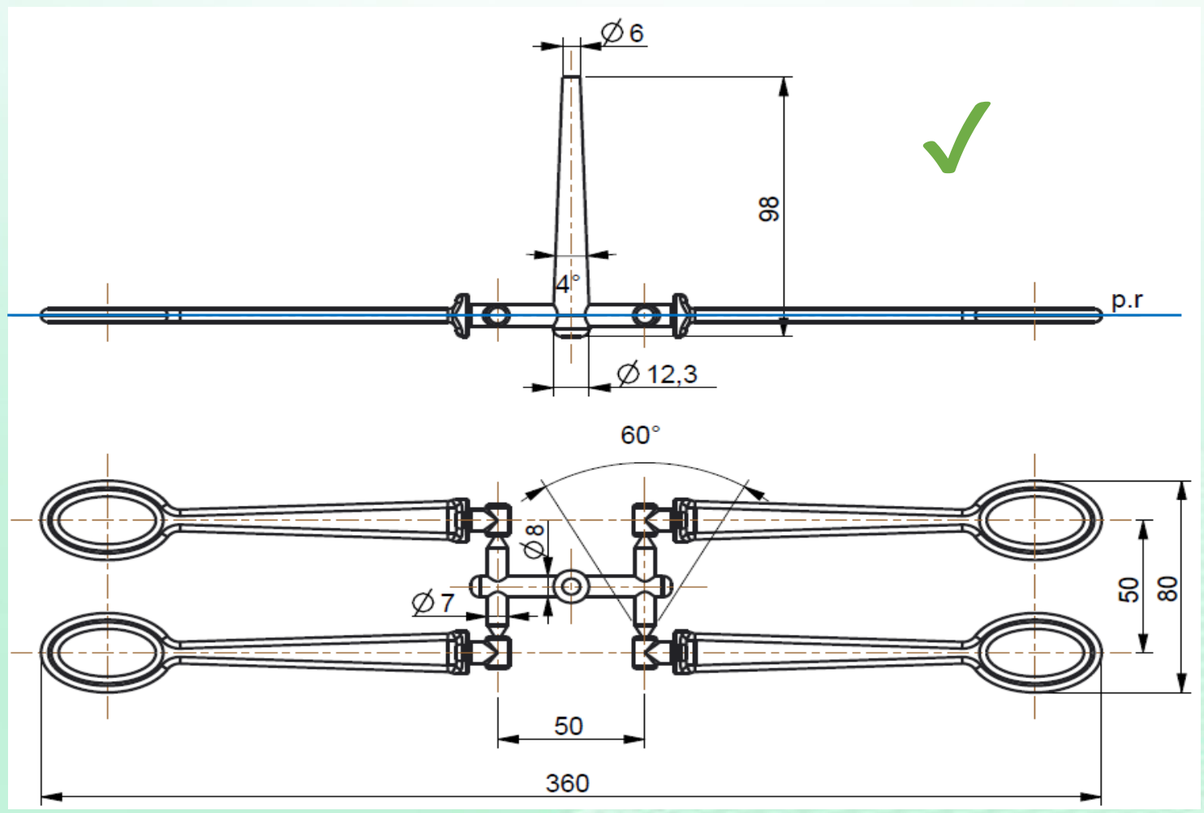
MATERIALS AND METHODS

The holder, shown in Fig.1, is used in the following case study. This is constitutive element of the saltshaker assembly.

The simulation models are generated using iterative redesign procedure into Creo Parametric software package, module for simulation (Pro/Plastic Advisor) and mold design (Pro/Mold Design). The appropriate simulation models are consists of the runner system and four CAD parts, as are indicated in Fig. 2. The runner system further consists of sprue gate, main runner, sub runner, cold slug and gate.

Fig. 1. The plastic product





RESULTS AND DISCUSSION

The quality test result measures the expected quality of the model's appearance and its mechanical properties by simulation. The quality is derived from combinations of the following five results: flow front temperature, packing pressure, cooling time, shear rate and shear stress. Only if all five results in an area are acceptable, the area is **green** and the **simulation model has a high quality**. Yellow area has medium quality, but that is acceptable. The both simulation models are suitable. The first one has favorable characteristics with regard to moldability.

CONCLUSION

The **both simulation** models are **suitable**. The first one has favorable characteristics with regard to moldability. The **first simulation model** occupies a better position in relation to the parting surface, so the costs of manufacturing the mold cavity are lower. The filling is much uniform and packing pressure is better distributed and more efficient. As a result, both residual stresses and warpage are lower, air traps and weld lines are reduced to a minimum.

THANKS FOR ATTENTION!