WELD HARDFACING AND REBUILDING TECHNOLOGY

integra

Welding Alloys Group



integra

innovative solutions against wear

Welding Alloys is the world's leading manufacturer of flux-cored welding wire, welding equipment and specialised services in rebuilding and hardfacing to reduce component wear.

The integra brand represents the integrated approach for the control of wear and the extension of operational life of industrial equipment and components that you design, build or use.

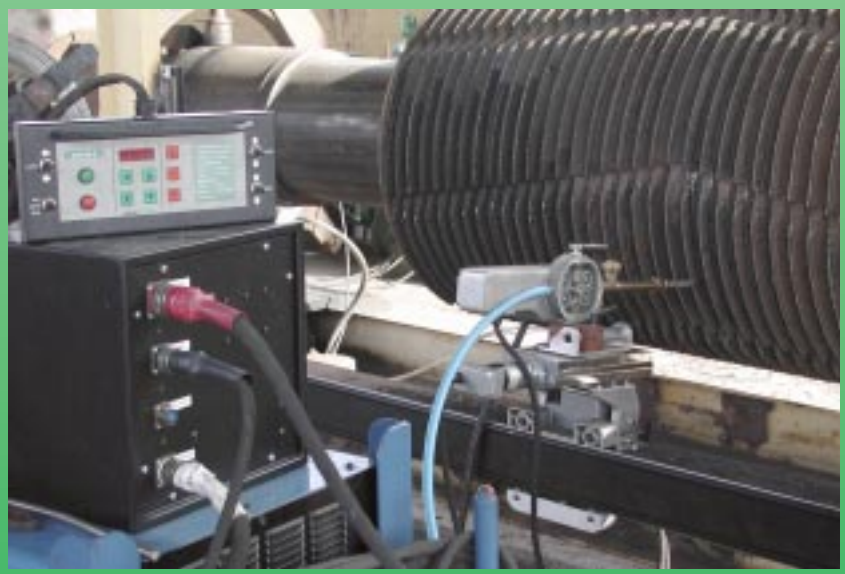
The service performance of components hardfaced by integra has proven that great cost savings can be achieved compared to the replacement with a new part either cast or forged.

Extensive work in research has resulted in the development of a wide range of alloys and welding procedures. The optimum alloy selection is made considering the component service conditions and feedback of the service performance.

Welding Alloys has built up a world-wide reputation for carrying out both in-house and in-situ welding services and for assisting local companies, as well as large multi-nationals. integra service centres are considered as reliable engineering partners offering a consistent high quality in welding services.

Principal industries

- Steel industry
- Cement industry
- Hydroelectric and thermal power stations, waste incinerators
- Mining and earth-moving industry
- Waste management
- Paper industry
- Food industry
- Petrochemical industry



Arcing of sugar cane crushers.

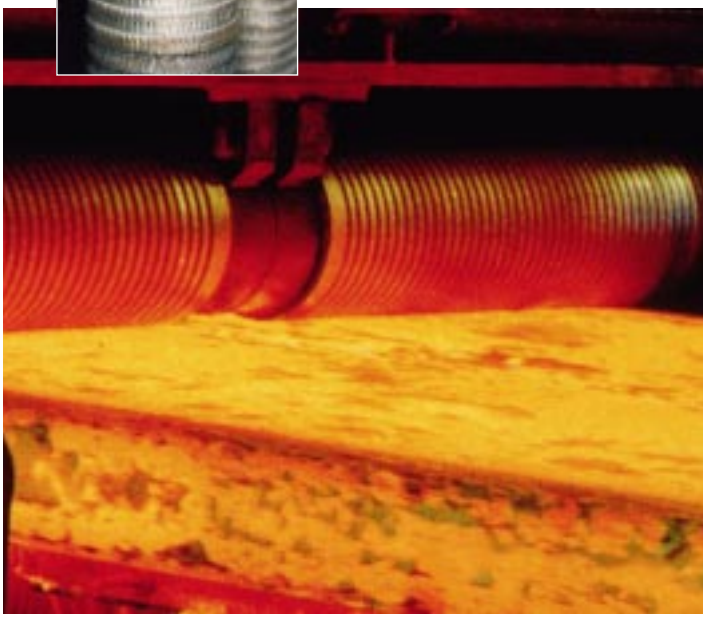
BVQI ISO 9002

STEEL INDUSTRY

- Mineral preparation - Sinter plants
- Blast furnaces
- Converters
- Continuous casters
- Rolling mills
- Forging plants
- Foundries



Continuous casting rolls.
Average life:
- without hardfacing:
300.000 tons of steel
- with hardfacing:
3.000.000 tons of steel.





Hardface plates on feeder chute. integra technology selected by the maintenance contractor. The service life is three times longer than Nihard cast plates.



A dedicated integra technician

Thomas' role as a trained technician is to make assessments of the service performance of components delivered to customers, but he is equally capable of installing automatic machinery or managing an in-situ welding contract.

