



bioenergy2020+

Measurement, Analysis and Monitoring of Condensable Gas Components (especially Tar) in Product-Gases from Biomass Gasification and Pyrolysis

International Workshop
June 8th 2011 at 19th EU Biomass Conference and Exhibition, 9.00 –
16.00 ,ICC Berlin

Introduction_SECTION_I

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Als Mitglied des Fachverbandes vertreten bei



innovations 
kompetenz



We start with confusion.....

Tars...Tars...Tars...Tars...Tars...Tars...Tars...Tars...Tars...Tars...Tars...

Gasification black technology...how to protect me and You?

ENTER

LEAVE

We all know typical obstacles from:

Condensation, clogging, stickyness, heterogeneous tar residues

Guideline, protocol, standard what's the next progress?

What should I know?

What's better working: the sampling or the plant?

Definitions: Woodgas-generatorgas-product gas-syngas-synthesis gas

Today we want to refresh.

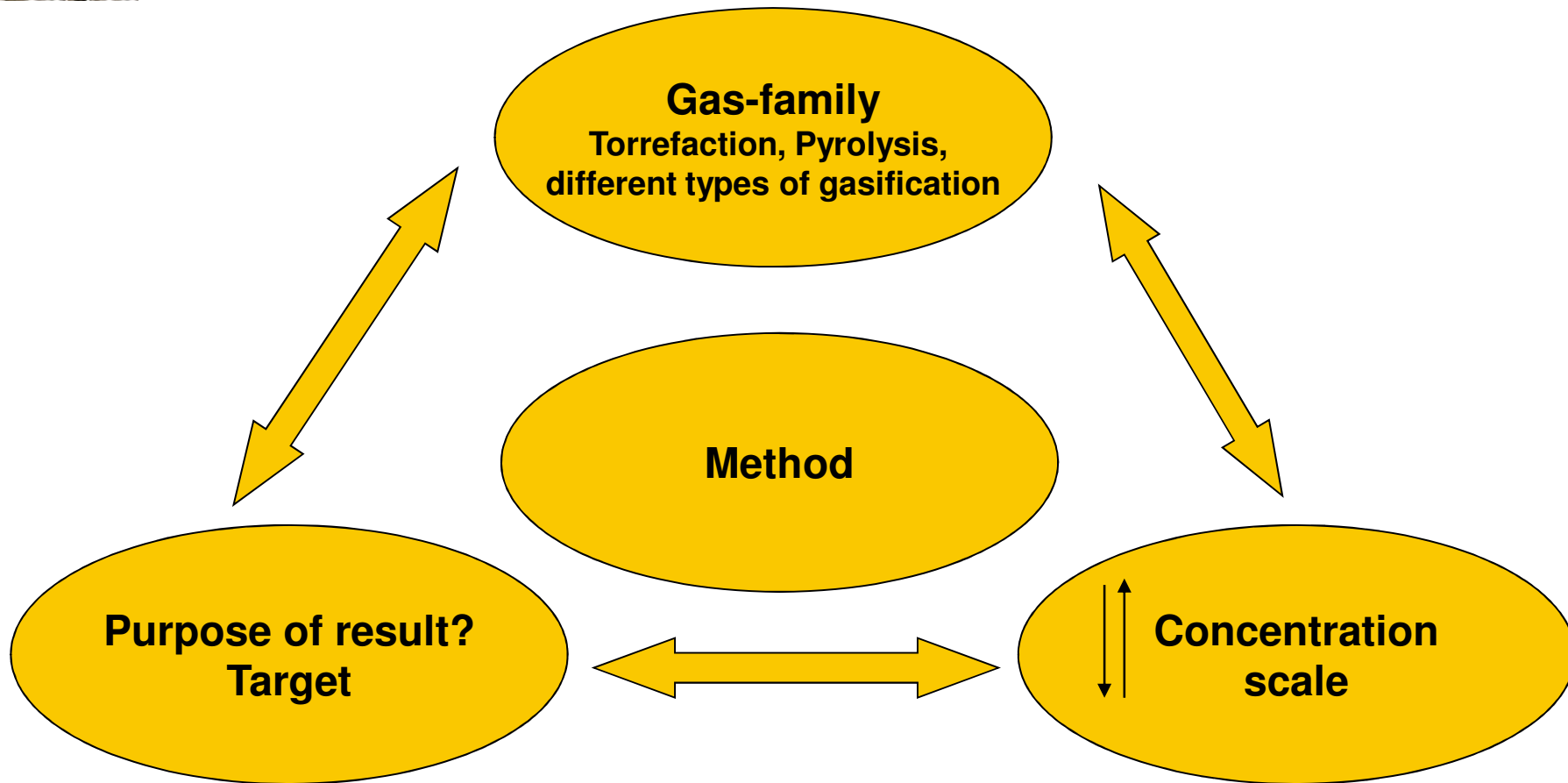


Classification what is in interest

Particulate matter	Real solid particle from ash, charcoal Aerosols re-condensed from tars, salts
General organic compounds Molar mass \geq Benzene	Definition of classes Boiling range Acronyms PAH, BTXE-S GC-detectable, gravimetric residue
Chemical reactive compounds Tracegases	NH_3 , HCN, org. N H_2S , COS, CS_2 , mercaptanes, thiophens HCl, NaCl, KCl aerosols

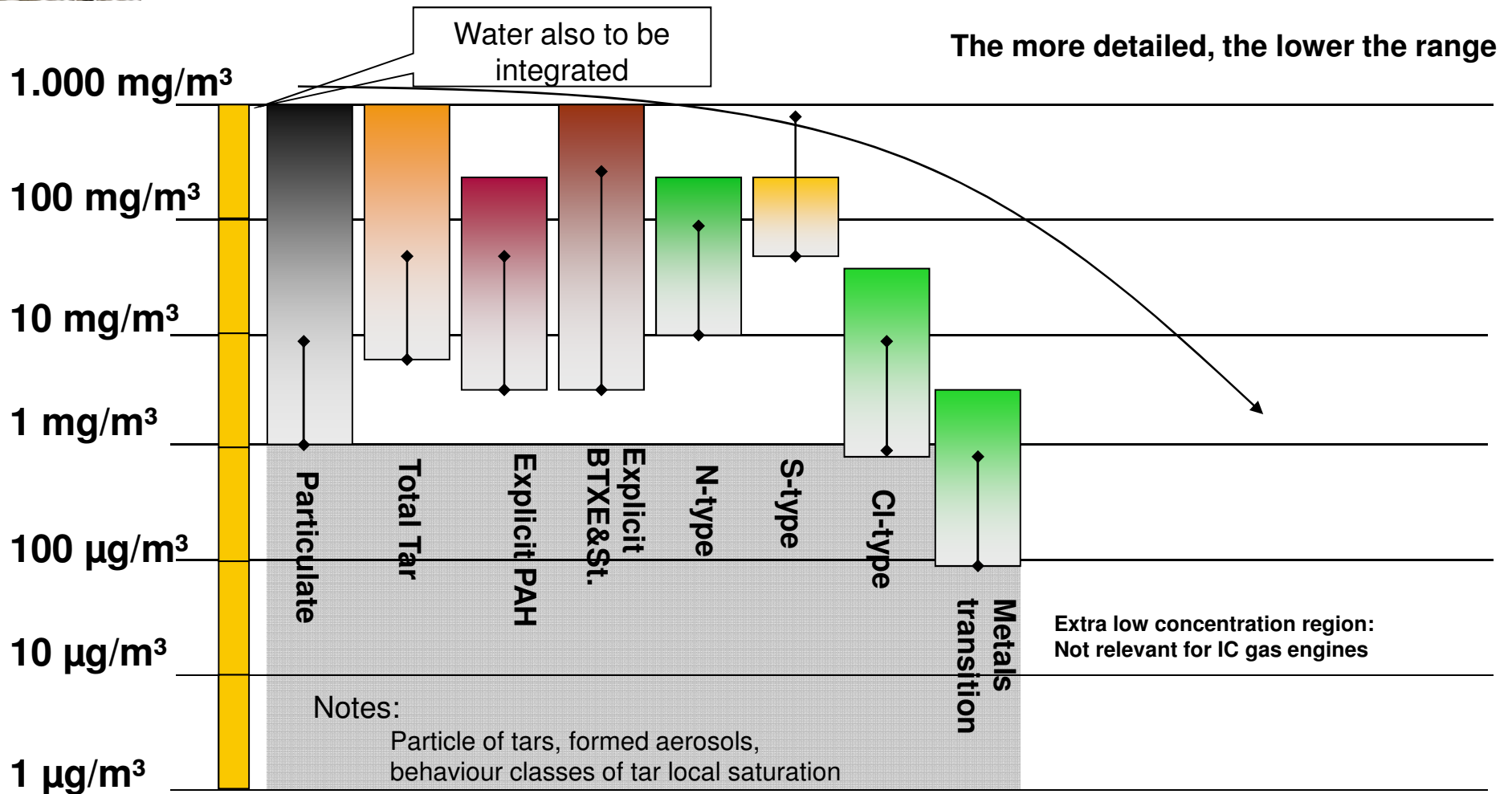


What to analyze?





