PAUL SCHERRER INSTITUT

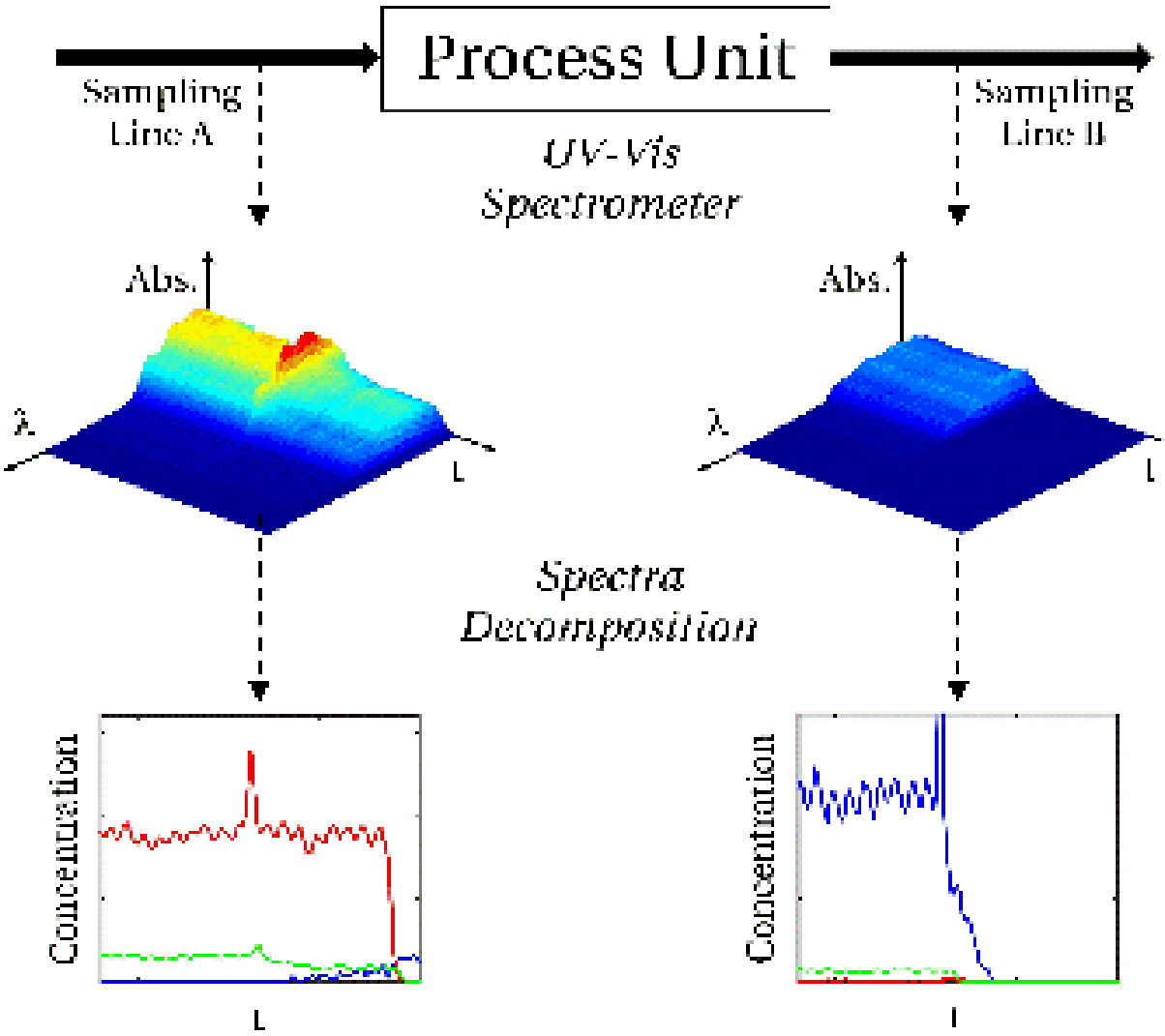
Ph. Edinger, J. Schneebeli, R.P.W.J. Struis, S.M.A. Biollaz, Chr. Ludwig
Paul Scherrer Institut

