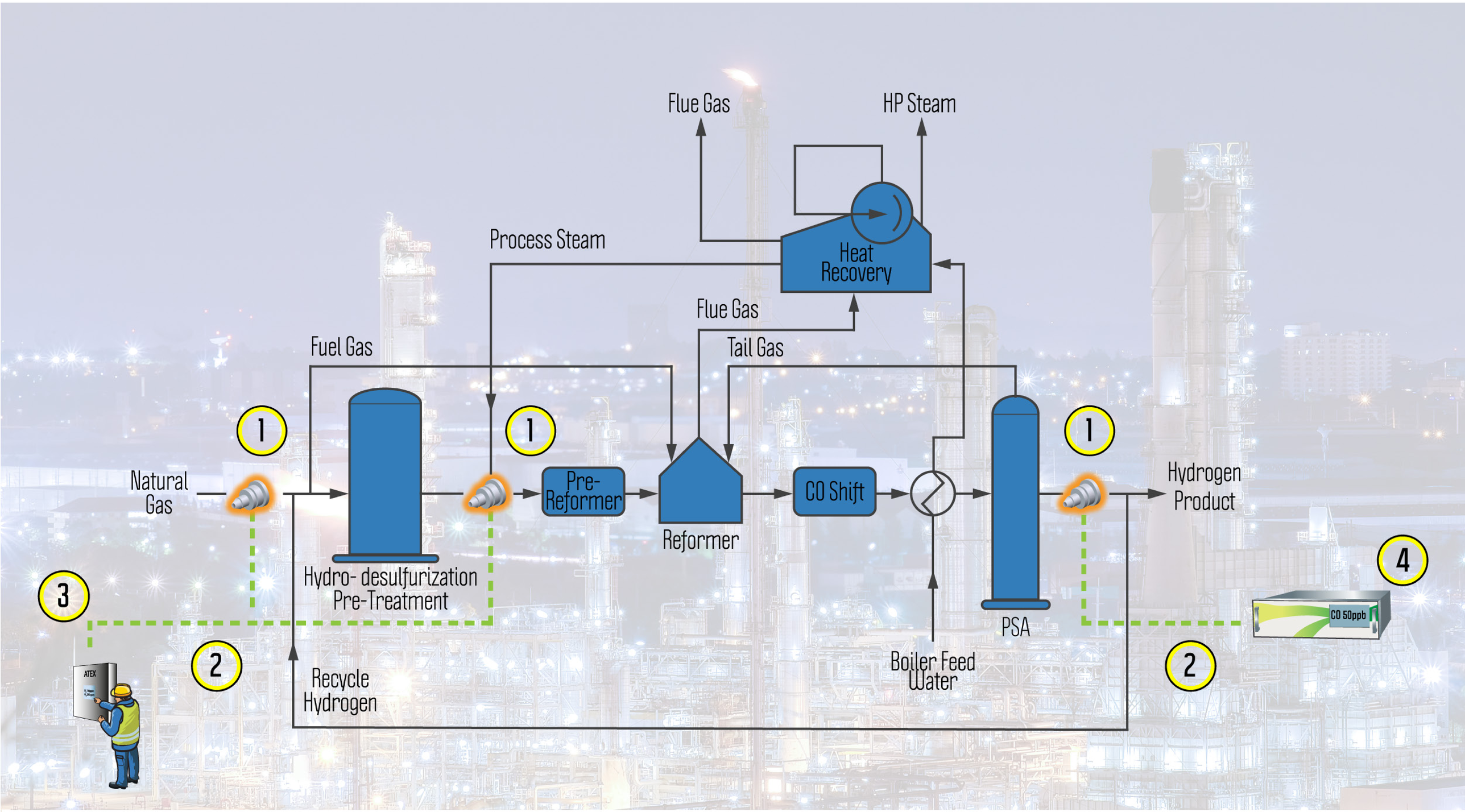
APPLICATION NOTE

ProCeas®

THE NEW GENERATION OF GAS ANALYZERS FOR STEAM METHANE REFORMING (H2 PRODUCTION)

- Accurate & low detection limit
- No cross interferences
- Online & fast response time
- Low maintenance & no drift



1 Sonic Nozzle

2 Sampling line

3 ProCeas® H2S in Natural Gas

4 ProCeas® CO CH4 H20 in Hydrogen

WHAT ARE THE GASES YOU NEED TO CONTROL IN STEAM METHANE REFORMING PROCESS?

Steam methane reforming, or SMR, is an industrial process where methane from natural gas reacts with pressurized steam in presence of a catalyst, in order to produce hydrogen and carbon monoxide.
SMR is the main technique to produce hydrogen.Gas analysis plays an important role in order to control and protect the SMR production.
At the beginning of the process, the hydrocarbon feed needs to be purified from sulfur compounds, as H2S affects the efficiency of the process.Therefore, H2S content is measured in natural gas before and after desulfurization.
At the end of the process, gas contaminants need to be controlled, even at very low concentrations (ppb), in order to verify the purity of the produced hydrogen.

PROCEAS® GAS ANALYZER TECHNOLOGIES

Optical Feedback Cavity Enhanced Absorption Spectroscopy and Low Pressure Sampling

The ProCeas® uses the patented OFCEAS technology, based one extractive absorption spectroscopy.This laser based technology is able to measure gases down to ppb levels of concentration, with an unforeseen quality of measurement in terms of accuracy and repeatability.
OFCEAS principle combined with Low Pressure Sampling (<50 mbar absolute) grants an enhanced gas selectivity, and therefore is not impacted by cross interferences between gases even in hydrocarbons matrices.
This is why ProCeas® can measure H2S below 10ppb in natural gas, and CO and H2S below 1ppb in H2.

Self-calibration

ProCeas® has an integrated self-calibration of the measurement system, featuring no zero and span drift over time. ProCeas® is able to analyze a large range of gases with limited maintenance costs.

ProCeas® KEY FEATURES

- No cross-interferences
- Highly sensitive
- Low detection level (ppb)
- No Zero drift and no Span drift
- No regular calibration required
- Multigas analyzer possibilities (H2S, CO, CH4, H2O, CO2, etc...)
- Fast response time (T10-90 starting from 3 seconds)
- Low sampled volume and low fouling
- ATEX enclosures available

PROCEAS® GAS ANALYZER FOR SMR

Is a complete pre-calibrated single or multicomponent (H2S, CO, CH4, H2O, CO2, etc...) laser infrared spectrometer for measurement of impurities.

Trace gas analysis in natural gas

IMPURITIES	RANGE[A]	LOD[B]
H2S	0-50ppm	<0,001ppm

Trace gas analysis in hydrogen

IMPURITIES	RANGE[A]	LOD[B]
CO	0-10ppm	<0,001ppm
H2S	0-10ppm	<0,001ppm
CH4	0-10ppm	<0,005ppm
H2O	0-10ppm	<0,01ppm
CO2	0-10ppm	<0,01ppm

[A] adjustable range on request
[B] limit of detection 3 sigma 60 seconds

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