

SINTEF Materials and Chemistry

STATUS UPDATE

International Test Center Network Meeting
Beijing, June 7 2017

Hanne Kvamsdal

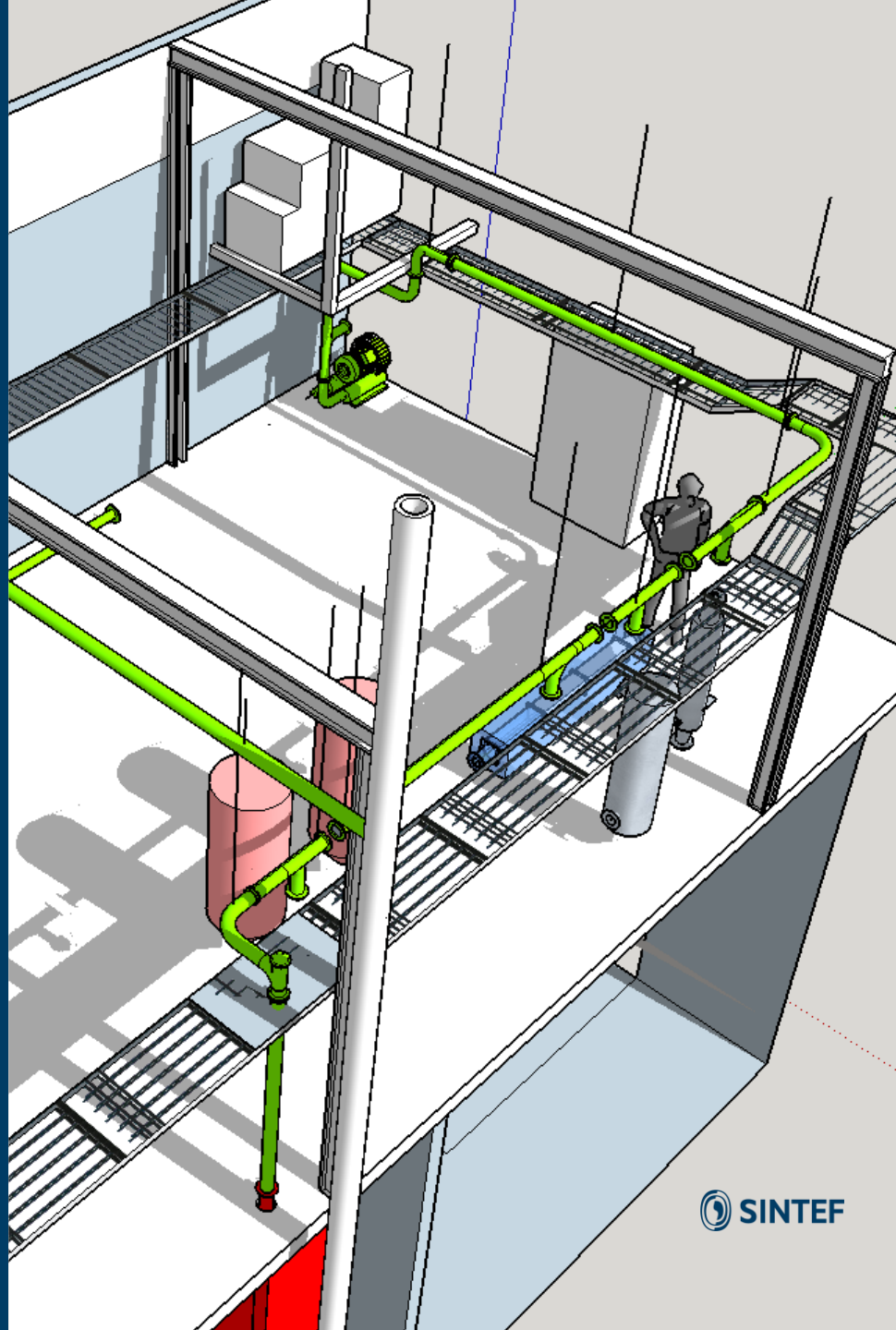
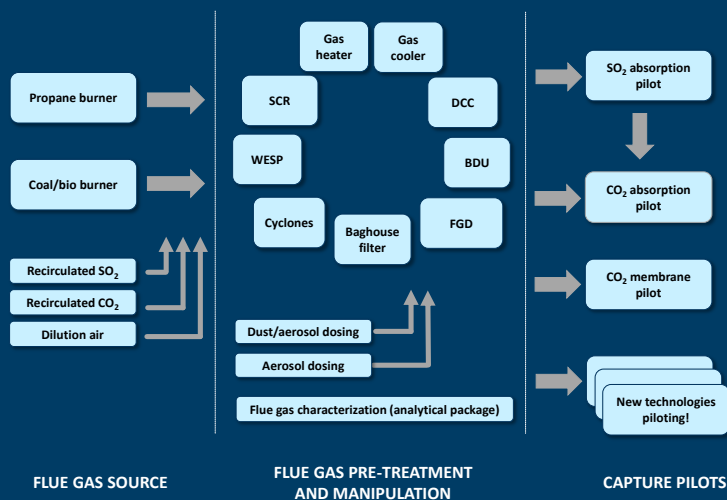
Ongoing and near future pilot campaigns

