Sorbacal®

CASE STUDY NR 4 • BELGIUM

SELECTIVE REMOVAL OF SO_2 BY FURNACE SORBENT INJECTION

THE CHALLENGE

Industrial waste incinerators must comply with ever-stricter acid gas emission regulations. Lhoist was contacted by an incineration plant that used a dry system to clean raw flue gases. When treating materials with high sulfur content it could not always meet the required emission standards, even with considerable quantities of sorbents.

THE LHOIST SOLUTION

We first conducted on-site testing to identify the reasons for the unsatisfactory results. The following steps were taken:

- An on-site audit of site operations was followed by the redefinition of ideal treatment temperatures.
- A trial Big Bag Injecto-Matic® unit was provided to validate the technical recommendations.
- A mobile laboratory was set up to measure acid gas concentration levels in flue gas, before and after the fabric filter.
- Evaluation and follow-up was carried out together with the incinerator R&D and technical teams.

Based on the test results we proposed two options for a combined solution, an optimized system to reduce acid gas emissions.

- **Option 1:** a supplementary injection of Sorbacal® SP sorbent at ultra-high temperature of 900°C (also called UHT or furnace sorbent injection – FSI) into the post-combustion chamber to selectively remove the SO_2. This would be followed by the existing sorbent injection, just ahead of the fabric filter, to remove HCl and residual quantities of SO_2.

- **Option 2:** a supplementary injection of Sorbacal® SP at 160°C prior to the fabric filter.

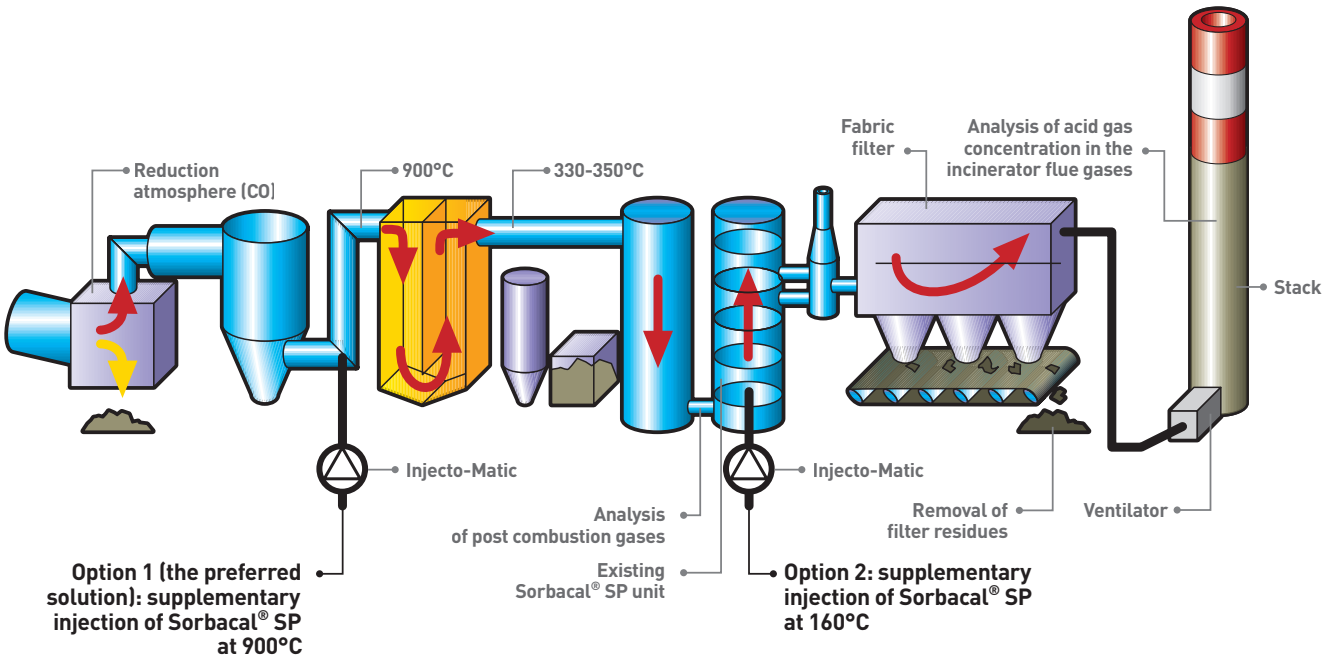
Either option would enable the site to comply easily with the new emission standards. However, the first option (FSI) also offered substantial cost savings due to an overall 30% reduction in sorbent usage.

INDUSTRIAL WASTE INCINERATOR

THE BENEFITS

The customer selected option 1. The dry injection of Sorbacal® SP has enabled the site to easily comply with acid gas emission regulations, regardless of the waste material to be incinerated. The supplementary injection at ultra-high temperature not only selectively removes SO_2. It has also considerably reduced total sorbent usage.

Flowsheet of the trial installation, showing the two options



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