Instran®

CASE STUDY

Automatic Control of Silica in Demineralized Water at KEM ONE
Project carried out by ANAEL Analyse En Ligne (France)

Context

KEM ONE is one of the leading companies in the chlor-chemical sector and one of the largest PVC producers in Europe. With eight plants across France and Spain, its operations require highly controlled processes and a continuous supply of ultra-pure demineralized water.

At the Fos-sur-Mer plant, where chlorine, caustic soda, and hydrogen are produced through electrolysis, the quality of demineralized water is critical: any contamination with silica or other ions can affect subsequent production processes such as VCM and PVC manufacturing.

Challenge

The plant uses cationic and anionic resins to produce demineralized water. However:

- When the resins become saturated, **silica is the first substance to pass through the system.**
- A level above **100 ppb** automatically triggers resin regeneration to avoid contamination of the buffer tank.
- During regeneration, the plant operates only with stored water; therefore, **incorrect or delayed detection can lead to operational risks and additional costs.**

Customer Requirements

KEM ONE was looking for a system that was:

- Precise and repeatable at low silica levels
- Capable of online measurement, without interference or delays
- Low-maintenance
- Reliable in a corrosive industrial environment
- Supplied with fast and expert technical support

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The Project: Implementation of the Instran® Silica Analyzer

This project was developed and implemented by our official distributor in France, ANAEL Analyse En Ligne, who led:

- System installation
- Commissioning
- Parallel verification with the former analyzer
- Technical support

Applied Technology: Instran® Silica

Instran® uses the formation of silicomolybdic acid to achieve:

- High sensitivity in the low range, ideal for chemical and power plants
- A new reagent No. 1, with faster reaction times
- Very low reagent consumption, reducing costs and preparation time
- Precise injection system and minimal maintenance

Project Results

1. Verified precision and repeatability

KEM ONE conducted multiple tests comparing:

- Their former analyzer
- Laboratory standard solutions
- Instran® Silica

The results showed excellent agreement and repeatability, confirming the instrument's reliability.

INSTRAN					LABORATORY
Test 1 [ppm]	**Test 2 [ppm]**	**Test 3 [ppm]**	**Test 4 [ppm]**	**Average [ppm]**	**Value [ppm]**
141,0	143,6	143,7	145,2	**143,38**	146
96,2	97,3	96,7	98,9	**97,28**	96
73,8	73,9	74,7	76,7	**74,78**	74
44,0	45,2	44,7	44,9	**44,70**	48
19,6	20,1	19,7	19,9	**19,83**	24
7,1	6,4	6,1	6,3	**6,48**	8

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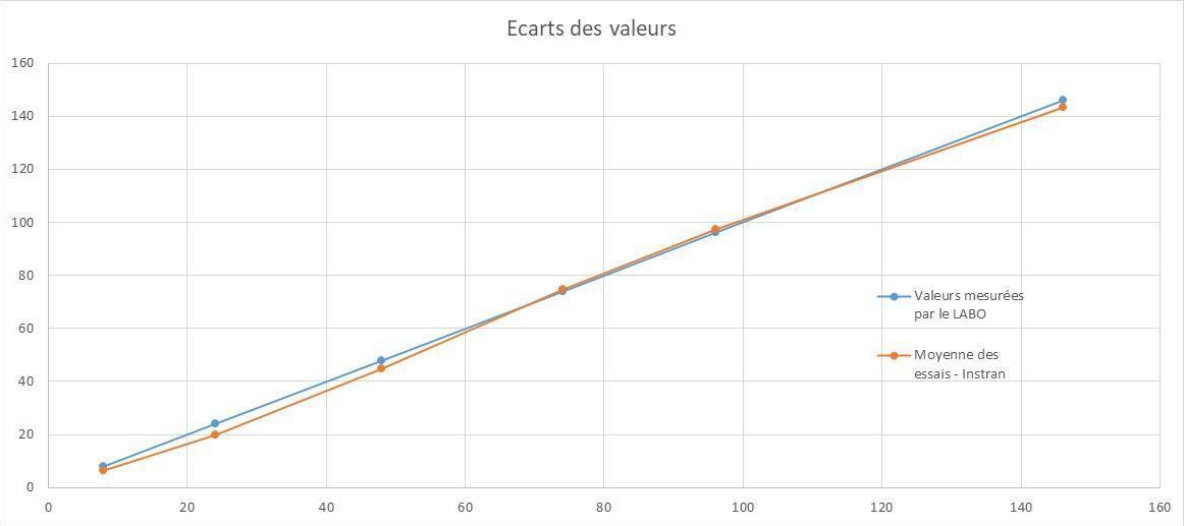

Figure 1. Plot provided by KEM ONE

2. Ease of use and operation

Operators highlighted:

- Clear interface, with visible steps during analysis
- Much more informative than other "black box" type analyzers
- Simple maintenance with low frequency
- Only the syringe comes into contact with demineralized water

3. Improvements during operation

- A one-off nozzle blockage was detected → section was enlarged → **issue permanently resolved**
- Recommendation: **use a pressurized cabinet to prevent syringe corrosion**

4. Satisfaction and system expansion

KEM ONE reported:

"This analyzer gives us full satisfaction, and ANAEL is very responsive and competent in answering all our questions."

Thanks to the performance of the first system installed in 2021, the plant acquired a **second Instran® silica analyzer in January 2023**.

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Conclusions

The project developed by **ANAEL Analyse En Ligne** achieved:

- Ensuring the quality of demineralized water
- Optimizing resin regeneration
- Reducing operational risks
- Minimizing maintenance tasks
- Providing a reliable, precise, and fast analysis tool

The KEM ONE case confirms that **Instran® Silica is a robust and effective solution for continuous silica control in critical industrial processes**.

Acknowledgements

From Instrumentacion Analitica S.A., we would like to express our gratitude to KEM ONE for sharing information about their industrial process and real experience with Instran®.
Likewise, we extend our thanks to our French distributor, ANAEL, for their commendable work with Instran® and customers. The reputation that Instran® has achieved in France would not have been possible without their efforts.

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