"It is always a very satisfying experience to witness the in-service wear characteristics and to discuss with the customer the performance of the hardfaced components. Before using integra technology the lifetime of the stars and the breaker bars was approximately 6 months. Today we can achieve 36 months!"

He must co-ordinate manufacturing improvements between the customer and the integra workshop, and ensure his report, including photos and measurement data, is sent to the customer and entered on the integra database.



Sinter plant increased production from 8.000 to 11.000 tons per day – only integra 'honeycomb' technology achieved satisfactory life time under the severe service conditions.

CEMENT INDUSTRY

- Vertical mills
- Roller presses
- Crushing mills
- Kiln trunions
- Screwflights
- Ventilators
- Hardfaced plates
- Hammer mills



In-situ rebuilding of the table and roller tyres of a Mitsubishi vertical mill.

Mr. Schmidt, a satisfied mill operator

Mr. Schmidt is responsible for the maintenance of a vertical mill in a cement plant. His aim is to ensure that the mill runs with a consistent ground particle size during the entire production campaign of 11 months per year, at the grinding rate of 250 tons per hour.

"Since working with Welding Alloys we have reduced our annual maintenance cost to a quarter of the original. Instead of always replacing the worn components with new ones we have adopted integra *technology. The wear of the rolls is perfectly controlled due to pre-planned hardfacing service interventions. It's much less of a headache! Apart from the first hardfacing that was carried out in the workshop, the components are handled and hardfaced either on site, or in-situ in the mill itself enabling us to reduce the downtime by eliminating the work of dismantling and re-assembling the rolls and table. As far as wear life is concerned the results are exceptional.*

The weight loss of the components per ton of material ground is three times less since we started hardfacing. We achieve a wear profile that remains very close to the original profile for longer, directly increasing the efficiency of the mill, and minimising the vibration - there is an additional saving in energy costs. The integra *team who are responsible for my mill are always very flexible in their scheduling and I can call on them at short notice. They now form part of our overall maintenance team !"*

Convinced of the benefits that hardfacing has brought, Mr. Schmidt insists that all new grinding components are hardfaced before use in the mill. From a simple beginning integra has become a true partner with the recent acceptance of a long-term maintenance contract.

Service

Performance

In-situ or in-house

Cost-saving

Preventative or repair hardfacing

HYDROELECTRIC AND THERMAL POWER STATIONS, WASTE INCINERATORS

- Coal mills
- Boiler tubes
- Turbines
- Sluice slides and wheels



Hardfacing the segments of a coal mill table.



Automatic cladding of boiler tube panels inside an incinerator.

Local service

Partnership

Supply of consumables and welding equipment

Supervision

Warranty

Paul, a confident engineer

As project manager Paul spends a lot of time abroad, but principally in developing countries, working for a large multinational on turnkey power station installations. He always has with him the address of the nearest integra workshop. Paul remembers one occasion when this was particularly useful:

"It was a particularly painful process to get the first order for a power station in China. We finally won the contract by giving a very competitive guaranteed maintenance cost. As in all our installations, we sub-contracted the hardfacing of the coal grinding mill to our integra partners whose Chinese workshop was only 3 hours drive from the power station. The welding equipment developed by Welding Alloys used in the maintenance of the grinding mill was supplied at the initial stage as part of the overall contract. The customer is delighted as it is now his maintenance crew who, after training, carry out the hardfacing operation with the supervision of an integra specialist. No language problems! It is also of considerable assistance that the tubular welding wire supplied by Welding Alloys is manufactured locally, so we avoid high import duties on the consumable as well as on the new rolls requiring hardfacing."

Paul particularly appreciates the ability to give guarantees to his customers for the service life of the grinding mill wear components. This helped secure two contracts in China, always with the rolls hardfaced before service use supplied by integra.

MINING AND EARTH-MOVING INDUSTRY

- Mining
- Brick, tile and ceramics industry
- Quarries
- Earth-moving and agriculture



Powder transport.
Tubing segments hardfaced.



Hardfaced plates on rotating excavator.



Conical gyratory crusher.



Screwflights for brick and tile industry.

WEAR BY CORROSION, EROSION AND CAVITATION

WASTE MANAGEMENT

- Waste milling
- Waste incineration

PAPER INDUSTRY

- Crusher mill
- Pulp digester
- Transport screws

FOOD INDUSTRY

- Sugar production
- Oil extraction
- Rendering and crushing
- Animal feed processing

PETROCHEMICAL INDUSTRY

- Pressure vessels:
  - Internal cladding of forged pipes
  - Cladding of welded joints