- Demo of model predictive control
Project: DOCPCC (SINTEF, TCM, NTNU and Cybernetica)
- Solvent testing
Project just started: External client
- Non-aqueous solvent testing (cont.)
Project: RTI-NAS-PILOT (RTI International and SINTEF)
- Absorber aerosol test campaign
Flue gas pre-treatment testing
Project: Aerosolve (SINTEF, TCM, NTNU, Uniper, TNO, Engie Road CCS)
- Continuation of Aerosolve and DOCPCC for the CESAR1 solvent system
Project: Part of ALIGN-CCUS (start August 1, 2017)



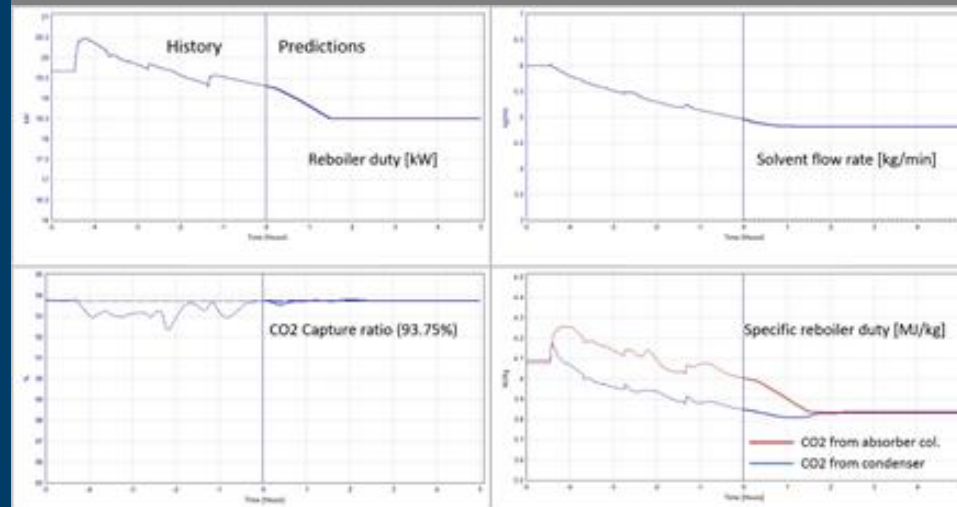
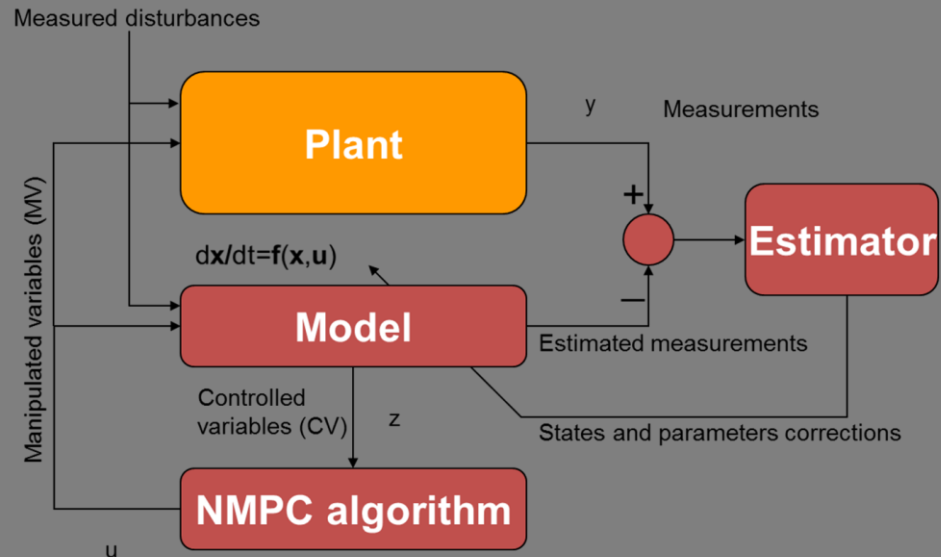
Status new flue gas pilot facility