Compact and robust UV-Vis spectroscopy for on-line BTX & PAH measurement

GAW 2016, Amsterdam 10.6.2016

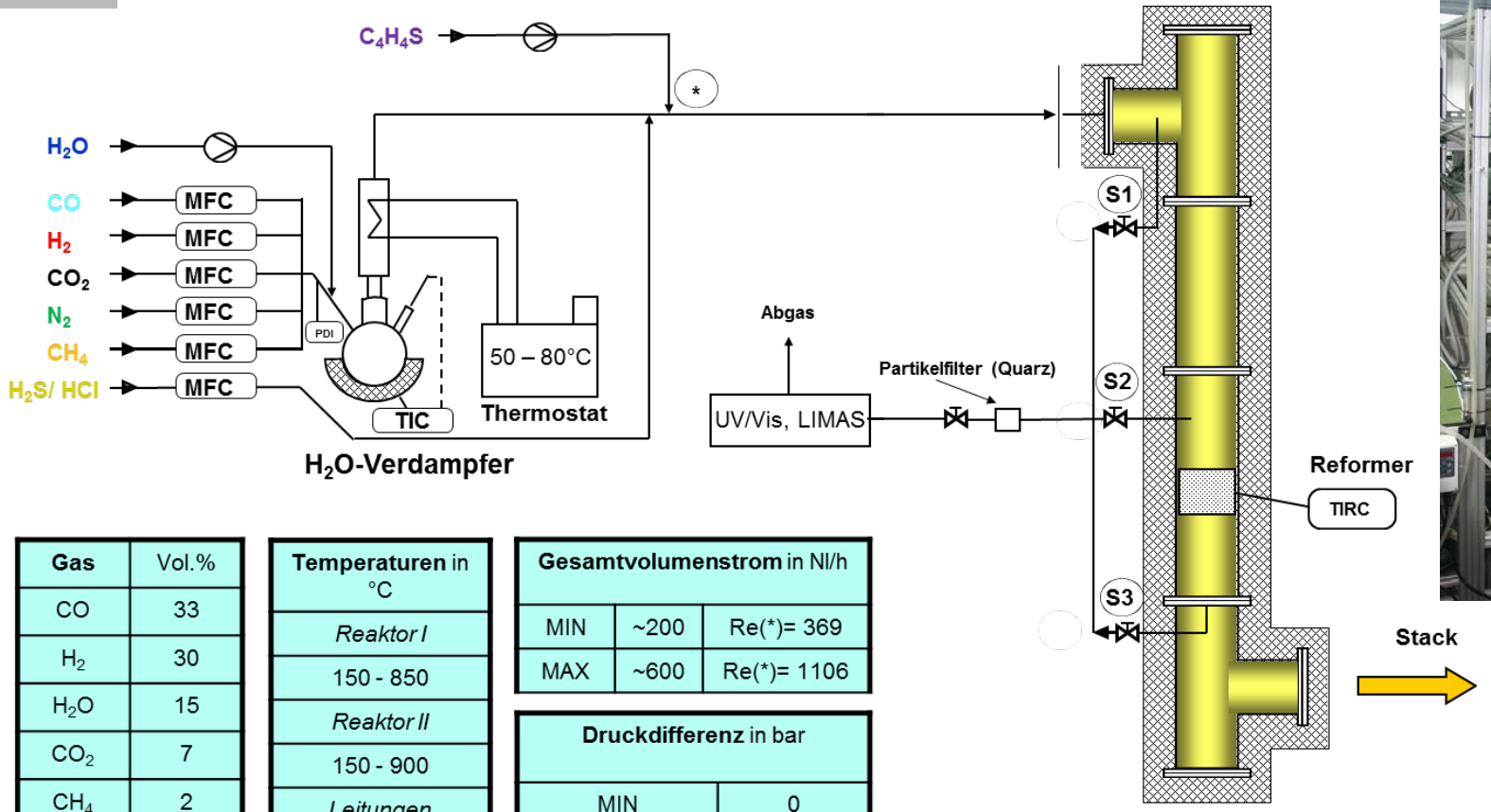
Motivation for UV-VIS on-line analysis

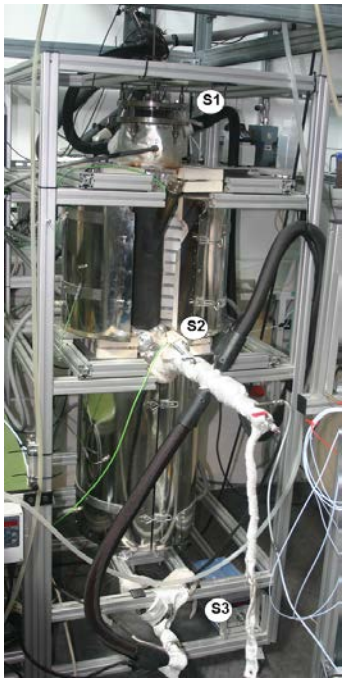
On-line assessment of a process unit such as a reformer or a scrubber for steady state and dynamic operation



Test case SILEX test rig @ KIT: Reformer

Investigating the performance of a reforming catalyst for temperatures between 750 und 850°C and presence of H_2S/Thiophene





Gas	Vol.%
CO	33
H_2	30
H_2O	15
CO_2	7
CH_4	2
N_2	Balance

Temperaturen in °C
Reaktor I
150 - 850
Reaktor II
150 - 900
Leitungen
150

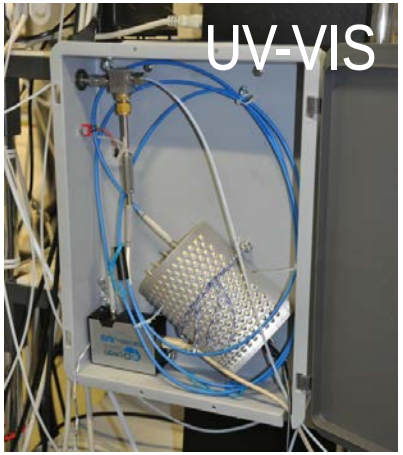
Gesamtvolumenstrom in Nl/h		
MIN	~200	Re(*)= 369
MAX	~600	Re(*)= 1106

