ReWaste F
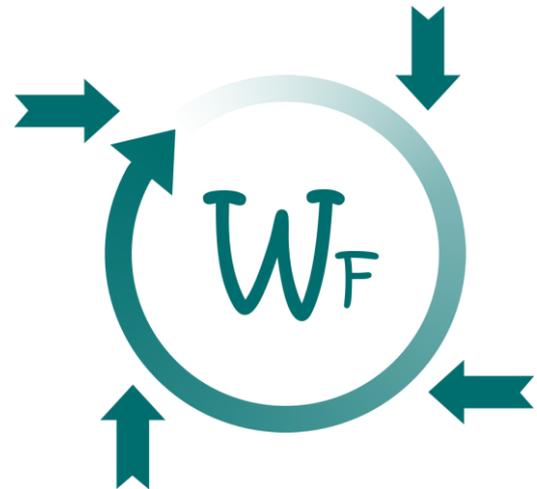**Recycling and Recovery of**
Waste for Future

Programme: COMET – Competence Centers for Excellent Technologies

Programme line: COMET-Project

Type of project: ReWaste F, 04/21 – 06/25, multi-firm

REAL-TIME QUALITY ASSURANCE OF SOLID RECOVERED FUELS USING NEAR-INFRARED TECHNOLOGY IN AN INDUSTRIAL PLANT

SENSOR-BASED MONITORING METHODS HAVE RECENTLY BECOME INCREASINGLY MORE ATTRACTIVE IN WASTE PROCESSING. A STANDARDISED CALIBRATION PROCEDURE FOR REAL-TIME QUALITY ASSURANCE OF SOLIF RECOVERED FUELS WAS IMPLEMENTED IN AN INDUSTRIAL PLANT TOGETHER WITH PROJECT PARTNERS.

Determining the quality of substitute fuels usually involves sampling and laboratory analyses. In order to reduce this effort, a completely digital measurement method is an attractive incentive. Near-infrared technology enables non-contact detection of the material surface and, with suitable calibration, allows calorific parameters to be measured in real time.

The DIN 54390:2022 standard describes a test method for continuous process analysis using near-infrared spectroscopy for the indirect determination of the parameters total chlorine content, water content and calorific value. The method, including calibration, was implemented together with project partners (EVK Kerschhaggl GmbH, Redwave) in the solid recovered fuel processing plant of Norske Skog Bruck GmbH. The hyperspectral sensor with suitable

lighting was mounted above a conveyor belt of the processing line (vgl. Figure 1). As part of practical tests, ten batches of different fuel deliveries were representatively sampled, their spectral data subsequently recorded and the material sorted into 13 material classes.

Figure 1: Sensor unit in the processing plant.

Figure 2: Setup for the determination of the grammage.

After determining the grammage (vgl. Figure 2) of individual particles, laboratory analyses were carried out to obtain calibration values. These were integrated into the calibration model in averaged form (according to the standard), which makes it possible to calculate the relevant fuel parameters via the continuously measured material-specific surface composition of the material flow.

Project coordination

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Project partners (story)

- ANDRITZ AG, AUT
- EVK DI KERSCHHAGGL GmbH, AUT
- FH Joanneum, AUT
- IUT Ingenieurgemeinschaft Innovative Umwelttechnik GmbH, AUT

- KNOW-CENTER GmbH, AUT
- Komptech GmbH, AUT
- REDWAVE - a division of BT-Wolfgang Binder GmbH, AUT
- SIEMENS AG Austria, AUT
- Mayer Recycling GmbH, AUT

- Müllex-Umwelt-Säuberungs-GmbH, AUT
- Saubermacher Dienstleistungs AG, AUT
- TÜV SÜD Landesgesellschaft Österreich GmbH, AUT

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