Integrated project Engineering Technology

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Automation of plastic analysis

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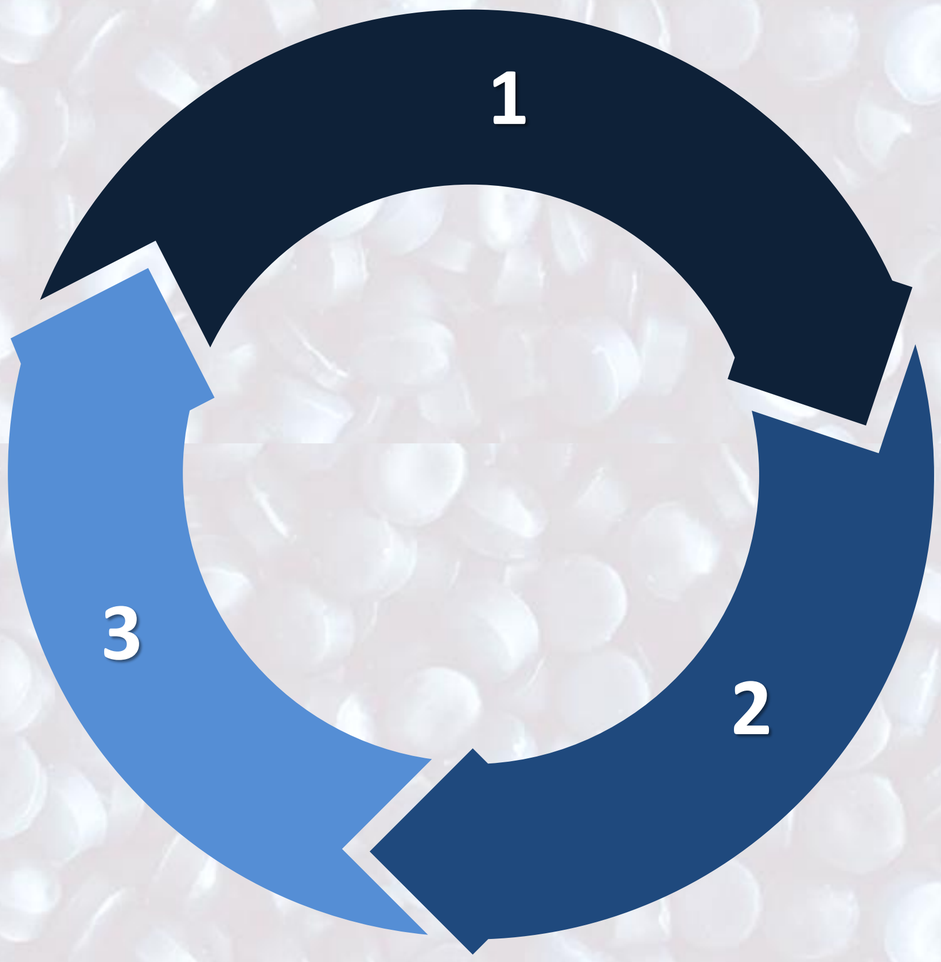
Specialization Bridging programme for Master of Electromechanical Engineering Technology

The LCE (life cycle engineering) group in Heverlee (Belgium) is a research group of KULeuven. They specialise in the optimisation of product lifecycle. This bachelor thesis will try to recycle plastics automatically using a FTIR-scanner (Fourier Transform Infrared Spectrometer). This scanner will analyse the plastics and then identify the variety.

1 SUPPLY STAGE

In the thesis only analysing the plastics has to be automated. A robotic arm with a drill attachment will take a sample (in the shape of burrs) of the plastic that has to be analysed. This sample will be transported to the scanner with air pressure.



2 COMPRESSION STAGE

Once the sample has arrived it will need to be compressed. That's because the sample has to be one solid object. The compression will be performed by two pneumatic presses that will press the burrs into one single cylindrical pellet. When the compression is completed, the pellet will be brought to the scanner.

3 SCANNING STAGE

When the pellet is on the scanner, a pneumatic cylinder will press the pellet firmly onto the sensor. This will ensure a quality scan. When the scan is made, the machine will know which variety of plastic this is and the plastic (where the sample was taken from) can be sorted correctly.

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