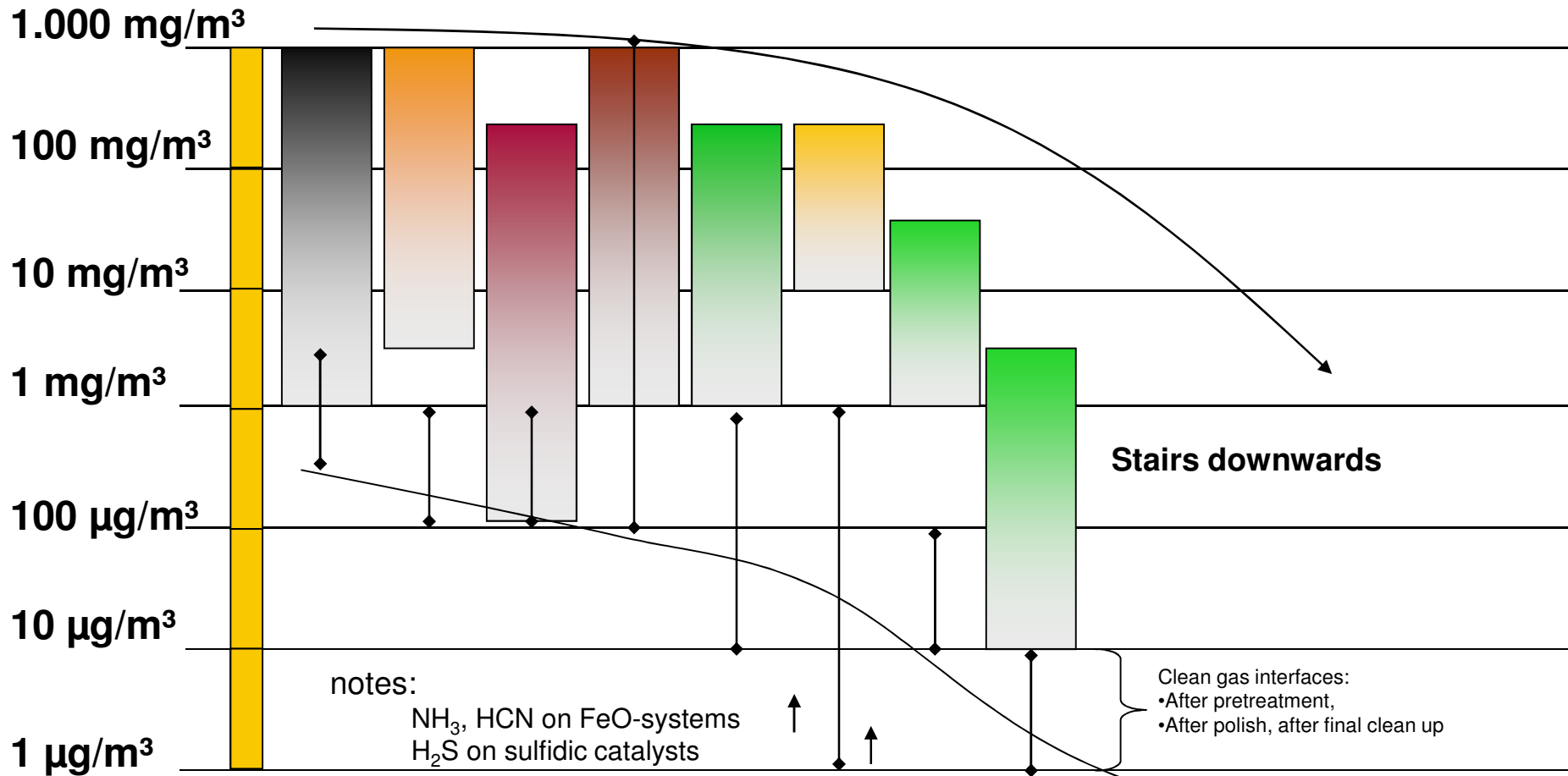
Impact of quality-parameter typical concentrations present BIOMASS and Gas engines