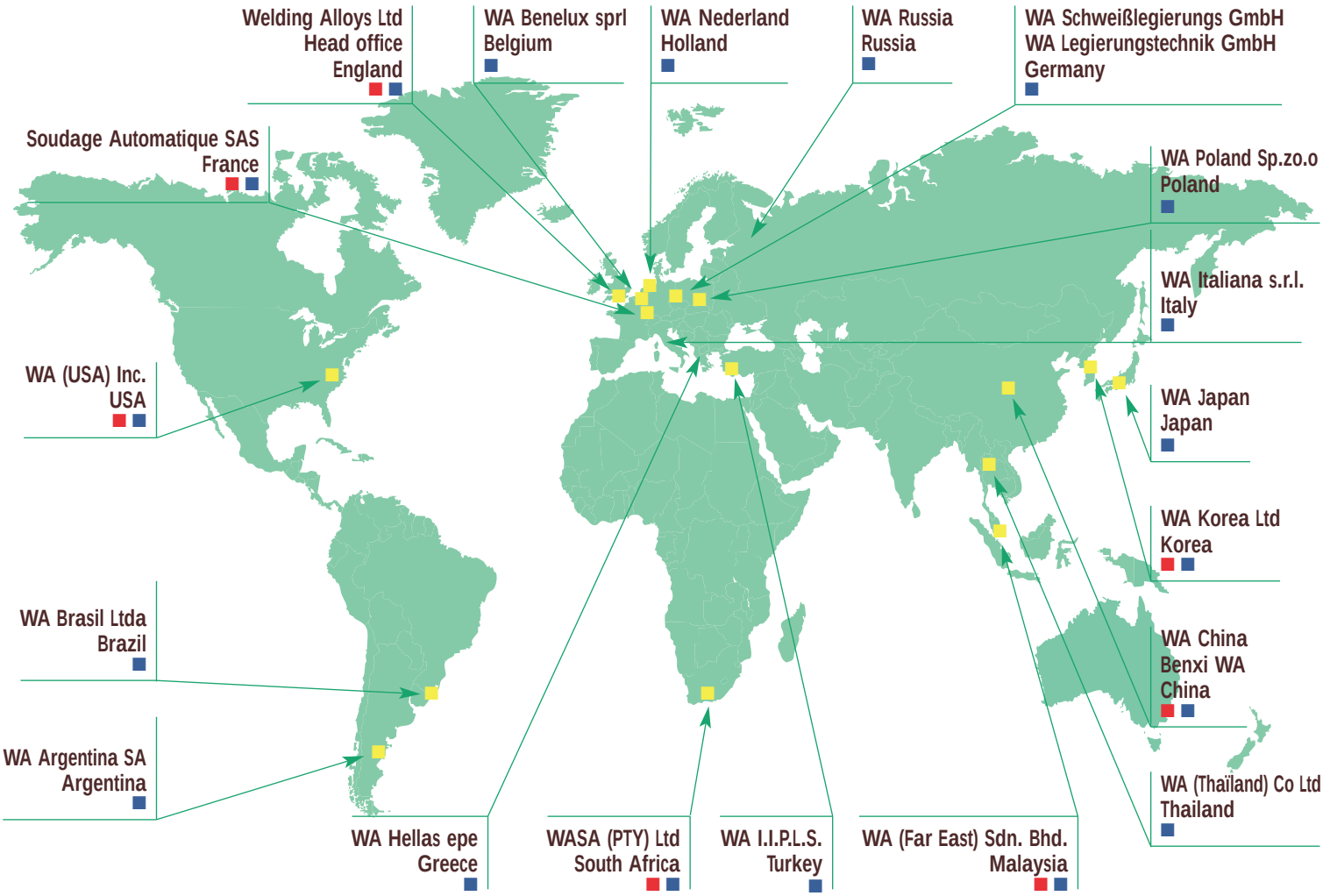


Anti-corrosion hardfacing of high-pressure components for petrochemical plant. Automatic welding with an over-alloyed flux-cored wire to obtain a specific chemical composition.

The Welding Alloys group

An international presence

Cored wire production Integra services Sales and support



A perfectly controlled technology



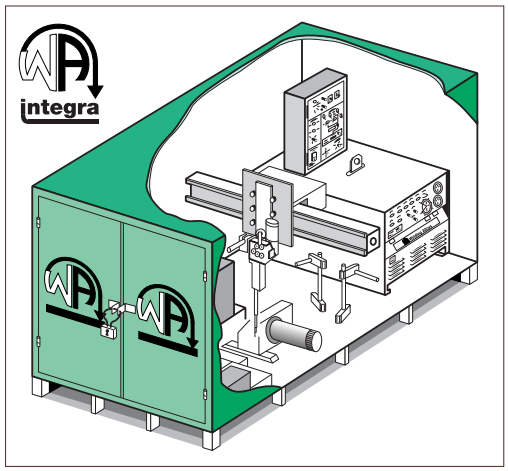
Production machinery designed and constructed in house



Design and manufacture of all types of cored welding wires



Design and manufacture of automated welding equipment



Integra services
Hardfacing in our workshops or on site.
Application of Welding Alloys technology

integra

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