- New burner for coal, biomass or propane
 - Some initial operating challenges
- Flexible flue gas pretreatment facility
- New equipment for flue gas manipulation and measurements



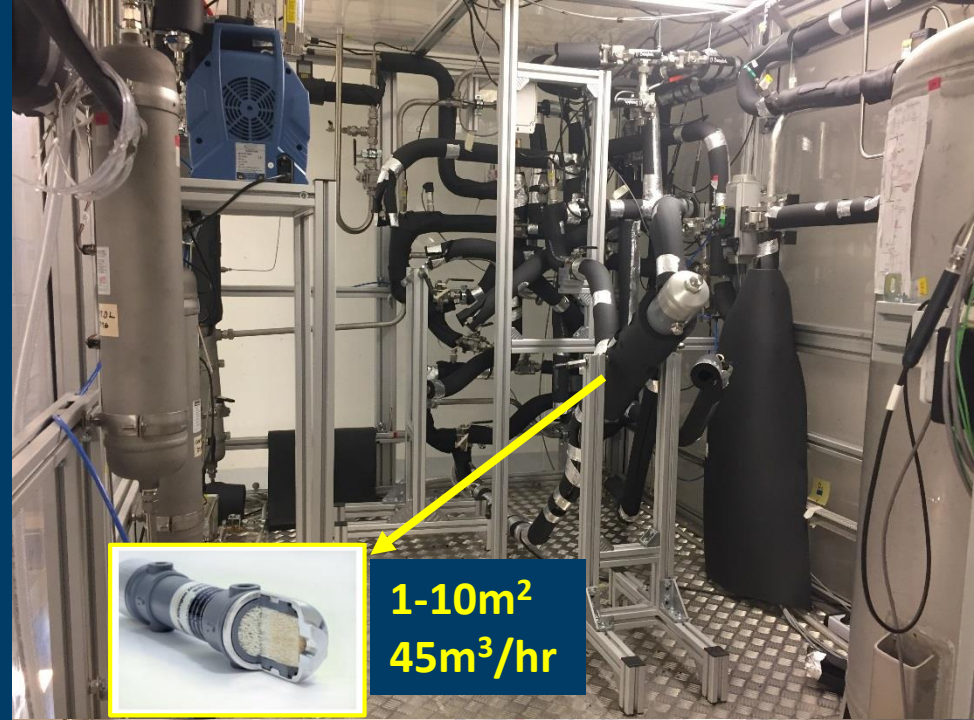
DOCPCC – ongoing project

- NMPC control functionality integrated with existing control system at Tiller
- When active – some parameters are controlled from this unit
- The software has been successfully tested for 4 weeks in April/May
- The same tests will be conducted at TCM in June/July



