

# LANXESS, SOUTH AFRICA

## CO<sub>2</sub> CAPTURE PLANT



Lanxess benefits from CO<sub>2</sub> capture plant for reuse in dichromate processing.

### THE CHALLENGE

LANXESS CISA (Pty) Ltd., the world's most modern chrome chemicals plant, needed to capture 120 tons of CO<sub>2</sub> per day from flue gas generated by a gas fired water tube boiler. This CO<sub>2</sub> would be reused within the LANXESS CISA chrome chemicals process. A project scope was developed to address, amongst others, operational problems including the unreliability of the CO<sub>2</sub> and poor availability of steam.

### OUR SOLUTION

PROXA was responsible for the design, supply, installation and commissioning of the CO<sub>2</sub> capture plant, together with the associated infrastructure including the 37 ton/hr water tube boiler, cooling tower, custom designed boiler feed water treatment plant and associated water storage facilities. The process selected included an amine based CO<sub>2</sub> capture process, which was jointly designed and developed with Shell-Cansolv, Montreal.

### HOW PROXA ADDED VALUE

PROXA embraced the specialised technology and added value in the customisation of the technology to the specific requirements of the customer. The basic engineering was jointly performed between PROXA and Shell-Cansolv.

The plant was completed in a record 22 months and achieved a recovery rate of >90% CO<sub>2</sub> to a final purity of >99% a few days after being commissioned. A steam consumption of 15% lower than guarantee value is achieved, confirming the overall energy efficiency of the process. What's more, the annual amine consumption is much lower than conventional amine based processes. The combined effect of these factors is a rapid payback of the capital expenditure - primarily as a result of more consistent operation of the Sodium Dichromate production plant.

The plant, to date, employs advanced technologies in the production of sodium dichromate that minimise raw material input and waste streams.

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### FEED

Boiler flue gas

### PRODUCTS

- ◇ 120 tons/day CO<sub>2</sub> for use as a reagent in the chrome chemicals process
- ◇ 37 tons/h MP steam from the Sasol gas fired boiler

### PERFORMANCE TARGET

- ◇ Recovery rate: >90
- ◇ Product purity: >98%, but constantly achieve 99% to 99.5%

### PROCESS

- ◇ Chemical absorption/desorption through utilisation of a newly developed amine based re-generable absorbent
- ◇ Water tube boiler

### PROCESS RELIABILITY

The plant has been in continuous operation since 2013 and is meeting all client's key performance objectives with a very high overall availability.

Client: Lanxess CISA

**LANXESS**  
Energizing Chemistry

**proxo**  
future focused