

FILM FORMING WATER TREATMENT AT SAIDEF INCINERATION POWER PLANT



Gabriel GREMAUD
 Environment Manager
 SAIDEF SA

"We have been using the FINEAMIN products for our water treatment since 2007 and during this time we have maintained the operating parameters. No corrosion was present, nor any other damage. Our turbine is regularly inspected every five years by a third party.

We are extremely satisfied with the FINEAMIN products and with H2O Facilities services."

Client name: Saidef SA, Fribourg
 Plant type: Incineration and Recycling Plant
 Treatment start date: 2007
 Boiler manufacturer WEHRLE
 Steam production 50t/h
 Steam turbine 10 MW Siemens / ABB

1 SCENARIO

Located in the canton of Fribourg, the French part of Switzerland, by the Sarine river, SAIDEF SA is a modern waste incineration and recycling power plant with two operation lines. The factory incinerates household and industrial waste and, at the same time, recycles it by producing electricity and steam to supply the district heating networks in the Fribourg area.

From the beginning, SAIDEF has done its best to optimize the operating processes in order to avoid any future downtime, forced outages and minimize maintenance costs, as well as reduce the impact on the environment, preserving the health of the employees and encouraging any initiative aimed at improving the living environment.

SAIDEF operates 24 hours a day and is shut down for about 3 weeks per year for inspection of the installations. Under intense operational conditions, SAIDEF long term availability and reliability are a must and altogether dependent on a performant plant protection, especially for the steam-water cycle.

With all of this in mind, the administration was searching for modern, environmentally friendly solutions to treat the steam -water cycle metal parts (pipes, boiler turbine) against corrosion and deposits, and keep installation trouble-free since the first day of operation.

SAIDEF incineration line and thermal waste recovery plant depend on a medium pressure 50 bar Wehrle boiler, 200°C water temperature, 50 t/h steam production, and a 10MW Siemens / ABB turbine.

2 SOLUTION

A response to SAIDEF's requirement for anti-corrosion, anti-scalent and pH stabilisation chemicals to boost plant performance and system longevity was a custom made water treatment plan based on FINEAMIN technology – a film-forming blend of volatile, alkalinizing polyamines and alkaline dispersing polymers.

SAIDEF started operating in 2001 and has been using FINEAMIN chemicals since 2007. Their chemists together with water-treatment professionals from h2o Facilities SA in Petit-Lancy, Geneva, selected the products and dosage to client's specific process requirements and water circuit configuration.

The advanced steam-water cycle chemistry applied was only one product – FINEAMIN O6, a single blend consisting of multiple components to satisfy all metal parts protection with only one dosing point. FINEAMIN O6 acts as a corrosion inhibitor and prevents any accumulation of deposits due to its ultra-hydrophobization capacities. Applied on metal surfaces, FINEAMIN O6 forms a monomolecular film inside the system, a barrier between water and metal keeping carbon dioxide away from the surface and not allowing any deposits adhere to it.



**PROVEN
 ANTICORROSION
 FILM FORMING
 WATER-TREATMENT
 CHEMICALS**



FINEAMIN 06

FINEAMIN 06 is a mixture of volatile, alkalinizing film-forming polyamines and alkaline dispersing polymers. The surface-active polyamines enhance the formation of a thin, homogeneous magnetite protection layer with a very stable structure. This protection layer prevents the contact of the electrolyte with the metal surface without reducing the heat transfer. FINEAMIN 06 protects the whole system, inclusive steam and condensate pipes, due to the high distribution coefficient of the alkalinizing components and the volatile amines. The combination of surface-active polyamines, alkalinizing polymers leads to a very effective protection against corrosion and scaling. Existing corrosion products and deposits get dispersed and removed gently. Using salt free FINEAMIN products leads to savings in water consumption and thanks to the improved heat transfer, reduced energy consumption. The performance of the whole plant gets increased, the overall system protection is improved, while the costs of operation will decrease.

FINEAMIN 06 has been independently tested and confirmed as ecologically and toxicologically harmless by medical and hygiene institutes. Furthermore, it is almost entirely bio-degradable. For more details see EU safety data sheet.

FINEAMIN 06 generally gets injected as diluted solution in a single point of the plant, using an adequate dosing station. The required quantity gets calculated by the service engineer regarding to the water quality and the condition of the plant.

