Boiler panel protection technology

The best solutions and service with WA Integra™
An innovative solution for boiler panel tubes

Laser Cladding on new boiler panel tubes

A process designed for the protection of new boiler walls used in waste incinerators and biomass plants. In such environments where the different combustible materials used can cause aggressive fume, ash and chlorides to be produced, the protection of vulnerable areas from the first installation offers significant advantages.

The benefits of Laser Cladding from Welding Alloys Integra™:

- Cladding thickness of just 0.7mm
- Limited dilution with the base metal
- Improved heat transfer between the panel and the water
- Limited levels of distortion
- Extended working life of initial installation materials

Other boiler related applications where Welding Alloys Integra can provide a protection service include:

- Nozzles
- Nozzle burners
- Conveyer screw
- Boiler tubes
- Biomass boiler nozzles
- Conveyer screw
High performance green solutions delivered by Welding Alloys

A viable alternative to replacement

Around the world governments continue to introduce new legislation aimed at reducing the damaging effect of greenhouse gases while setting ever higher renewable energy targets. At the same time energy providers are continuously under pressure to produce and supply more affordable energy.

With a well proven track record in the provision of high performance wear solutions to the coal fired power industry, Welding Alloys have now expanded their expertise into other areas of energy provision including biomass, offering:

• Reduced maintenance cost
• Extended working life
• Sustainable repair solutions

With boilers prone to high levels of corrosion and erosion, power plant operators are constantly looking for ways of maintaining the integrity and reliability of their boiler panel tubes. Welding Alloys offer a range of flexible refurbishment solutions for boiler repairs which can be applied either in situ or in one of our WA Integra™ Service Centres by our own certified engineers.

Welding Alloys solutions include:

- Weld cladding
- Spray cladding

![Weld cladding](image1)
![Spray cladding](image2)
The best all round protection for boiler combustion chambers

**Boiler panel protection by weld cladding**

The replacement of worn boiler walls can be a time consuming and expensive process. Hence the weld cladding of boiler panels is a process which has been developed and successfully used as a cost effective alternative to replacement.

Due to the high variety of combustible materials used to fuel boilers, Welding Alloys has developed customised cost effective solutions for protection against corrosion and erosion on different types of boilers.

**The benefits of weld cladding by Welding Alloys Integra™:**

- Extended working life of boiler walls
- Automated welding processes provide reliable and repeatable weld cladding quality
- Less weld dilution from a controlled process
- Highly experienced welders and welding engineers

![Erosion and corrosion graph](image)

Customised layering systems developed by Welding Alloys can be applied either in situ or in one of our strategically located WA Integra™ Service Centres by our experienced operators and welding as well as spraying engineers.

Welding Alloys can also offer a range of customised boiler cladding machines and equipment.
Boiler panel protection by the Thermal Spray Coating process

A highly effective protection against erosion and corrosion, Thermal Spray Coatings can be used for the protection of boiler walls and super heaters in coal fired power plants, waste incinerators, biomass boilers and economizers.

The benefits of Thermal Spraying from Welding Alloys Integra™:
- Potential savings in both time and cost compared to some other protection processes
- Bonding with the base metal greatly reduce thermal stress with limited distortion
- Extended life expectancy of the customised coating systems
- Tried and tested procedures

Welding Alloys Coating Systems

<table>
<thead>
<tr>
<th>WA coating system designation</th>
<th>Process Composition</th>
<th>Application Description</th>
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<tbody>
<tr>
<td>Spray cladding</td>
<td>arc spraying</td>
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<tr>
<td>Boiler TS C1</td>
<td>FeCr based metal cored arc spraying wire; Cr-carbides</td>
<td>Water walls and super heaters of coal fired boilers; Excellent abrasion resistance under corrosive loading; 1000-1100 HV; WA Integra™ in situ service</td>
</tr>
<tr>
<td>Boiler TS B10</td>
<td>NiCrMoBSi based metal cored arc spraying wire</td>
<td>Water walls of biomass, waste and RFD fired boilers; High corrosion and erosion resistance; wood class A1 and A2; additional WA sealing protection; WA Integra™ in situ service</td>
</tr>
<tr>
<td>Boiler TS BW10</td>
<td>NiCrMoBSi based metal cored arc spraying wire</td>
<td>Water walls of biomass, waste and RFD fired boilers; Excellent corrosion and erosion resistance; wood class A3 and A4; additional WA sealing protection; WA Integra™ in situ service</td>
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<tr>
<td>Boiler TS SH10</td>
<td>NiCrBSi based metal cored arc spraying wire</td>
<td>Super heater tubes of biomass, waste and RFD fired boilers; Excellent erosion resistance against ash and hard particles in combination with high corrosion resistance. Subsequently sintered/fused; WA Integra™ in situ service</td>
</tr>
<tr>
<td>Boiler TS PA10</td>
<td>Cr based metal cored arc spraying wire</td>
<td>Water walls of black liquor boilers; Thermal spray protection of black liquor boilers in the paper industry in situ. High resistance against sulphur</td>
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Weld cladng welding

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<tr>
<td>Boiler CW BW10</td>
<td>NiCrMo based solid wire</td>
<td>Water walls of biomass, waste and RFD fired boilers; Weld refurbishment protection for withstanding highest corrosion requirements in Cl and S atmosphere. WA Integra™ in situ service as well as in our WA Integra™ Service Centres</td>
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<tr>
<td>Boiler CW PA10</td>
<td>FeCrNiMn metal cored wire</td>
<td>Water walls of black liquor boilers; Weld clad protection of black liquor boilers in the paper industry in situ and in WA Integra™ Service Centres</td>
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<tr>
<td>Boiler CW SH10</td>
<td>FeCrMoNi metal cored wire</td>
<td>Water walls of bagasse fired boilers; Weld clad protection against corrosion and erosion of sugar cogeneration plant boilers; in situ as well as in WA Integra™ Service Centres</td>
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Laser cladding welding

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<tr>
<td>Boiler LC BWN10</td>
<td>NiCrMo solid wire</td>
<td>Water walls and super heater tubes of biomass, waste and RFD fired boilers; Laser weld cladding protection in WA Integra™ Service Centres for corrosion environments</td>
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<td>Boiler LC BWS10</td>
<td>FeCrCo metal cored wire</td>
<td>Water walls and super heater tubes of biomass, waste and RFD fired boilers; Laser weld cladding protection in WA Integra™ Service Centres for corrosion and erosion environments</td>
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Our Technical ‘Spark’ Solves Your Industrial Challenges

WA Consumables
The go-to provider of advanced welding consumables

WA Machines
The go-to provider of automated equipment for wear protection

WA Integra™
The go-to provider of engineered wear protection solutions

A worldwide presence

www.welding-alloys.com