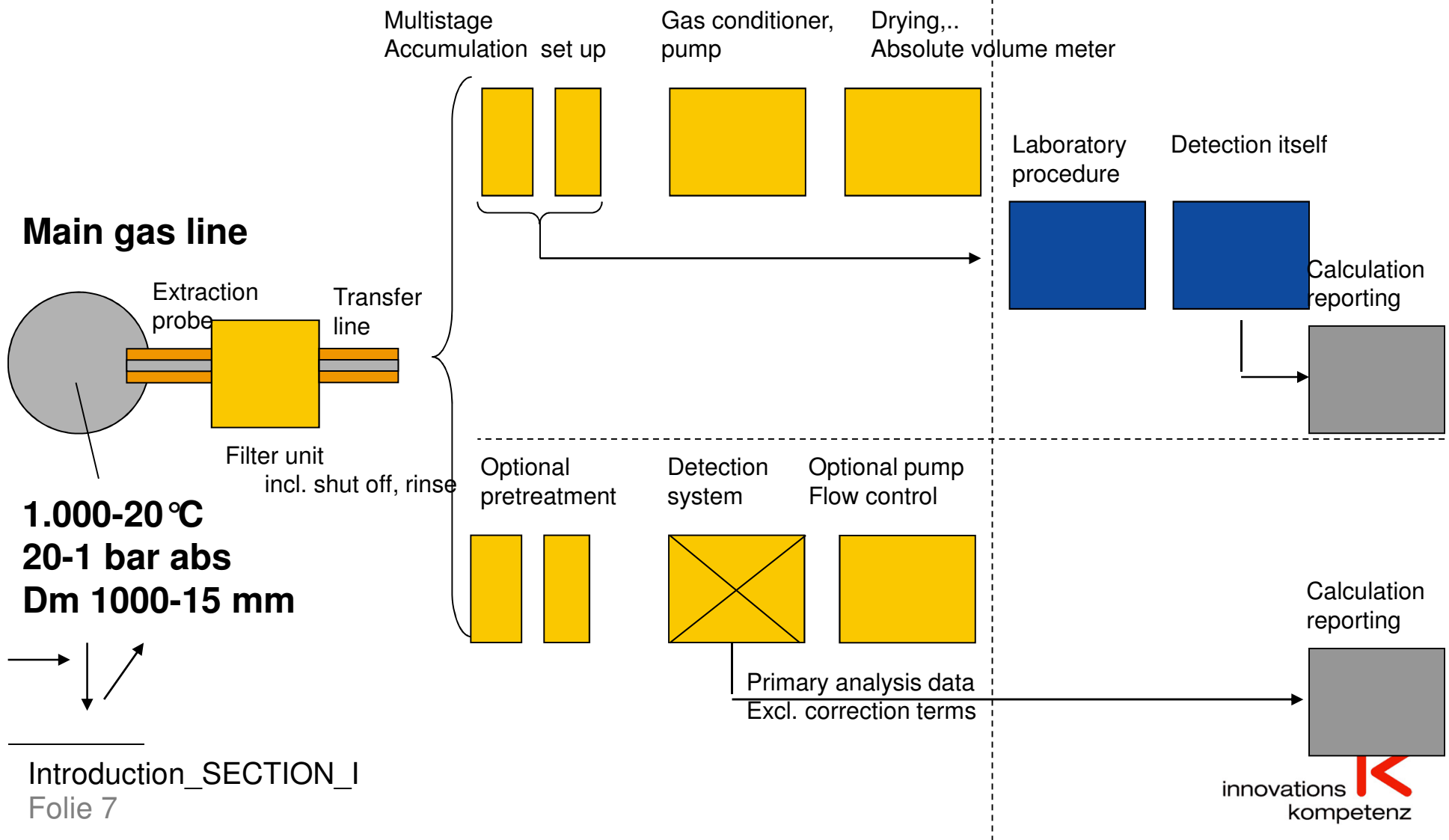
Impact of quality-parameter

typical concentrations present BIOMASS and Synthesis application





Sampling train of extractive = non insitu measurement





For conclusions it's too early: now follows the planned content

Modules 1-4: (as general items from the guideline status 2002)

