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Digital Motor Nameplate

Industry 4.0 stands for topics like energy management, condition monitoring or self-configuration. In such industrial environments, frequency converters are commonly used. They usually need to be configured manually with parameters from the motors nameplate. Therefore, the company Lenze Schmidhauser AG came up with the idea to create a digital motor nameplate. They would like, the frequency converter to be able to configure itself automatically.

The frequency converter can communicate through a serial interface with the digital nameplate. This enables it to read parameters from the digital nameplate. The energy to drive the nameplate is harvested from the same line, on which the communication takes place. Furthermore, the nameplate has an additional RFID interface to read and write parameters with a Smartphone.

The bachelor thesis provides a ''proof of concept'' for the digital motor nameplate. Therefore, in a first step, the specifications were properly defined. According to these specifications a concept was developed. This concept includes a modified version of the 1-Wire standard to communicate and for energy harvesting. To minimize energy, the software is implemented on an ARM Cortex M0+ microcontroller. A Dual-Tag is used for data storage and RFID interface. It combines an EEPROM with an I2C and RFID interface. The RFID interface is based on the Vicinity coupling standard.
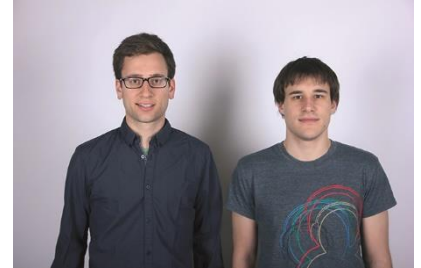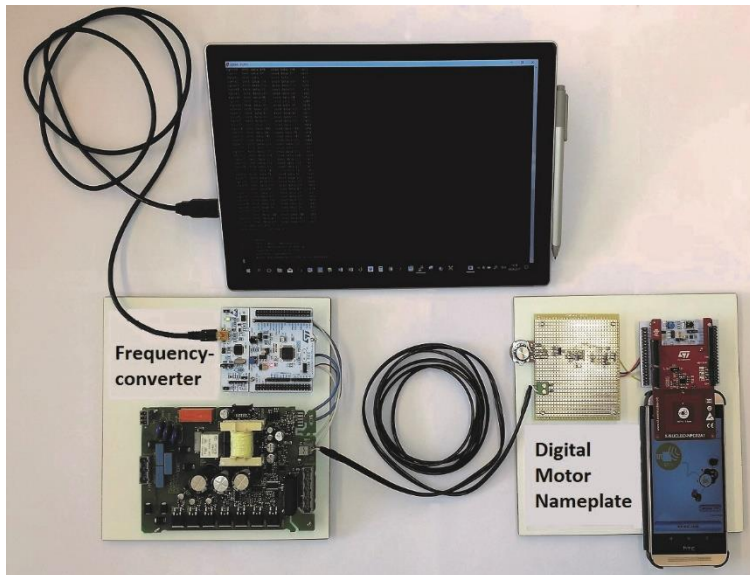

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The outcome of the project is a prototype of a digital motor nameplate. This prototype demonstrates, that a self-configuration of a frequency converter could be realised.
A further step would be to connect vibration or temperature sensors to the digital motor nameplate. This would facilitate the detection of motor problems, prior to the appearance of damages.