Mining and Metals, Australia
Nyrstar Port Pirie: *Chemical Cleaning*

| The challenge

Nyrstar is a global multi-metals business with a market leading position in zinc and lead and growing position in other base and precious metals. The Port Pirie plant is currently the largest lead smelter in the world and commencing in 2017 underwent a transformation project which included the construction of the largest boiler of its kind in the world, allowing to process various grades of lead and other metals.

Pre-commissioning of boiler

The standard procedure of a newly constructed boiler is that it must undergo chemical cleaning prior to start up. Chemical cleaning is required to remove any debris, deposits and excess iron which is generated from welding slag.

Veolia was contacted by Nyrstar to devise a plan and procedure to chemically clean the newly constructed boiler. Being a one-off design meant that Veolia worked with Nyrstar engineers to carefully select appropriate tie-in locations and pumps to undertake the task. All procedures had to be consulted with Amec Foster Wheeler who are responsible for designing the boiler.

International expertise to oversee smooth operation	Safety Interaction: No recordable injuries	Customised solution to suit specific needs

Tailor made solution

Veolia Chemical Cleaning in Victoria consulted with specialist overseas Veolia teams to develop a tailor made solution to chemically clean Nyrstar's newly constructed boiler using a combination of chemical cleaning and other specialised equipment. Veolia was able to empty and clean the boiler through a number of stages and achieved high percentage of iron removal and a well passivated system.

Port Pirie, South Australia

Site: Port Pirie Lead Smelter
Scope: Commissioning clean of a new boiler
Duration: 3 weeks

3,489 hours worked	0 injuries

140,000 litre
litre system chemically cleaned

| Veolia's solution

Veolia's chemical cleaning methodology included the following
- Degreasing of a 140,000L system for grease removal at temperatures of 70 degrees
- Acid clean using specialised chemicals to achieve maximum iron removal
- Passivation of the boiler to prevent corrosion and pitting of the surface
- Steam drum cleaning with confined space entry

| The benefits

Prevention of corrosion

Using a combination of ammonia and sodium nitrate at pH of 9 and 60 degrees, Veolia was able to achieve perfect passivation of the Nyrstar boiler. The passivation acts as a barrier layer for the complete system reducing the risk of corrosion of the system over time.

Local expertise, International knowledge

Using Veolia's services enabled Nyrstar to have access to both local expertise and international knowledge. Veolia organised an experienced boiler commissioning supervisor from America to assist with the planning and execution of the commissioning clean.

Reduced disruptions to construction activities

Nyrstar was still undergoing construction activities during the scheduled chemical clean and could not afford delays to construction. Veolia liaised with Nyrstar to thoroughly prepare and plan chemical cleaning activities to avoid disruption and downtime on site.

Safety practices

Veolia has performed all chemical cleaning and shutdown activities since 2009 without any recordable injuries or environmental incident. To clean Nyrstar boiler, Veolia opted for a methodology which has been tried and tested globally and minimise all risk on site.

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> **Veolia has created a bespoke solution to chemically clean Nyrstar's newly constructed boiler using a combination of chemical cleaning and other specialised equipment.**
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> **John Baranauskas**, State Manager, Industrial Services
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