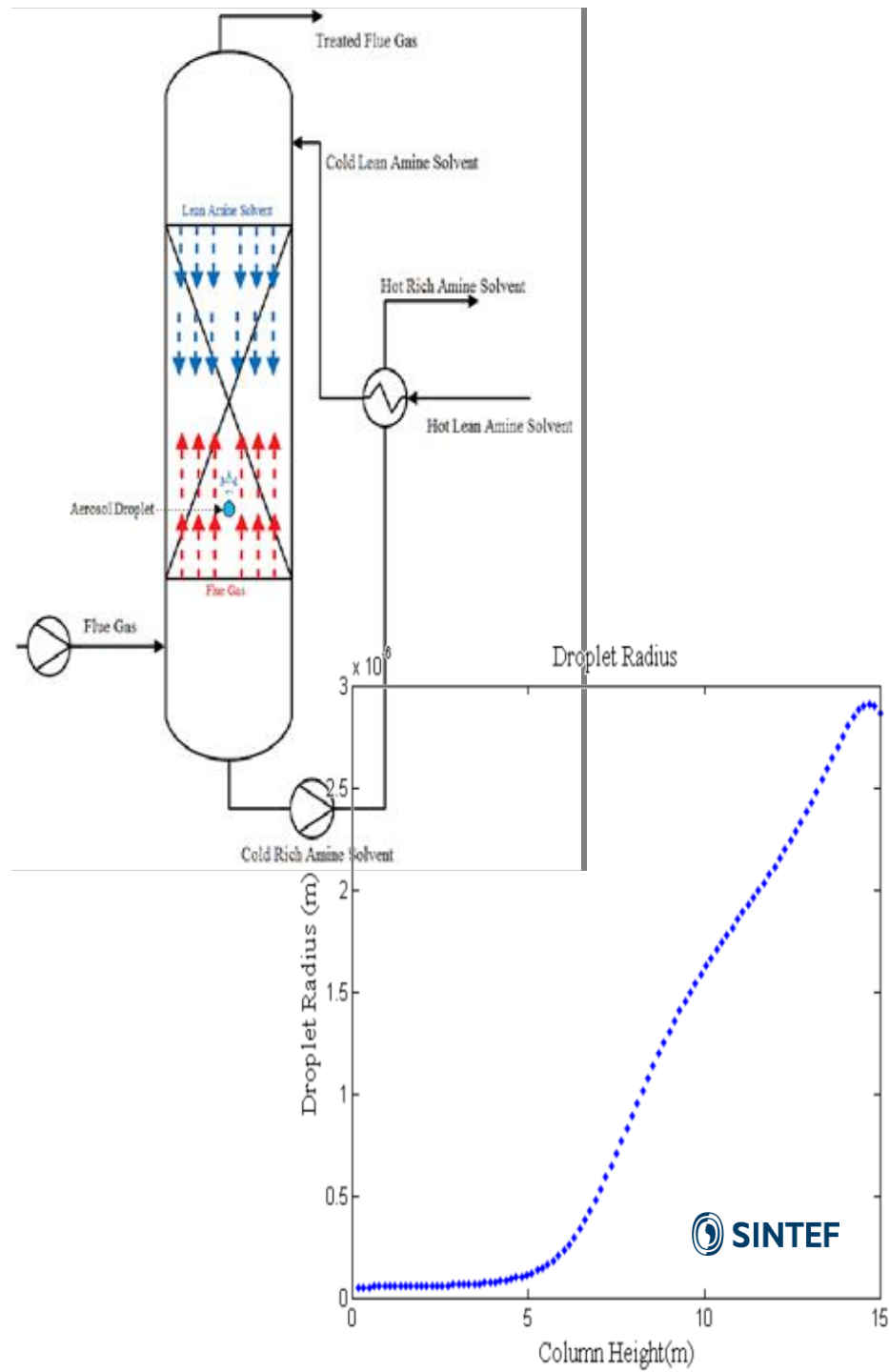
Status membrane rig

- Real flue gas pilot scale membrane test facility – good flexibility in testing various membrane modules and their configuration with changing operation parameters (flow rate, P, T, etc.)
 - Recently confirmed a state-of-the-art membrane developed with NTNU and sold license to use its related technology to USA
- Real flue gas lab-bench scale membrane test facility – even wider flexibility, especially high pressure and high temperature also with changeable flow rate and membrane modules, etc.)
 - Under construction, to be operable in summer of 2017



