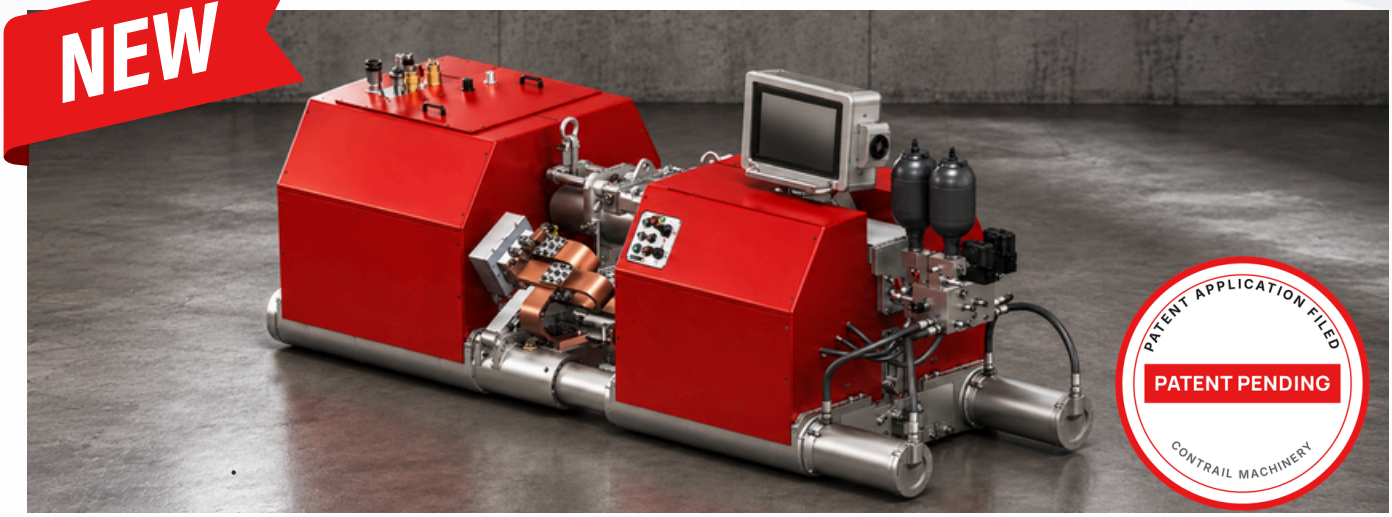
CONTRAIL MACHINERY

CR120



ADVANCED FLASH-BUTT WELDING HEAD

Built to weld the rails that carry the heaviest loads and the fastest trains.

The CR120 is Contrail's most powerful welding head: 120 tf of upsetting force and integrated rail pre-tensioning for demanding closure welds, combined with a new-generation control system: adaptive welding, two-button operation and full weld traceability, on site and in any climate.

120 tf
Upsetting force, highest in the Contrail range

200 mm
Total upset stroke, head self balanced over the full travel

< 0.5 ms
Control cycle time, phase by phase adaptive welding control

// WHY CR120

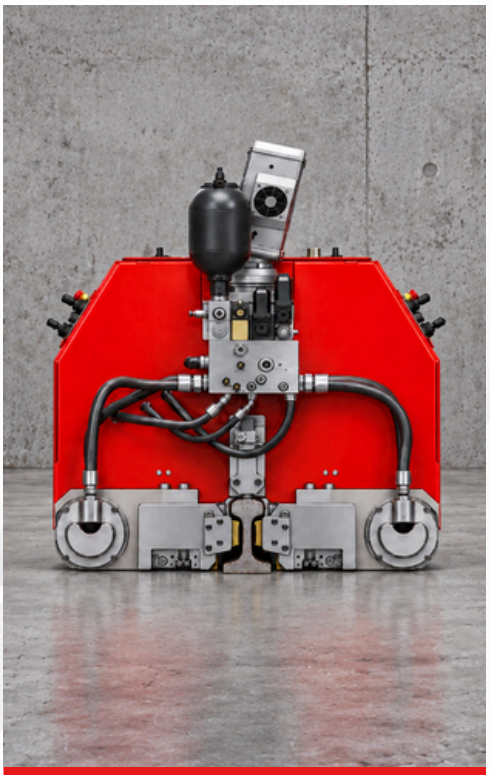
1 Integrated rail pre-tensioning
Controlled pre-tensioning for closure welds, supporting stress management in the finished joint.

2 Alignment you can trust and control remotely
Precise vertical and horizontal rail alignment at rail head and foot, set and corrected remotely — the alignment set before welding is preserved through the upset.

3 Electrodes independent from the clamping jaws
Electrical and mechanical functions are separated: consistent contact quality, reduced wear, less rail surface to clean, and shorter preparation before every weld.

4 Deburring without releasing the rail
The weld upset is sheared while the rails stay clamped and aligned. No release, no loss of alignment, no lost time.

5 Self-balancing head
A fully mechanical system keeps the suspended head horizontal through the entire upset stroke, in any jaw position, with no operator intervention.



BUILT FOR HIGH PERFORMANCE

// KEY ENGINEERING FEATURES

HIGH STRUCTURAL RIGIDITY
Rigid frame minimises deflection under the full 120 tf of upsetting force, for consistent weld geometry.

PRECISE FORCE & DISPLACEMENT CONTROL
Controlled axial loading through the whole cycle, with 24-bit acquisition of the welding parameters.

