



Explosion Welded Metals for Your Renewable Equipment

With the shifting focus to sustainable energy, the demand for renewable fuel processing is growing. End users in the Oil & Gas industry (O&G) are being asked to decrease their carbon footprint and in doing so are revisiting their renewable fuel processing capabilities.

Sustainable Air Fuel (SAF) is one of the newer alternative fuel on the market intended to lower airline carbon footprint. SAF is becoming increasingly popular as it reduces emissions and delivers the same performance compared to conventional jet fuel. The International Air Transport Association (IATA), projects that SAF can reduce emissions up to 80% during its full lifecycle. To produce SAF from biomass, feedstocks are processed in equipment operating under high-pressure and high-temperature.



Clad Metals Meeting the Demand for Renewables

Refineries that switch to renewable fuels face technical challenges outside of conventional fuel processing practices. For instance, renewable diesel feedstocks contain certain contaminants that require specific processes to remove them. In addition, free fatty acids contribute to the acidification of a feedstock forcing operators to turn to higher corrosion resistant equipment. Metals such as Nickel-based alloys will protect this equipment from the higher total acid number or TAN.

Clad metals are globally known as a less expensive solution for the manufacturing reactors, heat exchangers, flash tanks, separators in highly corrosive oil & gas processing environments. As more and more turn to biomass feedstocks, hydrotreatment reactors are being optimized by EPCs, Licensors and Owner companies with clad solutions.

In addition to acidic feeds, clad metals handle risks associated with the hydrogen environment at high–pressure and high–temperature. A clad material is, in most circumstances, one of the most appropriate options to balance between capital expenditure and operating expenditure.

Benefits of Clad by Explosion Welding for Renewable Biofuel

The proprietary DetaClad™ explosion welding process uses a precisely controlled detonation to bond dissimilar metals together while preserving the physical, mechanical, and corrosion-resistant properties of each metal. The cladder, typically is the corrosion resistant alloy or CRA, and the backer or base metal, typically is the pressure boundary metal. DetaClad is a practical method to effectively produce a durable, high-strength bond and it has been put to the test as an appropriate cladding technology for processing equipment in very aggressive environments.

Recent studies have substantiated claims that DetaClad is the right technical solution when designing pressure vessels for renewable fuel processing. Among all the outcomes, we can highlight:

- DetaClad demonstrates elevated properties to support hydrogen embrittlement at high–pressure and high–temperature, typically operating conditions for renewable fuel production. [Read the full study here.](#)
- DetaClad preserves corrosion properties of the cladder material. Various case studies have shown that the corrosion properties of highly heat sensitive materials like Nickel Alloy 825 (UNS N08825) are not impacted by the DetaClad explosion welding process throughout fabrication. [Read the article here.](#)

NobelClad is Your Trusted Partner

For over 50 years, NobelClad has provided customers with innovative technologies to join dissimilar metals. Today, we remain the proven leader in explosive welding and offer the widest collection of customized clad metal products in the world.

Most clad providers lack experience, testing protocols and quality processes, which cost customers significantly more time and money in the end. NobelClad has a dedicated R&D and technical staff across our global production facilities to support clad for renewable fuel processing in each step of the manufacturing process.

When you choose NobelClad, you invest in a partnership that ensures the long-term viability, safety, reliability and lowers cost over your equipment's lifetime.

Knowledge is the First Step to Creating Value

We believe in sharing our metallurgical expertise and invite you to attend an interactive, free 45-minute webinar – An Introduction to Explosion Cladding Technology for Renewable Processing. Fill out this form – and a NobelClad expert will contact you soon to schedule your 45-minute webinar.

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