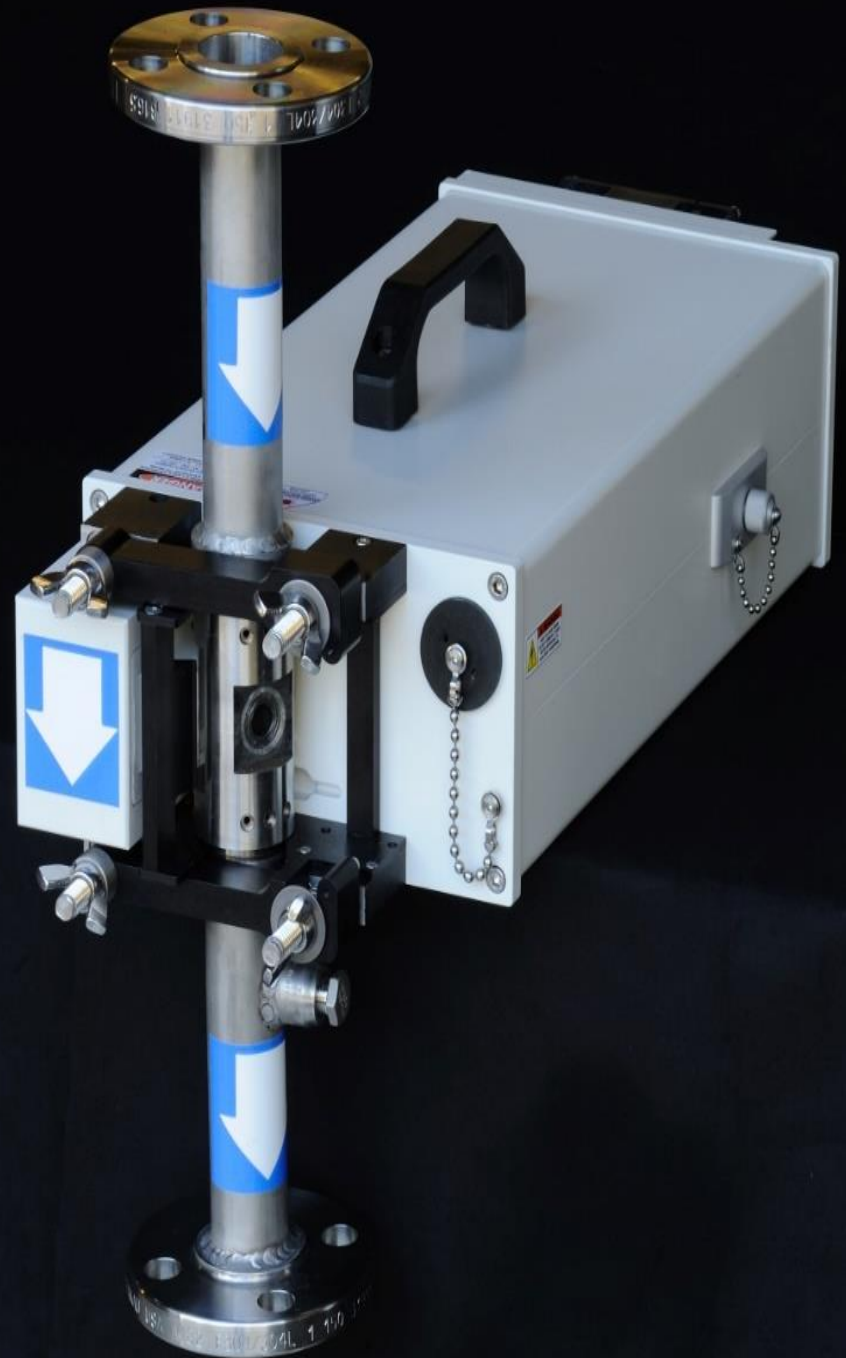
AEROSOLVE-project

- Monitoring and mitigation of aerosol related solvent emissions in post combustion CO₂ capture
- Project partners: SINTEF, TCM, Road CCS, NTNU, TNO, Uniper, Engie
- Co-funded by the Climit-demo program
- Modelling, measurements, pilot- and demo test campaigns at SINTEF and TCM
- Status: Kick-off meeting last week