CONTROL ON THE HEAD
High-performance PLC (8-core + FPGA) mounted directly on the welding head: no control cables to the container, highspeed local communication with field devices.

CONTAINER OR STAND-ALONE KIT
Runs on Contrail FBW container platforms (multi-brand truck chassis) or stand-alone with external hydraulic, cooling and power supply.

BUILT FOR SITE CONDITIONS
Operating range –20 °C to +55 °C, with thermoelectric cooling and heating of the main control boxes.

IP67 PLUG & PLAY WIRING
Power and communication combined in pre-manufactured cables with quick-disconnect ends; IP67 field modules, easy to swap.

OPERATOR ERGONOMICS
Operating panels on both sides of the head and a monitor that rotates 180°.

THREE OPERATING MODES
Automatic and semi-automatic, with manual control available for every movement when needed.

NEW GENERATION CONTROL SYSTEM

Adaptive, traceable and connected - the control system developed for the CR120.

‹0.5 ms	24 bit	2 button	IP67
CONTROL CYCLE	ACQUISITION	OPERATION	FIELD MODULES

Phase-by-phase process control
against validated welding programs, PWM power control for high energy efficiency.

Mistake-proof operation
Automatic mode, two-button start-to-finish, on-screen welding coach and role-based access rights.

Acceptance & traceability
Continuous recording, automatic acceptance against configured limits, detailed weld reports with high-resolution curve analysis.

Machine-wide SCADA
Supervision of head, hydraulic and cooling stations and generator set, full event history, predictive maintenance functions.

Connected
On-machine storage synchronised to the Contrail cloud, secure remote diagnostics and fleet-dashboard integration via the customer portal.

Plug & play serviceability
Pre-manufactured quick-disconnect cables, swappable field components, welding simulator for operator training.

TECHNICAL PARAMETERS	
Upsetting force	120 tf (≈ 1,180 kN)
Total upset stroke	200 mm
Weight	approx. 5,500 kg
Rail profiles	Vignole rail 46 – 75 kg/m
Maximum hydraulic working pressure	315 bar
Supply voltage / frequency	400 – 480 V, 50/60 Hz
Nominal power (TRAFO 50% duty cycle)	360 kVA
Secondary current	approx. 45 kA



ENGINEERED FOR PRECISION

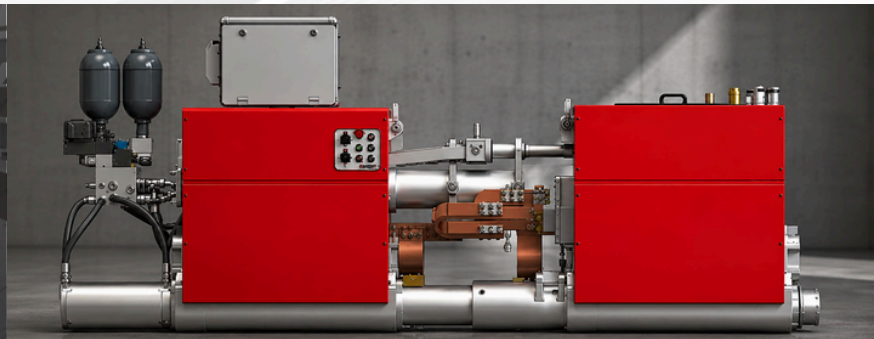
Discover the CONTRAIL CR120 FBW

Talk to our railway welding specialists

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KEY ENGINEERING FEATURES

SUPERIOR RAIL ALIGNMENT
Precise vertical and horizontal alignment for consistent weld geometry.

INTEGRATED RAIL PRE-TENSIONING
Enables controlled rail pre-tensioning for demanding closure welding applications.

ADVANCED WELDING CONTROL
Integrated control of key welding parameters ensures consistent process performance.

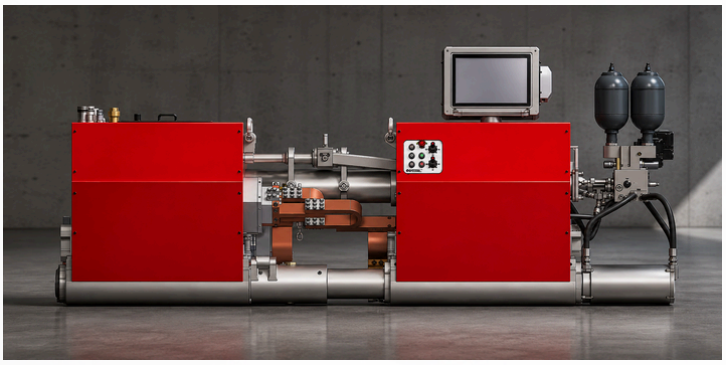
CONTROLLED AXIAL RAIL LOADING
Controlled axial force application throughout the welding process.

INDEPENDENT DEBURRING SYSTEM
Removes excess material while the rails remain securely clamped and aligned.

INDEPENDENT ELECTRODE SYSTEM
Stable electrical contact independent from the mechanical clamping system.

PRECISE FORCE CONTROL
Accurate control of force and displacement throughout the welding cycle.

HIGH STRUCTURAL RIGIDITY
Rigid construction minimizes deflection under load and maintains accurate rail alignment.



Electrical parameters	
Supply voltage	400 - 480 V
Nominal power (TRAFO 50% duty cycle)	360 kVA
Secondary current	about 45 kA
Nominal frequency	50/60 Hz

Hydraulic parameters	
Maximum working pressure	315 bar

ENGINEERED FOR PRECISION

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