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"Every aspect of the project has brought about significant benefits. Just the fact we are no longer dependent on any external suppliers is great, before even considering safety, cost and performance benefits!"

Michael ElHaddad | Analytical Lab Manager

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CASE STUDY | Chemical



Making it safe to use hydrogen as a carrier

Implementing our UCS-1000 solution

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"Helium cylinders are the blind spot for managers and users in the lab. But it is a time bomb that sits somewhere behind the lab..."

Michael ElHaddad | Analytical Lab Manager

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Unique laboratory solutions, easy to use, efficient and cost-effective

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Call: **972-4-8438992**

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Sion was Founded in 2015 by leaders in the field of analytical device manufacturing. Sion develops advanced laboratory analytical instruments and associated support systems. The Company's goal is to integrate knowledge, experience and ergonomics, in the development of analytical products, with the objective of making the impossible possible.

Our client



ICL is a multi-national manufacturing concern that develops, produces and markets fertilizers, metals and other special-purpose chemical products. ICL primarily serves three markets: agriculture, food and engineered materials. The industrial chemicals division is a leader in the production and marketing of bromine, bromine compounds and phosphorus-based compounds, supplying over 33% of global demand.

The business serves a wide range of industries and applications, including drilling and completion fluids, microbial and water treatment solutions, life sciences, pharmaceuticals, agriculture, flavours and fragrances, mercury emissions reduction and energy storage.



The Challenge

The specific ICL-IP plant primarily produces flame retardants and biocides. The quality control laboratory at ICL employs 30 staff members and plays a key role in all stages of the manufacturing process, from raw materials to final product testing. Within the laboratory, 7 gas chromatographs are installed and operate as part of the test procedures.

Helium, supplied in gas cylinders, was being used as the main carrier gas in the laboratory. Whilst effective, this solution needed to be supported with an external supply chain solution to ensure a continuous supply of the gas, not to mention the continuous rise in helium costs. **The gas supply cost €10,500 each year, with an additional cylinder rental fee of €1,500.**

The quality control team were interested in alternative approaches for the chromatography analysis. They already had experience with nitrogen, which was already being used as a back-up carrier solution, but the much slower analysis procedure was problematic.

One alternative carrier gas was hydrogen, which is, in many ways, the best possible choice for capillary gas chromatography. However, **the risks associated with storage and potential flammability were a serious concern.** Therefore, this option had never been considered because there was no obvious solution which would allay safety fears.



Our Solution

At Sion Technologies we have pioneered the Ultimate Carrier Solution (**UCS-1000**) which provides a safe use of hydrogen as a carrier within laboratory environments. We introduced the **UCS-1000** to ICL and, after explaining both the benefits of the platform and the necessary operational requirements, ICL were keen to test this technology within the laboratory.



Outstanding Benefits

This solution saves 95% compared to the costs of helium and burns all excess split chemicals coming from the split vent of the chromatography units.

Because hydrogen can be produced in the laboratory setting, there are no gas cylinders, which reduces costs and improves safety. When cylinders leak, or when there is a risk of explosion, all activities must stop. With this risk eliminated, **UCS-1000** can operate continuously. Not only is the system safer, but it also enhances productivity.

Processes are also simplified because there is no need to have a procurement and logistics process in place to ensure a continuous supply of gas!

Implementation

Initially, a single unit was installed as part of a trial. Since installing the trial unit, ICL have ordered 3 extra units (one for each pair of gas chromatography units), which means the entire plant has converted to using the **UCS-1000** platform.



The Results

The senior team and the lab managers are highly satisfied with the installation of the **UCS-1000** units.



The laboratory environment and the overall plant is safer. Numerous operational risks have been completely eliminated



Operational costs are lower



Air quality is improved



The plant no longer needs to rely on any external suppliers

The project has been highly successful. So much so that ICL put the project forward as a business change process to a national contest for 6 sigma process improvements, winning an excellence award.