

TECH 4398

## Appendix I: Design Project Abstract

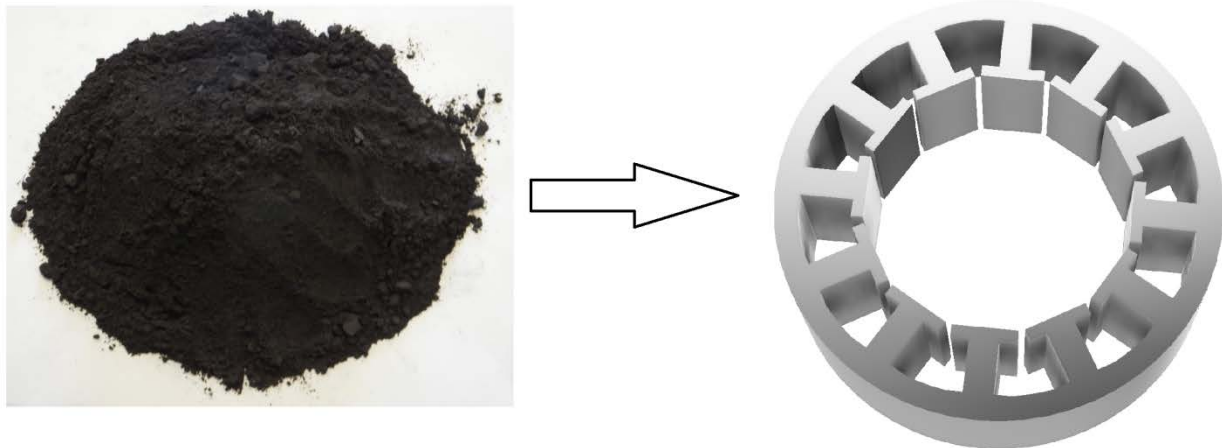
### Product Description:

Prototype of a press die for magnetic cores of R-Water electro-pumps

### Abstract:

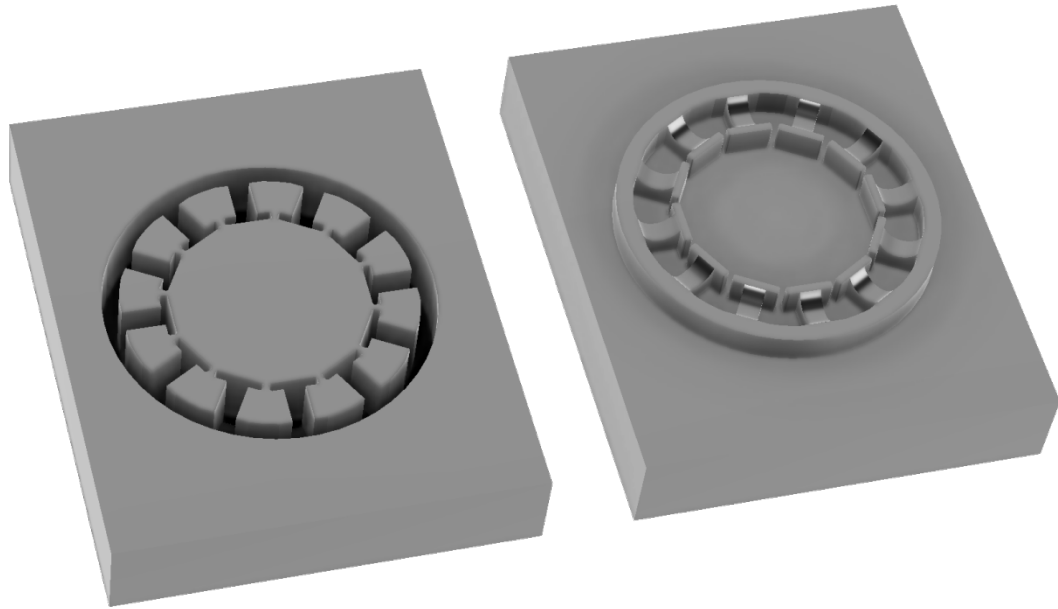
The electro-pumps employed in electro-chemical machines always face long term chemical and mechanical issues caused by corrosive materials and contamination. We are working on novel pump structures with self-cleaning capabilities, custom designed for longer lifetime on R-Water TC-RU machines. This project focuses on manufacturing of a press die for prototyping magnetic cores of R-Water custom-designed electro-pumps.

In the structure of any electro-motor, uni-body metal magnetic cores result poor efficiency due to formation of eddy currents inside a conductive magnetic material. A common technique to overcome this problem is using low-conductivity ferrite cores made by pressing ferrite powders following thermal annealing.



### Deliverables:

The project design group will be expected to deliver a press die mold for prototyping ferrite magnetic cores. The group will design the 3D structure of the core part according to the provided dimensions. Then, the 3D structure of the press die will be designed. Two pieces of the mold die will be finally machined on the stock materials.



**Project Customer:**

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