

Appendix I: Design Project Abstract

Product Description:

Prototype of a magnetic core for R-Water electro-pumps

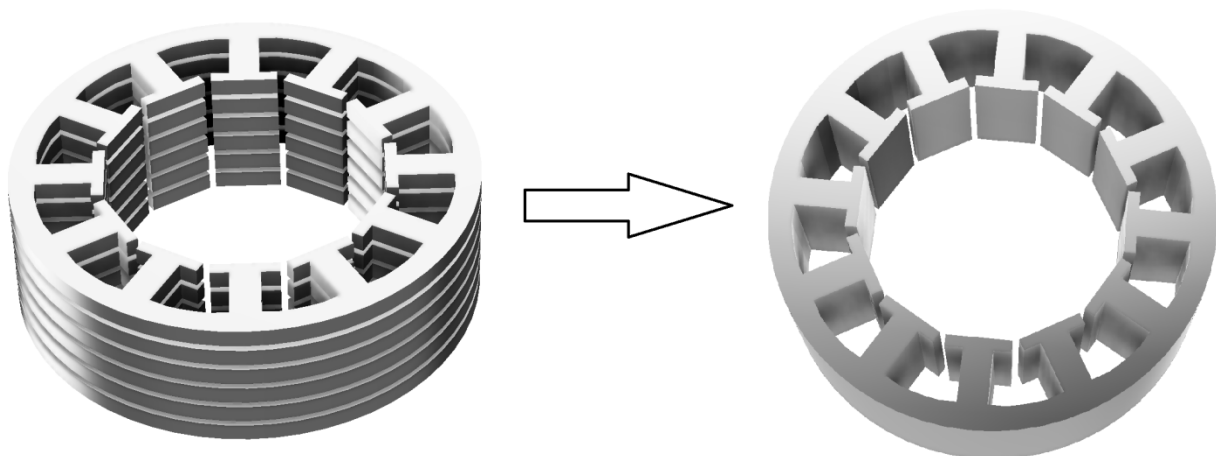
Abstract:

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 magnetic stator cores for R-Water 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 slicing the magnetic core into multiple layers of metal sheets, coating each layer with a non-conductive material, and finally attaching the parts together. It prevents formation of current loops inside the core.

Deliverables:

The project design group will be expected to deliver a magnetic core to be used in the stator of R-Water electro-pumps. The group will design the 3D structure of the part according to the provided dimensions. Then, the projected 2D plot of the core layers will be cut out of silicon steel sheets. The thin layers of metals should be coated by dipping in an insulator resin and finally glued together.





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