

# On-line Gas Analysis In Urea Plants

## APPLICATION

Emerson provides Rosemount Analytical gas analyzer technology for on-line analysis of urea plant streams.

## BACKGROUNDS

Urea is an important building-block compound for many chemical processes used primarily in the production of agricultural chemicals.

## GAS ANALYZER APPLICATIONS

**Carbon Dioxide in Ammonia Return Gas:** The process return gas from the urea reactor is scrubbed of CO<sub>2</sub> to prevent the sublimation of ammonium carbamate precipitant formation in the ammonia compressor. Compressor fouling contributes heavily to significant and unplanned maintenance costs. Efficiency checks of the CO<sub>2</sub> scrubbers greatly minimize the ammonium carbamate and ammonium carbonate fouling potential.

CO<sub>2</sub> levels in the scrubber exit over 50 ppm indicate poor scrubber efficiency.

**Solution:** Emerson's Rosemount Analytical MLT analyzers can meet the monitoring needs of this application. One site calibrated the analyzer to measure three ranges, including: 0 to 100, 0 to 200 and 0 to 700 ppm CO<sub>2</sub>.

The MLT analyzers can be provided with an internal heated compartment equipped with temperature controller to maintain cells and sample lines between 80°C and 120°C (176°F and 248°F). A heated sample prevents formation of ammonium carbamate and ammonium carbonate.

## SAMPLE HANDLING SYSTEM

To prevent formation of ammonium carbamate and ammonium carbonate, the complete sample system is heated between 80°C and 120°C (176°F and 248°F).

*The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request. We reserve the right to modify or improve the designs or specifications of our products at any time without notice.*

### WORLD HEADQUARTERS

**Emerson Process Management  
Rosemount Analytical Inc.**  
6565 P Davis Industrial Parkway  
Solon, OH 44139 USA  
T 440.914.1261  
Toll Free in US and Canada 800.433.6076  
F 440.914.1271  
e-mail: gas.csc@EmersonProcess.com  
www.raihome.com

### ASIA-PACIFIC

**Emerson Process Management  
Asia Pacific Private Limited**  
1 Pandan Crescent  
Singapore 128461  
Republic of Singapore  
T 65 6 777 8211  
F 65 6 777 0947  
e-mail: analytical@ap.emersonprocess.com



### ROSEMOUNT ANALYTICAL EUROPE

**Emerson Process Management  
GmbH & Co. OHG**  
Industriestrasse 1  
63594 Hasselroth  
Germany  
T 49 6055 884 0  
F 49 6055 884209

### EUROPE, MIDDLE EAST AND AFRICA

**Emerson Process Management  
Shared Services Limited**  
Heath Place  
Bognor Regis  
West Sussex PO22 9SH  
England  
T 44 1243 863121  
F 44 1243 845354



**EMERSON**  
Process Management