

# Quality Improvement in Ammonium Nitrate Production Using Six Sigma Methodology

Olmedo Ochoa-González; Jairo R. Coronado-Hernández; Mayra A. Macías-Jiménez; Alfonso R. Romero-Conrado

## **Abstract**

Six sigma has been used in different industries to reach operational excellence. However, in the chemical industry, the application of this methodology is limited. This research presents an implementation of the six sigma method for ammonium nitrate (AN) content optimization in condensate production for a fertilizer company in Colombia. The paper aims to determine the levels for input variables in the process, to meet desirable standards for condensate quality in terms of ammonium nitrate content. Based on the DMAIC steps implementation, it was possible to establish the main variables affecting the condensate quality and their optimal levels to reach an ammonium nitrate content below 15,000 ppm. These results demonstrate the impact that a six sigma project may have on operational effectiveness and quality improvement for meeting the customer requirements.

## **Keywords**

Six sigma; Chemical industry; Ammonium nitrate; Condensate production; Fertilizer industry; Quality improvement