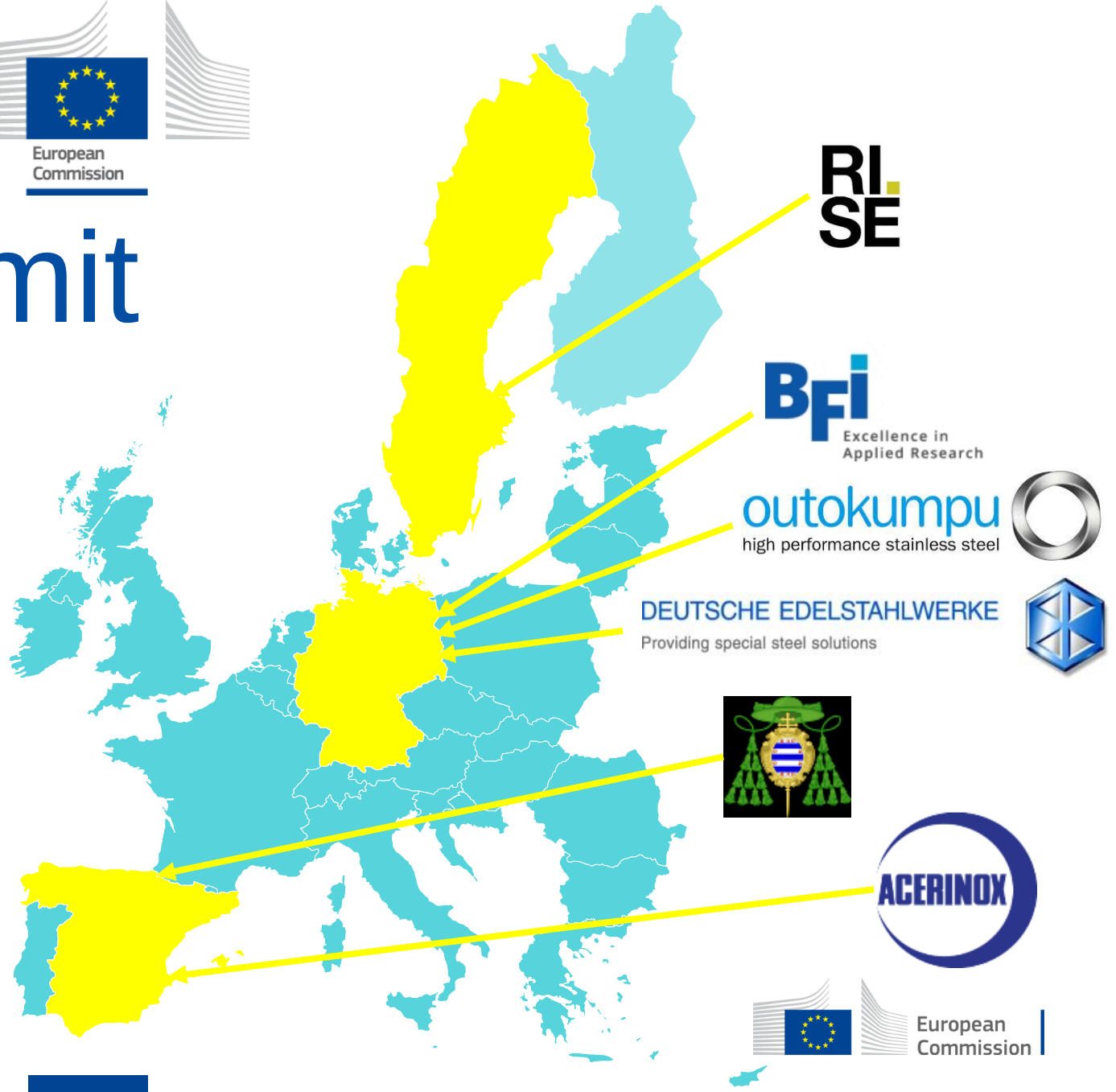
RFCS Summit

Brussels, 21/03/2022

MACO-Pilot

Optimisation of the HF-HNO_3 mixed-acid online monitoring and control in stainless steel pickling plants

