

# engineered efficiency

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## “Efficiency Through Analysis”

Helping Australian companies streamline their processes and drive down costs.

### Case Study – Safer Chemicals

Hydrofluoric acid is a common component of materials used for cleaning and passivating welds in stainless steel. It is highly effective in the removal of weld deposits, exposing the virgin surface to allow effective passivation.



Unfortunately, even at moderate strengths, hydrofluoric acid is extremely dangerous to come into contact with, because it is absorbed by the body and reacts with bones, causing severe and sometimes fatal damage.

A manufacturer of stainless steel vessels used a mixture of nitric and hydrofluoric acid to pickle and passivate the tanks after welding. Handling high strength hydrofluoric acid to make the pickling solution was a significant safety concern for the staff and management. They were seeking a way of maintaining the performance of the cleaning solution whilst reducing the risks.

In addition to the handling risks of hydrofluoric acid, maintaining the licences, permits and conditions required to purchase and store the product on site safely also took a lot of management time.

We identified a powder source of fluoride which was much safer to handle, and when mixed with nitric acid formed hydrofluoric acid.

We tested the solution on sample welded material to demonstrate that the same level of weld cleaning was achieved with the new solution.

The result was a method of making the pickling and passivating solution that was a lot safer and easier for staff on site to handle, and with a lower cost!



### About Us

*Engineered Efficiency* is a Western Australian business focussed on helping small to medium companies streamline their production and maintenance processes, and reduce input costs from utilities and reagents. We do this through working closely with our customers to understand their business needs and processes, and apply our experience and knowledge to build practical and achievable programs to improve efficiency and drive down costs.

Our Managing Director, Jon Langford, has over 20 years experience in design, construction and maintenance of process plants and commercial buildings. Jon started Altrum Pty Ltd in 2002, providing process engineering, chemical manufacturing and storage, and heat transfer solutions across Australia. Between 2010 and 2015, Jon worked outside of Altrum in process plant maintenance and utility asset management fields. He recommenced work with Altrum at the end of 2015, trading as *Engineered Efficiency*, integrating this recent experience with the innovative process solutions he provided previously through Altrum.

