

## Customer Success Story: Nitrous Acid ( $\text{HNO}_2$ ) Measurement in Fertilization Plant

Guided Wave's dual-beam ClearView® db Vis-NIR Process System Analyzer was fully incorporated for plant-wide  $\text{HNO}_2$  measurement and optimization.

### The Customer

A global firm specializing in agricultural products and environmental protection agents needed a solution to improve employee safety during the manufacturing process. Its largest business area is the production of nitrogen fertilizer; however this process also encompasses the production of nitrates, ammonia, urea and other nitrogen-based chemicals.

### The Problem

The company was taking liquid samples of the  $\text{HNO}_3$  manually, several times every day for the determination of the  $\text{HNO}_2$  level. This was costly and the manual handling of the samples was extremely dangerous and toxic for the employees.

In an effort to improve plant safety during this manufacturing process as well as to optimize the process, they decided to look for a way to minimize the employee handling of this substance.

After researching several technologies to measure  $\text{HNO}_2$  in the lab, they determined that Guided Wave's dual-beam ClearView db Vis-NIR Process Analyzer was the best technical solution.

The measurement is based on specific wavelengths in the visible (Vis) range.

### The Smart Choice

The customer came to Guided Wave due to the reliability of Guided Wave's process analyzer systems. Not only does Guided Wave offer a dual-beam Vis-NIR system to ensure reading stability in process environments, our unique probe assemblies can accommodate even the most challenging sample streams.



### The Challenge

Guided Wave's probes were successfully tested to ensure the resistance to up to 60% volume of  $\text{HNO}_3$  over a long period of time. They trusted the measurement results of the ClearView db, however once they began testing this technology on their process, they discovered that there were micro air bubbles in the liquid sample stream that impacted the readings. They worked with Guided Wave's technical team to find the solution.

### The Solution

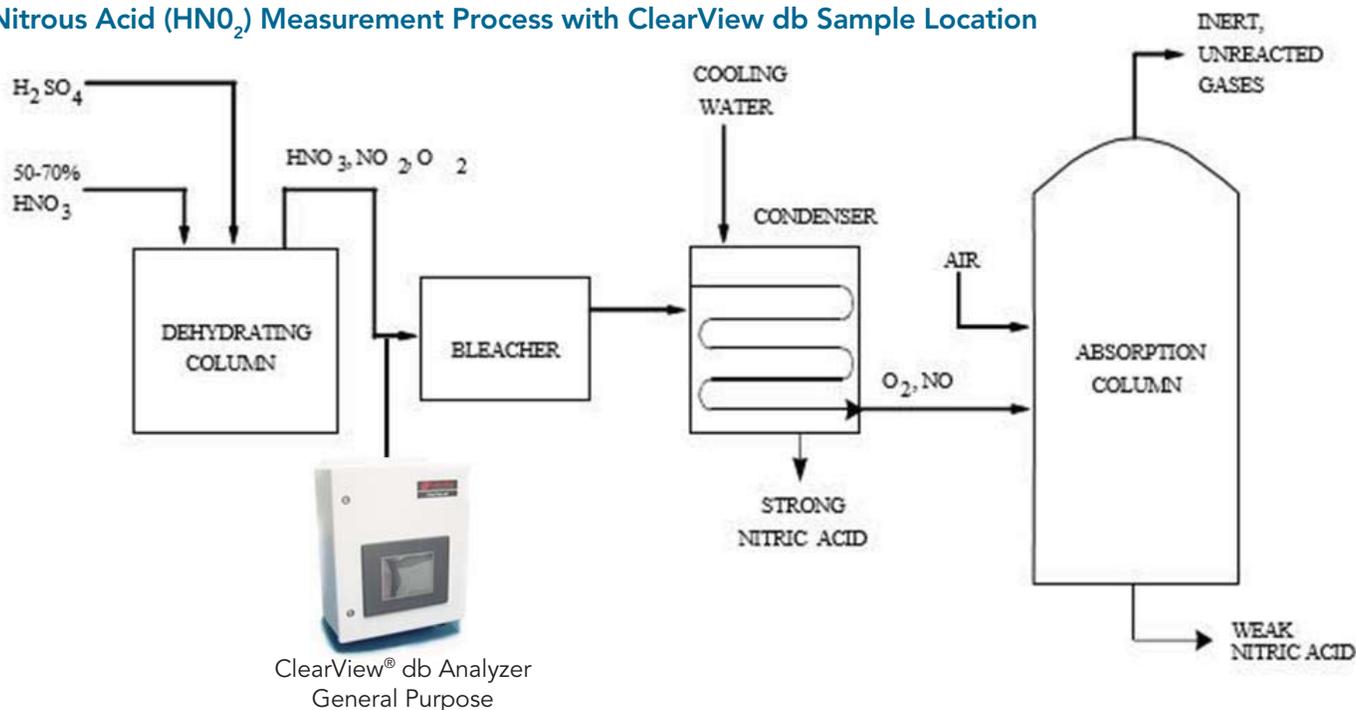
With technical assistance and collaboration, the customer and Guided Wave were able to define the best sample interface for the process (in this case an Axial Flow Cell) to use as well as the best way to remove the air bubbles before measuring.

As a result, the system was able to be mounted in-line for real-time  $\text{HNO}_2$  measurements of the process without having air-bubbles affect the readings.

While measuring in-line, they could start a batch cycle either manually or automatically through their DCS.

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## Nitrous Acid (HNO<sub>2</sub>) Measurement Process with ClearView db Sample Location



### The Conclusion

Once the Guided Wave ClearView db system was successfully implemented, the customer achieved their original safety goal. They reduced the handling of dangerous nitric acid, and in addition they also realized that they could produce 40% more product than the original designed plant capacity. This was accomplished without the added cost of plant expansion, as now less O<sub>2</sub> is required for the complete reaction.

The Guided Wave analyzers have been online since 2015. The company is already implementing this solution worldwide using ClearView db analyzer systems.

### Control You Can Measure

By partnering with Guided Wave customers gain the advantage of 30+ years of experience in online process monitoring and stream sample analysis. Our entire product line is designed and developed to meet the challenges of the most demanding production environments for *control you can measure*.

### ClearView db Configurations



### Product Data Sheets

- ClearView db Process Analyzer #1033
- Axial Flow Cell #1043

### Some Customers in this Industry

- Agrium
- Angus Chemical
- Bayer
- CF Industries
- DuPont
- Lyondell
- Solutia
- Yara