Call: *RFCS-2015*
Instrument: *PDR*
Start date: 01/07/2016
End date: 31/12/2019
Budget: 1,915,143 €



Problem tackled by MACO-Pilot

- Demanded high process flexibility in European stainless-steel sector → fast adjustment of concentrations in industrial mixed-acid pickling baths required
- Improvement of working conditions concerning operation of pickling plants

Main objectives

- Optimisation of the innovative online concentration measuring technique concerning set-up, long-term reliability and operative range
- Improvement of the stainless-steel pickling plant process operation by development of advanced control models

Main scientific results

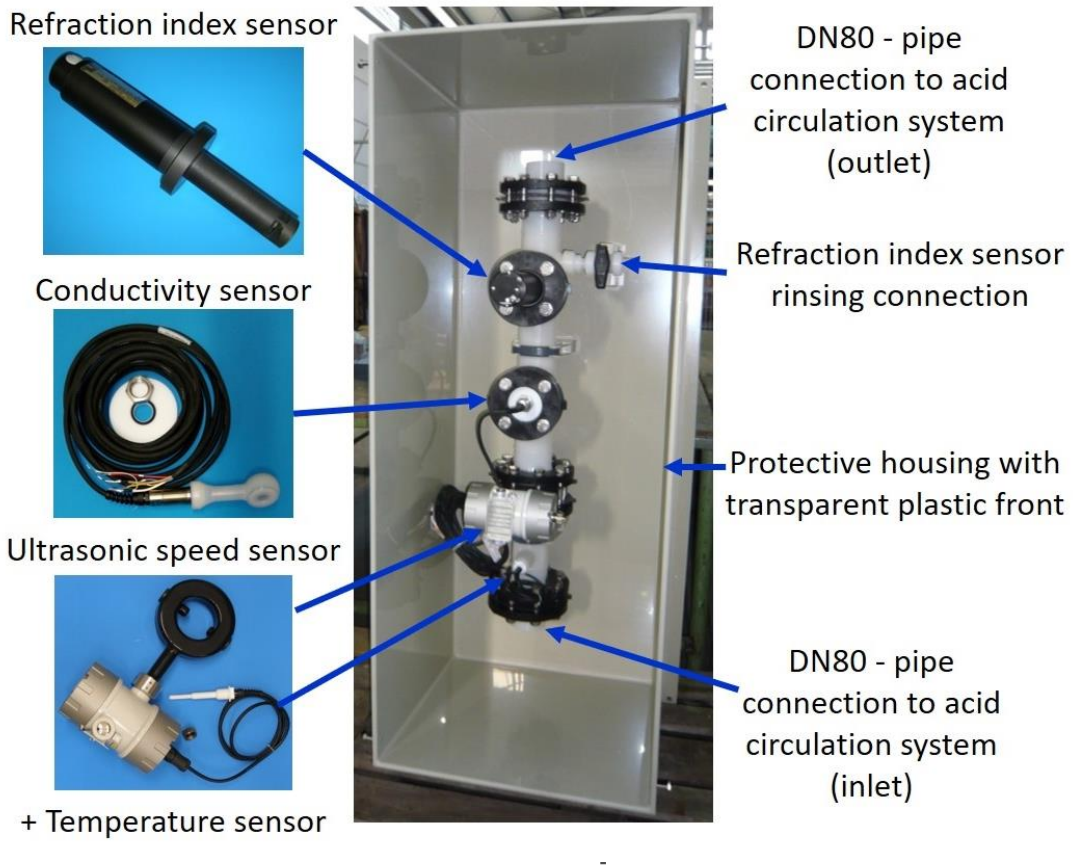
- Successful operation of online measuring systems at strip and wire rod pickling plants + regenerated acid tank, deviations to reference analysis mainly < ~ 5 g/L for free HF + total metals and < ~8 g/L for free HNO_3
- Optimised online-measuring system prototype set-up → TRL5 to 7

Main industrial or socio-economic impact

- Advanced concentration control models based on high-rate concentration data enable enhanced pickling process stabilization, saving of acids and costs, reduction of emissions as well as improvement of working conditions

Main scientific results

At DEW wire rod pickling plant



At Outokumpu strip pickling line