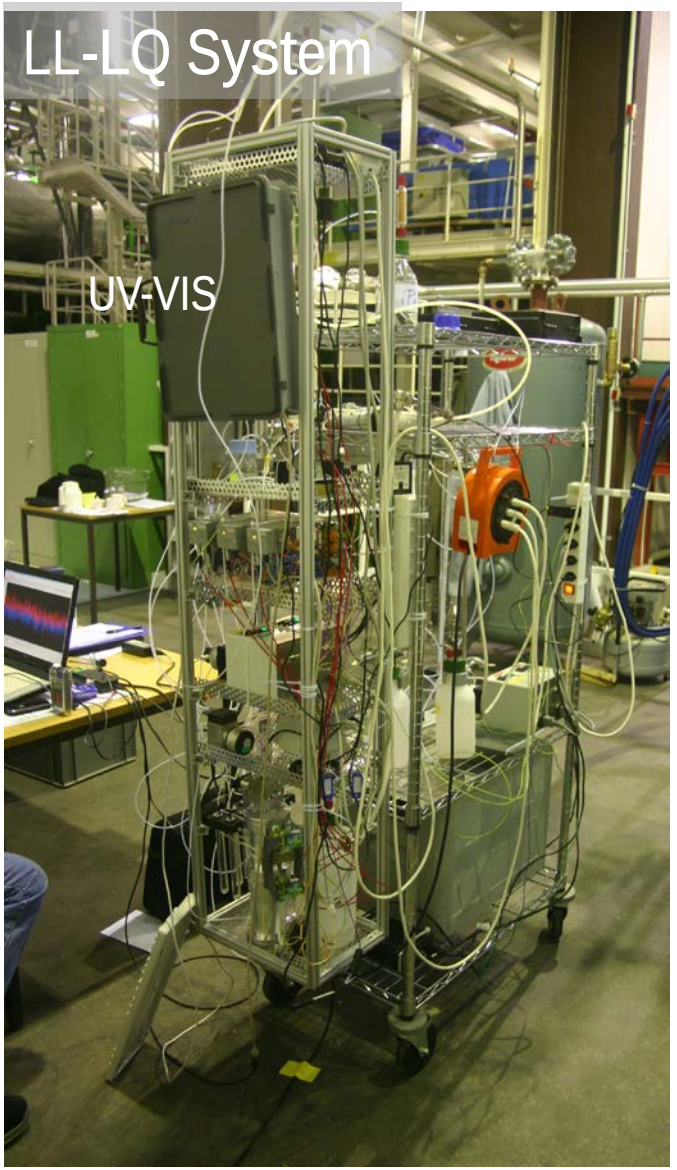
Druckdifferenz in bar	
MIN	0
MAX	~0,6

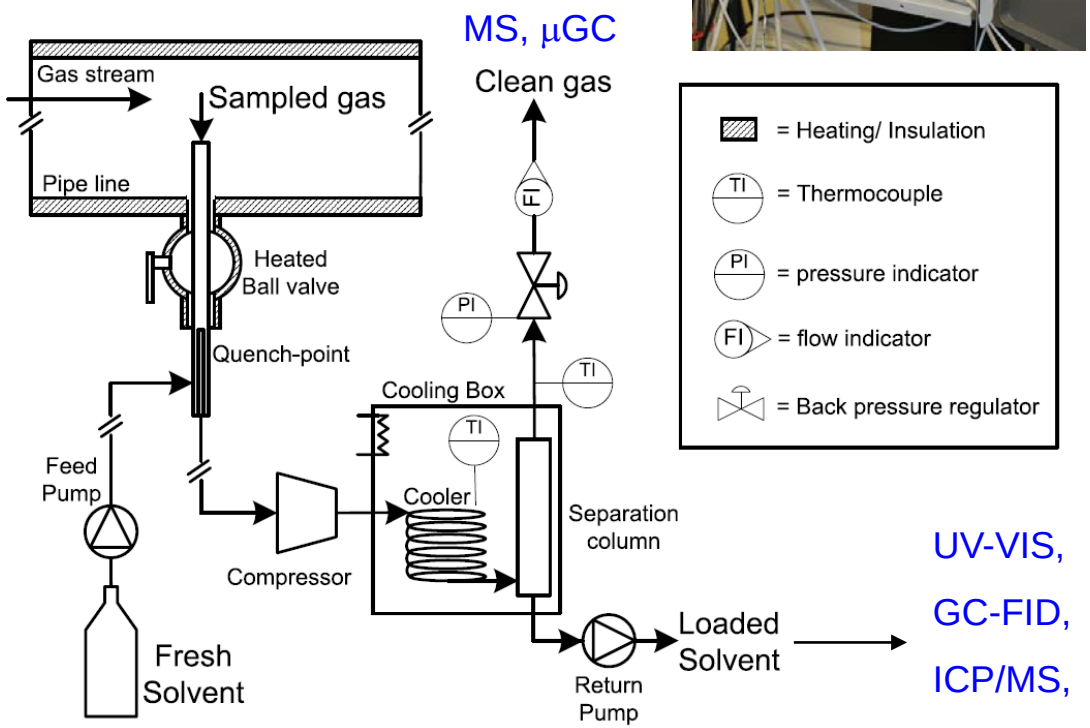
Sampling system LL-LQ for on-line measurement

Design of LL-LQ system

Two lines in place at KIT sampling inlet and outlet of reformer (S2 and S3) in parallel.







UV-VIS,

GC-FID,

ICP/MS,

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Typical results of UV-VIS online measurements

Online measurement of inlet and outlet concentration of BTX/PAH for a tar reformer operated with model gases