- extraction lines
- accumulation set upset
- Volume recording (gas)
- Analytical procedure in lab

Perspective of coupling online detection/analysis systems

General hurdles from sample to result

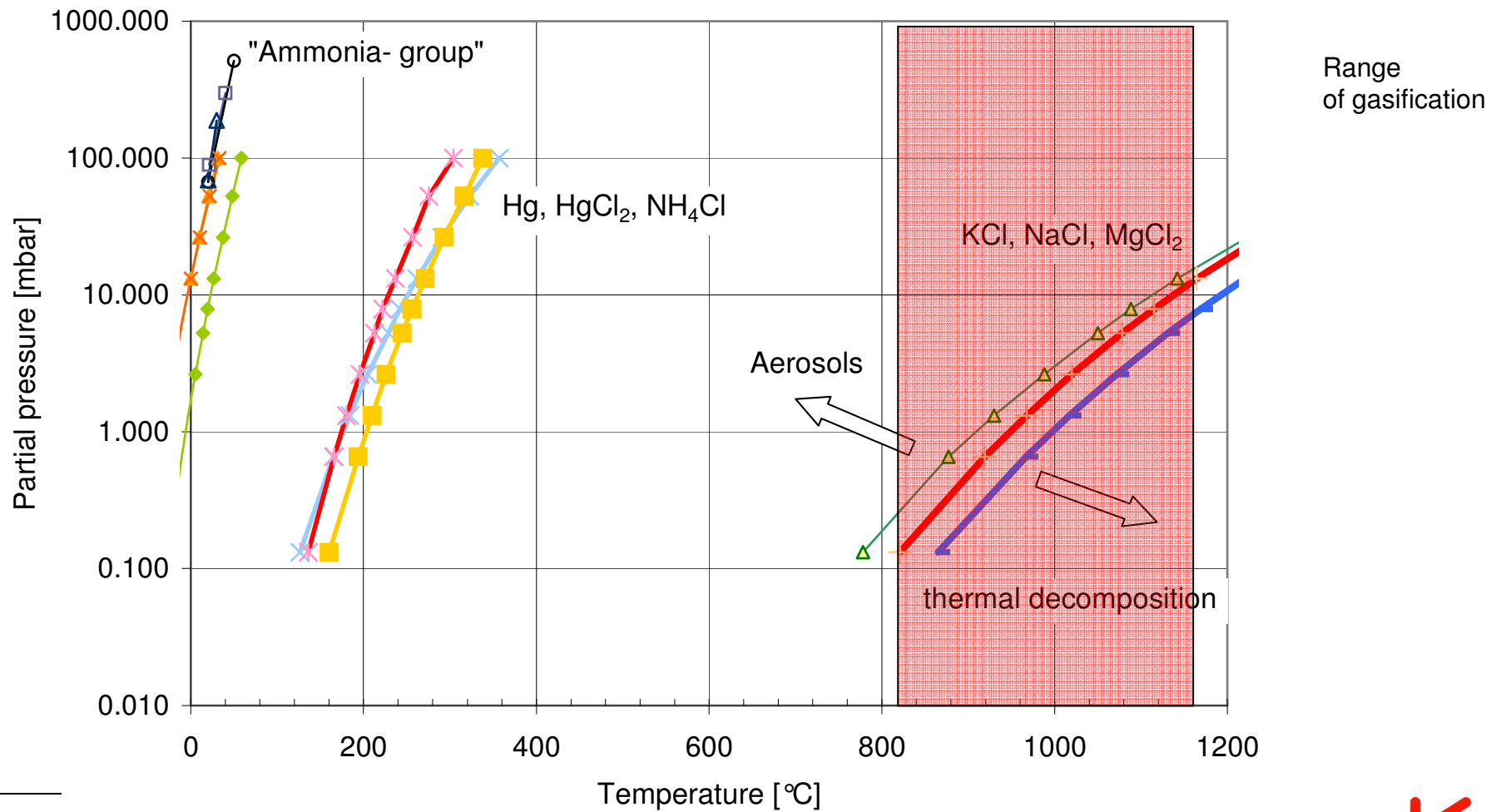
Extraction, isotherm line, transfer, delay, dewing point, adsorption, Filter cake, condensation, aerosol formation, tar-potatoes, clogging, solvent losses, volume errors tightness, recovery & re-dilution, detection, errors in normalisation volume, in steady transient conditions

Typical obstacles in: sample extraction, transfer, accumulation, detection, gas volume metering.