Further strengthening of instrumentation for aerosol measurements

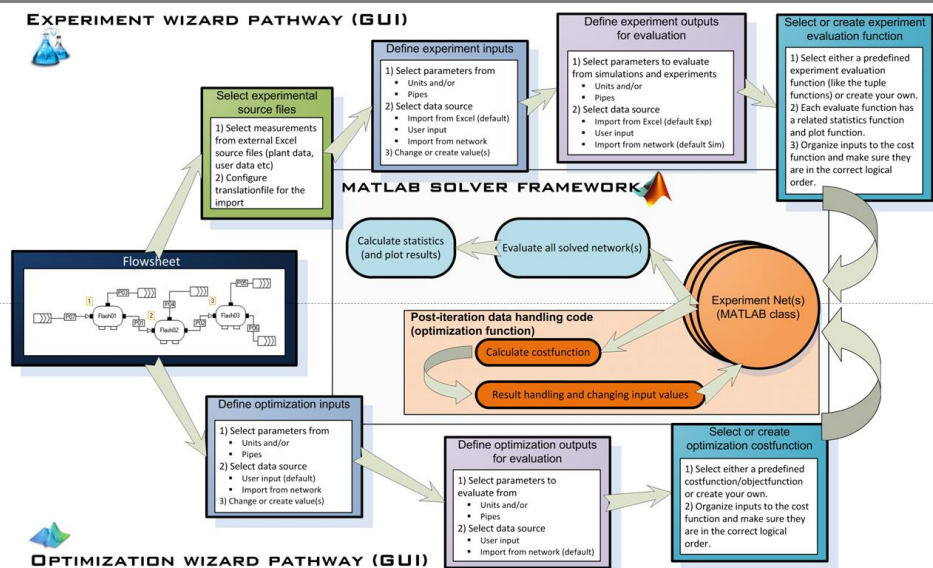
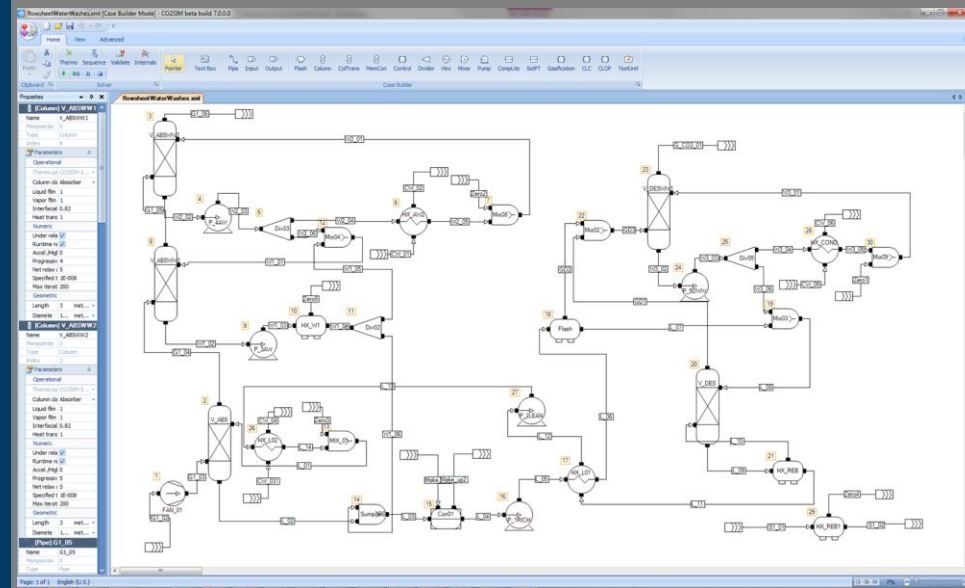
- Phase Doppler Interferometer (PDI)
- Electrostatic Low Pressure Impactor (ELPI)
- Condensation Particle Counter (CPC)
- Collecting Aerosol Filters
- In-situ impactor aerosol separation
- Improved FTIR
- SINTEF prototype Mark1 for online measurements of solvent and trace gas compounds (nitrosamines, degradation products) in gas, solvent and waterwash



Modelling activities in SINTEF

- Library of process unit models established, can be utilized in many applications
- Library of many solvent systems (various thermodynamic models and system properties)
- CO2SIM steady state simulator at present, plan to extent to dynamics
- Has been invited to be member of the CCS12 Industry and Academic Stakeholder board

CO₂ SIM





Technology for a better society