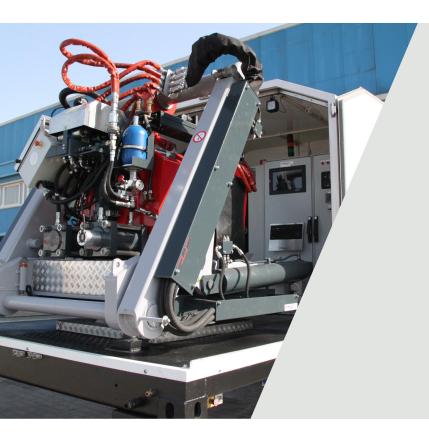**PANDROL**
Partners in excellence

Flash Butt Welding Service

Rail welding - India

Adding Value

Improving access to the latest flash butt welding technology for rail companies in India.

To complement our aluminothermic welding solutions in India, Pandrol offers a complete mobile flash butt welding plant hire service for rail companies.

The service involves providing access to a flash butt welding machine, along with a trained team of operators to carry out the welding process to a high standard. There are four machines available for hire:

- Two Paton International machines (K-920 and K-900) – both designed for welding using continuous or pulsed flashing, with burr removal immediately after welding

- OEM - Hiarom – a 100 tonne machine with capacity for handling the longest rail strings

- A Contrail CR-80 – a compact, versatile machine, with the welding of grooved rails a standard feature.

The mobile machines can travel on rail and road, so can be moved easily between job sites. All have been approved by the Research Designs and Standards Organisation (RDSO), Ministry of Railways, Government of India.

→ TECHNICAL FEATURES

Resistance welding

In flash butt welding, the energy to join components is primarily provided by resistance heat from the parts themselves. The pieces of metal to be welded are separated and a current is applied to them. The gap between the two pieces of metal creates resistance and produces an arc to melt the metal. The time that the arc is present is the 'flash time'.

No filler metals

The pieces of melted metal to be joined are pressed together under high pressure, causing the ends to join. No filler metals are needed.

Electronic control

An electronic control system is designed to provide a stable welding process according to pre-set parameters, producing high quality welding joints.

Clamping system

Flash butt welding machines use a clamping system of two horizontal mounted cylinders that clamp the rails with high force to ensure they do not slip during welding and upsetting.

Welding cycle

Flash butt welding covers the whole welding cycle: preheat, pre-flash, steady flash, boost, upset, forging, and removal of flash material.

Versatility

Flash butt welding can be used to make long welded rails (LWRs) and to convert short rails or LWRs into continuous welded rails (CWRs). The machines are flexible enough for use either on or off track.

→ ADVANTAGES

- Flash butt welding creates rail that is much smoother than mechanically-joined rail because there are no gaps between the sections of rail.

- The lack of joins means that the welded section has the same properties as the rest of the rail – including, most crucially, strength. This minimises uneven wear and tear on the rail, reducing inspection and maintenance costs and saving time.

- Where necessary, for example at switches and crossings, flash butt welding enables two different types of metals to be joined.

- The process is very flexible – through simple adjustments to the flash butt welding machine, different types of rail sections and grades can be welded.

- Flash butt welds are less prone to corrosion and have a lower failure rate then aluminothermic welds. Defects like porosity, inclusions and lack of fusion are eliminated.

- The flash butt welding machines are mobile – they can be driven to site by road or rail, saving time and making welding more efficient.

→ FLASH BUTT WELDING PROJECTS COMPLETED IN INDIA

Project	Customer
DBPL Railway Sliding	DB Power Ltd.
Doubling – North Western Railway	ARSS
Eastern Dedicated Freight Corridor	GMR
Sarguja Rail Corridor PVT. Ltd.(SRCPL)	Gannon Dnkerley & Co. Ltd.
Sarguja Rail Corridor PVT. Ltd. (SRCPL)	EBPL Ventures PVT Ltd.
Doubling – East Central Railway	Track & Towers Infratech PVT Ltd.
RVNL – New Railway Line	Mehrotra Buildcon PVT Ltd.
North Western Railway	IVRCL Infrastructures & Projects Ltd.
Jaipur Metro, RVNL – Rani Keshvganj, RVNL – Palanpur	Kalindee Railnirman Limited
Bhatapara Line	ERA Infra Engineering Ltd.

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