**Influence of concentration scale/ type of gas,... Simultaneous sampling of ###
Concept of quality management**

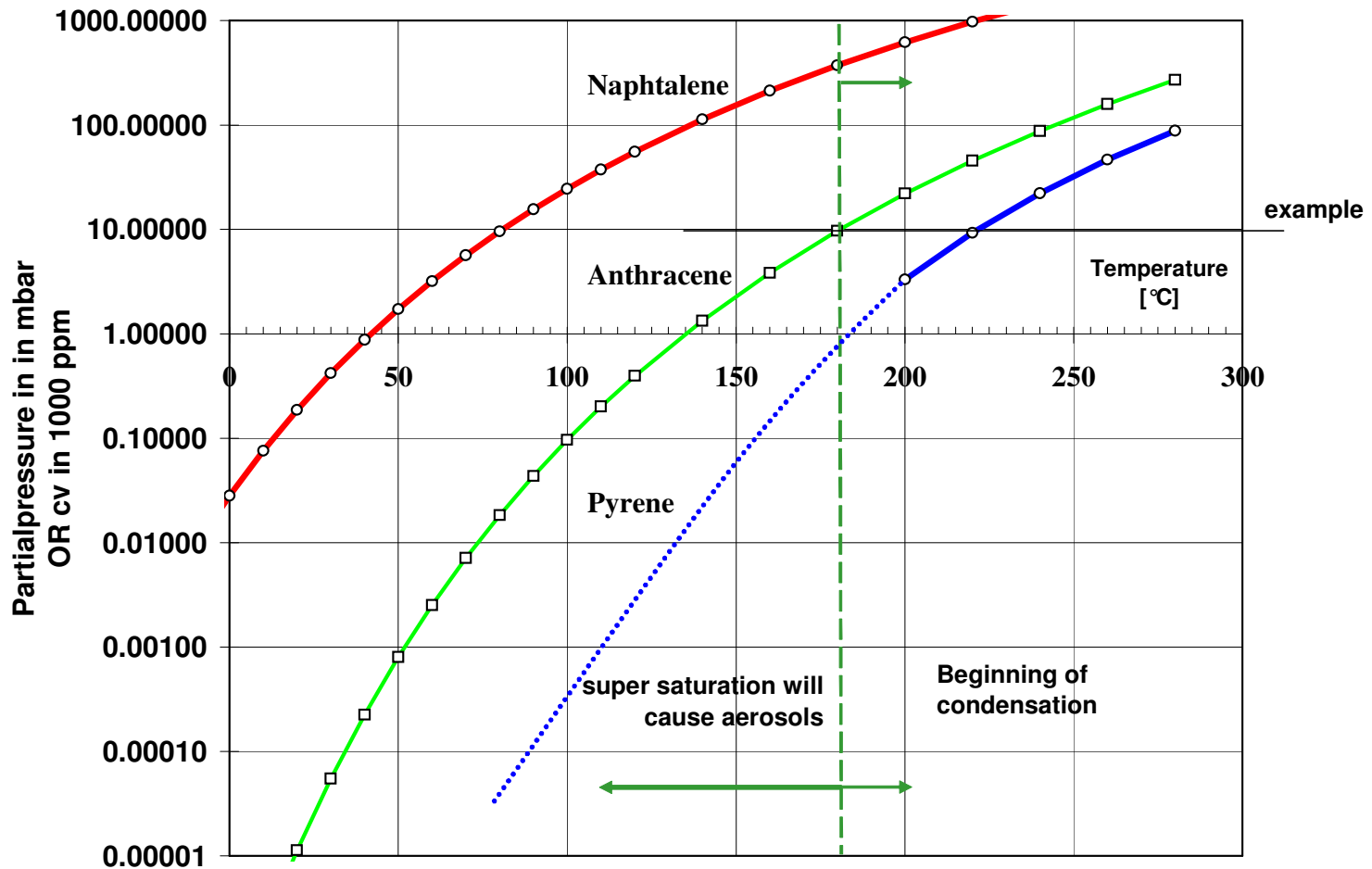


About: the evaporation, sublimation pressures of inorganic salts





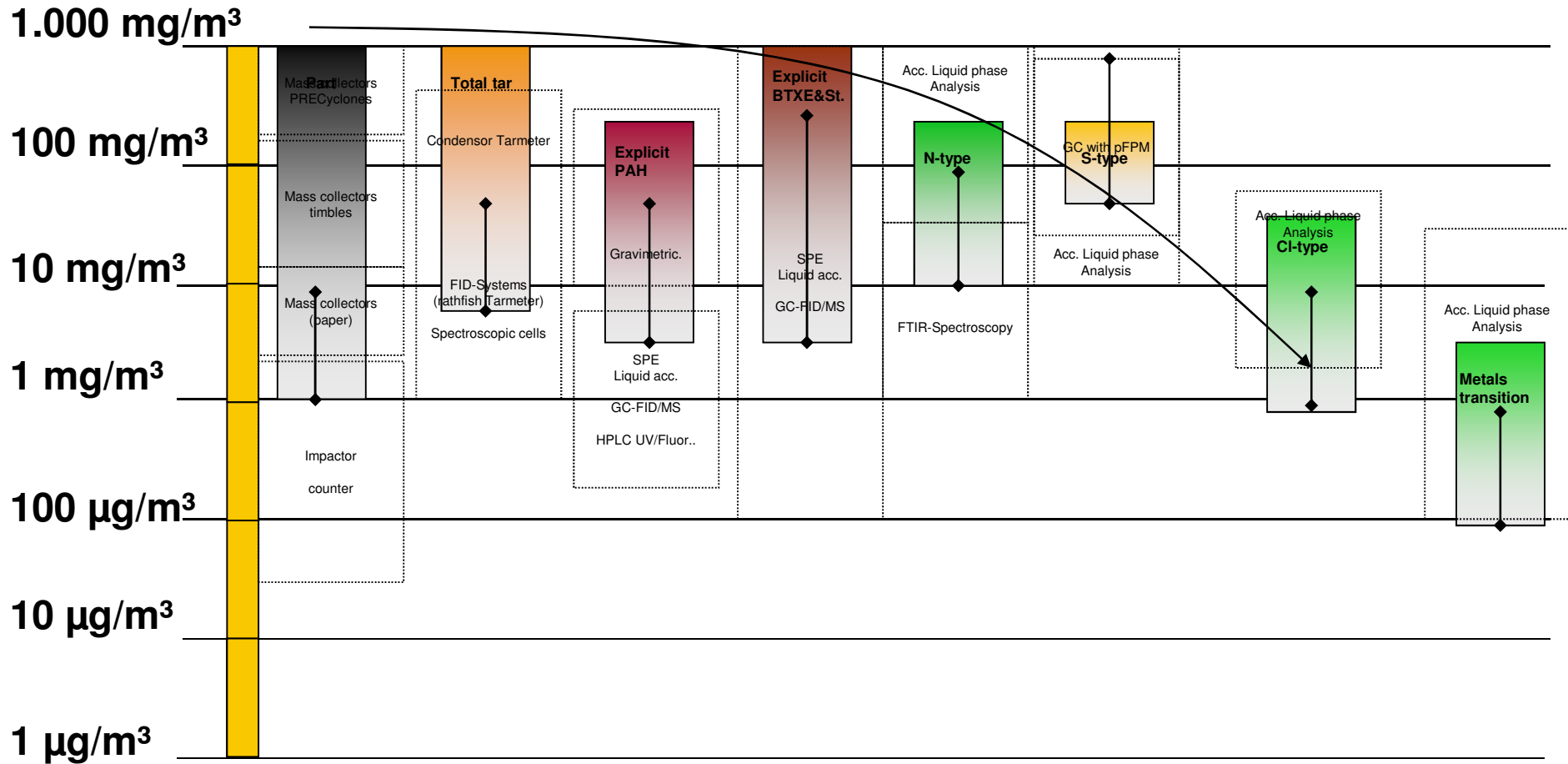
About: the evaporation, sublimation pressures of tar compounds (selected)





Applied technology

typical concentrations present BIOMASS and Gas engines (limits)





Impact of quality-parameter typical concentrations present BIOMASS

Synthesis application; depending on gas interface: before polishment / before catalyst

