

Measuring H₂S in Sour Gas / Sulfur Recovery Unit (SRU)

Applied Analytics Application Note No. AN-048

Application Summary

Analytes: **H₂S (hydrogen sulfide)**

Detector: **OMA-300 Process Analyzer**

Process Stream: **Sour Gas**

Typical Measurement Range: **0-100% H₂S (OMA-300 Process Analyzer)**

Introduction

H₂S is an extremely dangerous chemical which occurs naturally in fossil fuels and is removed through refining processes. Gas that contains significant amounts of H₂S is considered “sour gas” due to the foul aroma provided by H₂S and other sulfur containing compounds.

The primary process for removing H₂S from sour natural gas, Sour Water Stripper Gas and Hydrotreater Gas is the amine treatment process in a Sulfur Recovery Unit (SRU). The sour gas is run through an absorption tower containing an aqueous amine solution. The amine selectively absorbs the H₂S from the gas stream, which results in a treated “sweet gas”. To achieve efficient control of the amine unit cycle time, the operator must know the concentration of the H₂S in the sour gas.

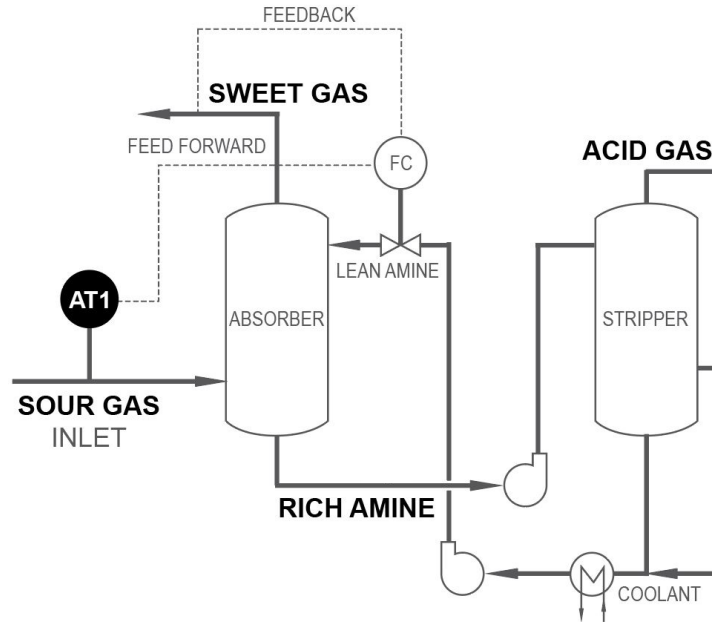
The OMA-300 Process Analyzer can be implemented in this process to provide H₂S measurements in the incoming sour gas stream. The OMA-300 Process Analyzer continuously outputs H₂S readings, providing new measurements every 5 seconds. Response time is critical in the amine treatment unit in order to keep the unit running as efficiently as possible.

System Benefits: Sulfur Recovery Unit Feed Forward

- » Continuously measures H₂S level in sour feed gas stream using UV-Vis spectrophotometer
- » Totally solid-state build with no moving parts — modern design for low maintenance
- » Additional software benches for up to 4 chemical analytes
- » Ultra-safe fiber optic design with no sample gas inside analyzer unit — world’s safest solution for this application

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Schematic of Amine Unit

The specifications below represent performance of the OMA-300 Process Analyzer in a typical crude oil application.

For technical details about the OMA-300 Process Analyzer, see the data sheet:

https://aai.solutions/documents/AA_DS001A_OMA300.pdf

All performance specifications are subject to the assumption that the sample conditioning system and unit installation are approved by Applied Analytics. For any other arrangement, please inquire directly with Sales.

Application Data			
Performance Specifications			
Accuracy	<i>Custom measurement ranges available; example ranges below.</i>		
	<table border="1"> <tr> <td>OMA-300 (UV-Vis)</td> <td>H₂S 0-100%: ±1% full scale</td> </tr> </table>	OMA-300 (UV-Vis)	H ₂ S 0-100%: ±1% full scale
OMA-300 (UV-Vis)	H ₂ S 0-100%: ±1% full scale		
	*Whichever is larger.		

Subject to modifications. Specified product characteristics and technical data do not serve as guarantee declarations.

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Further Reading

Subject	Location
OMA-300 H ₂ S Analyzer Data sheet	https://aai.solutions/documents/OMAH2S.pdf
OMA-300 Process Analyzer Data sheet	https://aai.solutions/documents/AA_DS001A_OMA300.pdf
TLG-837 Tail Gas Analyzer Data Sheet	https://aai.solutions/documents/AA_DS004A_TLG837.pdf
Lean Amine / Rich Amine Analysis Application Note	https://aai.solutions/documents/AA_AN025_Lean-Amine-Rich-Amine-Analysis.pdf



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Headquarters

Applied Analytics, Inc.
Burlington, MA, USA
sales@aai.solutions

North America Sales

Applied Analytics North America, Ltd.
Houston, TX, USA
sales@appliedanalytics.us

Brazil Sales

Applied Analytics do Brasil
Rio de Janeiro, Brazil
vendas@aadbl.com.br

Europe Sales

Applied Analytics Europe, AG
Genève, Switzerland
sales@appliedanalytics.eu

Middle East Sales

Applied Analytics Oil & Gas Operations, L.L.C.
sales@appliedanalytics.ae

India Sales

Applied Analytics (India) Pte. Ltd.
sales@appliedanalytics.in

Asia Pacific Sales

Applied Analytics Asia Pte. Ltd.
Singapore
sales@appliedanalytics.com.sg

China Sales

Applied Analytics China Limited
China
sales@appliedanalytics.cn

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