The dosing point for Steam generator plants should be fixed into the feed water pipe after degasification and extracting attemperator spray water. The determination of the FINEAMIN amount can be analyzed by a test kit or using a photometric test.

FINEAMIN 06 gets delivered as a liquid solution in drums of 30 l, 60 l or 210 l. For major customers, it is available in standard containers of 1000 kg. In closed drums, with an ambient temperatures from 5°C to 45°C, it can be stored until 5 years.

Polyamines have been used for more than two decades and to an increasing extent for successful conditioning of all pressures boilers. Easy to operate with, far less dangerous for workers than many conventional products and compatible with the environment thanks to its largely bio-degradable characteristics, FINEAMIN 06 was the optimal water treatment solution for SAIDEF.

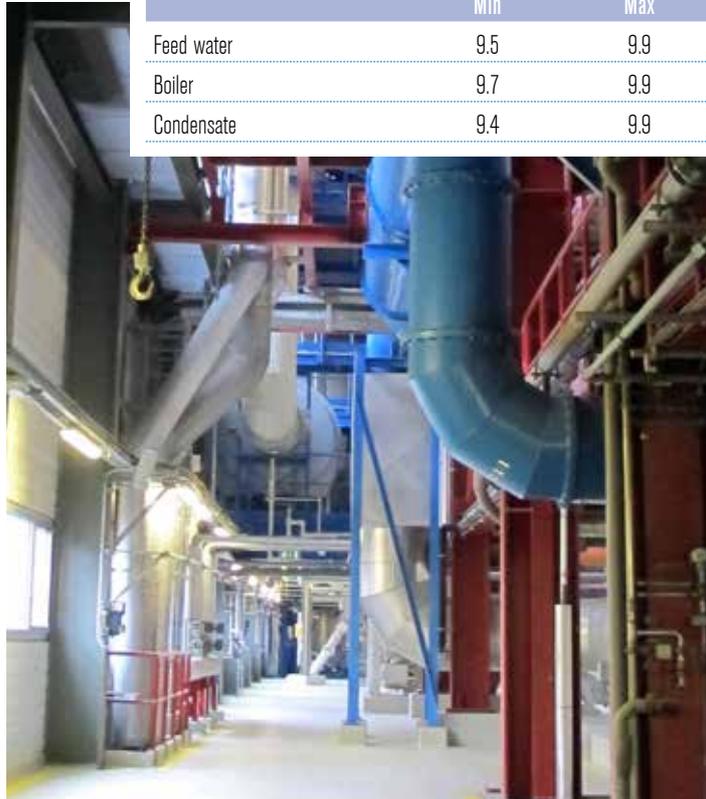
Some of the reasons for choosing FINEAMIN products included the continuous protection of the steam-water cycle without worrying about oxygen parameters in the water, simplicity of the dosing procedure, decreased boiler-blow down, notable energy, water and chemicals savings, and high quality Swiss products.

3 RESULTS

For more than 13 years, SAIDEF has been using FINEAMIN 06 to obtain metal passivation and has been operating without any troubles in the steam-water cycle. Polyamines-based products were the only chemicals chosen and used from 2007 until today. No corrosion or deposits were observed during the yearly inspections do in this period, and no damages were recorded. The pipes are also regularly inspected every year. The turbine is inspected every five years by a third party.

Along the years, while using film-forming polyamines, SAIDEF has maintained the following parameters, all of which are within the required limits. pH was stable. The long term use of FINEAMIN has met the client's expectations. The trouble-free steam water cycle allows SAIDEF to operate 24 hours a day without outages, keeping maintenance costs low for the plant and increasing the reliable delivery of its services.

	pH		Conductivity	
	Min	Max	Min	Max
Feed water	9.5	9.9	5.0	15
Boiler	9.7	9.9	10.0	15
Condensate	9.4	9.9	0.2	0.5



h2o Facilities SA

The Geneva-based h2o facilities Ltd is a Swiss company with more than 60 years of experience in complete water treatment services for the industrial field, as well as the design of high-end pools and spas. The company also includes more than twenty qualified fitters, equipped with service vans allowing quick and efficient interventions for the most exclusive clients.

With the full range of exclusive FINEAMIN and SANICLINE products, the company covers all industrial and domestic hot water networks needs, for cooling towers, air conditioning and heating. h2o facilities Ltd guarantees quality and efficiency, while maintaining a very competitive price level. h2o facilities Ltd concludes annual installations maintenance and adjustment subscriptions, preserving small to high investments.

