

Measuring point	Installation	Measuring task
1	pipeline	real time control of the regenerated MDEA concentration
2	pipeline	monitoring the MDEA concentration directly in the MDEA tank

MDEA-scrubbing

Introduction

Amine scrubbing is a chemical process in which CO_2 , H_2S and other acid gases are captured from natural gas. Thereby, a slightly alkaline aqueous solution of amines (mostly tertiary amines) is applied, which reversibly chemically absorbs the acid gases. Due to its high selectivity for H_2S and CO_2 , the tertiary methyldiethanolamine (MDEA) is used as an absorber. The aim of the gas scrubbing is to prepare the sour natural gas for further transport in accordance with the pipeline requirements, so that corrosion damages can be avoided.

BASF is the licensee of the MDEA plants, as well as for two additional gas scrubbing plants: the ammonia and the synthesis gas plants. As a result of the successful cooperation; the LiquiSonic® analyzer is recommended by the BASF AG Ludwigshafen for MDEA-concentration measurement.

Application

The natural gas processing with scrubbing liquids, such as MDEA, is an industrial process to improve the quality of natural gas. The natural gas is led counter-current in the absorber through MDEA, which is enriched with disturbing components. At the upper end of the absorber, the purified natural gas escapes. The MDEA (rich amine) that is contaminated with H_2S and CO_2 is transferred after the scrubbing in the stripper.

In the stripping process, the scrubbing liquid is heated and the acid gases are desorbed. The regenerated MDEA (lean amine) is then cooled, filtered and lead back into the absorption cycle.

The LiquiSonic® 30 system allows a detailed analysis of the regenerated MDEA concentration. Through the inline LiquiSonic® sensors, the amine scrubbing is analyzable around the clock with precise real-time data storage. This enables the user to react in a flexible manner and the efficiency of the absorption can be optimized.

Customer value

Through the continuous measurement of the concentration of the scrubbing liquid (MDEA) manual sampling can be omitted. This leads to a reduction of material and labor costs and improves plant safety:

- time saving: 1 h per day
- cost per hour: 50 €
- total cost saving: 10.000 € per year

Through the concentration measurement with LiquiSonic®, the purity of the regenerated scrubbing liquid is ensured for optimal efficiency of the absorption.

The prevention of overdosing of MDEA scrubbing liquid leads to the reduction of substance expenses for the scrubbing liquid.

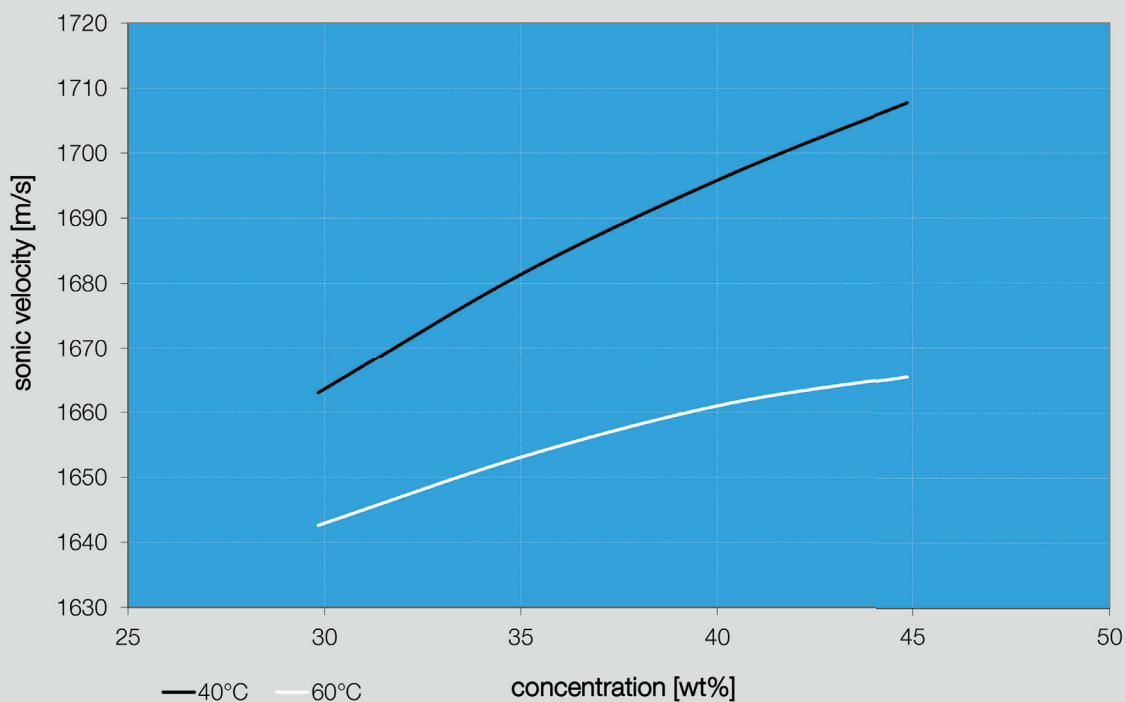
- 1 % MDEA scrubbing liquid to much in the cycle corresponds to: 40.000 € / 46.000 \$ per year
- investment: 20.000 € / 24.000 \$
- amortization: 6 months

Installation

The LiquiSonic® sensor is installed in the DN 50 pipeline from the stripper to the absorber after the amine cooler and the filter. Another installation side is the MDEA-tank.

concentration range: 20 to 45 wt%
temperature range: 30 to 65 °C (85 - 150 °F)

Sonic velocity measurement in MDEA



LiquiSonic® 30



21001311
LiquiSonic® Controller 30 V10



21010106
immersion sensor V10 40-40 Ex ATEX/IECEX, DIN DN50, L150

BUS

21004435
BUS connection: Profibus DP



21004449
Network integration



21004110
High power sensor electronic



21004202
Bus cable indoor (100m)



21007846
Factory acceptance test (FAT) certificate



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