

A man with grey hair, wearing a light-colored shirt and a dark tie, is holding a complex, metallic, welded part. He is looking at the part with a focused expression. The background is a blurred industrial setting with various metal structures and equipment. The entire image has a dark blue overlay.

Welding Presentation

AG60 November 2022

PANDROL

About Us



Part of the Delachaux Group



A family-owned company created in 1902, the Delachaux Group is a **global player in mission-critical engineered solutions**



PANDROL

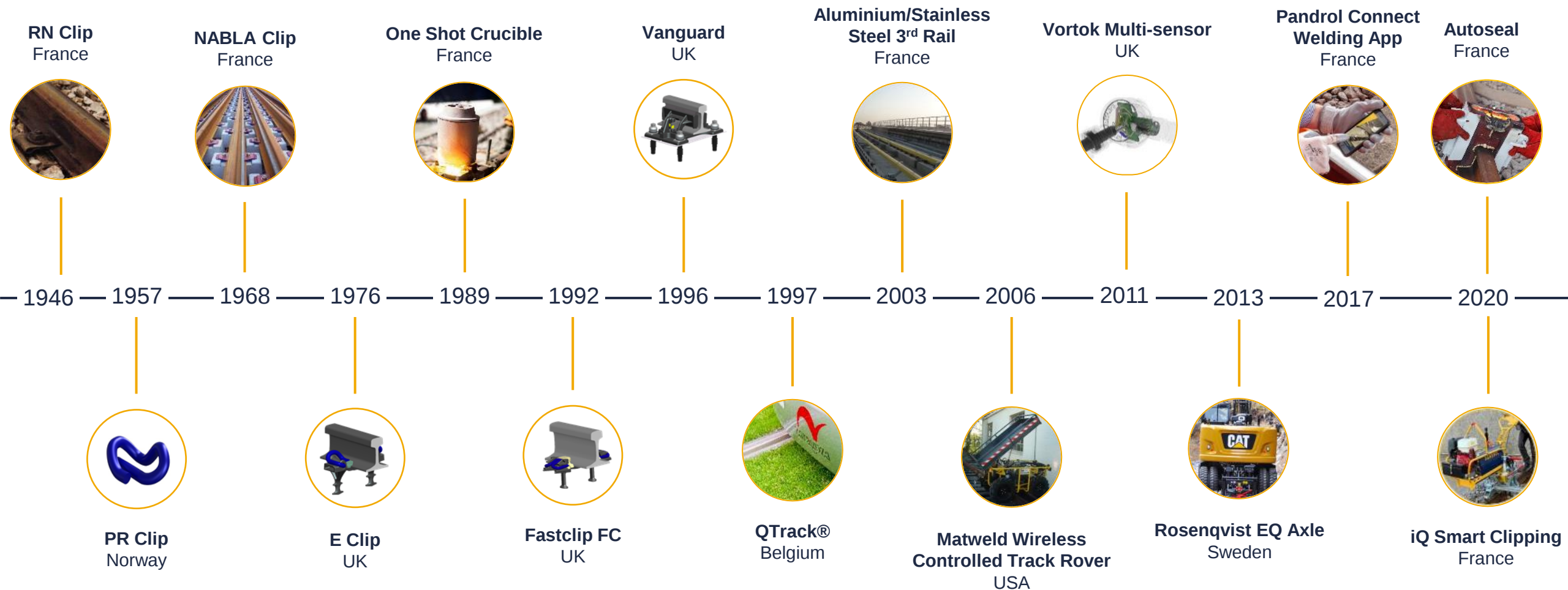
FRAUSCHER



DCX CHROME

© GROUPE DELACHAUX

A history of innovation

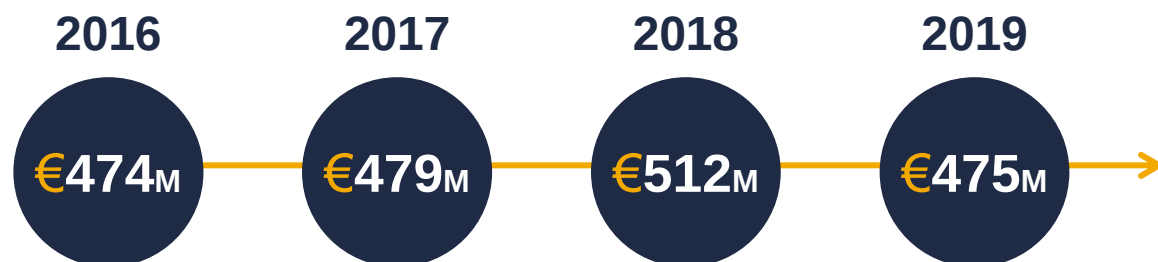


The driving force in rail

1700 employees globally in over **40** locations

At the heart of more than **400** railways in over **100** countries

Our global Sales Revenue:



World Speed Record

for conventional trains 574.8 km/h

Longest Heavy Haul

track in the world 2000 km

World Highest Track

Tibet Line, China, 5,200m

Award-winning expertise



2010 /

Vortok Stressing Roller



2018 /

RE Fastening System



2018 /

Product Innovation

Safety is more than a priority at **PANDROL**

...it's the foundation of **everything we do**

WE SUPPORT



Partners in excellence



■ MANUFACTURER ■ SLEEPER MAKERS ■ CONTRACTORS ■ RAILWAY OPERATORS ■ TRANSIT AUTHORITIES

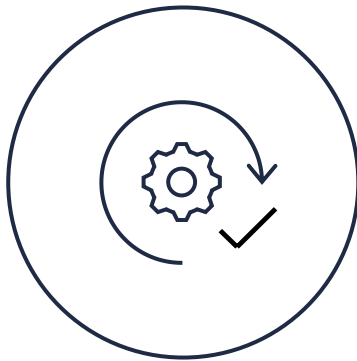
Locations



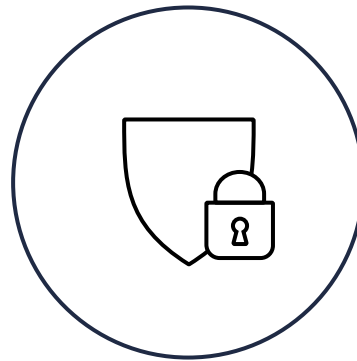
Our Promise



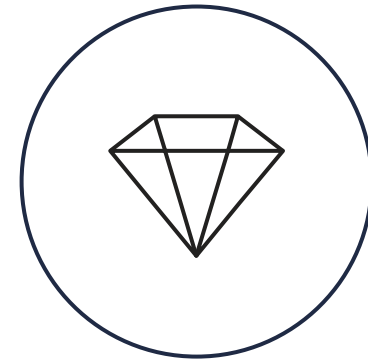
To deliver an **unrivalled customer experience** by **maximising** rail infrastructure



Availability /



Safety /



Lifetime Value /



Aluminothermic Welding

Setting the industry standard

With more than 100 years of experience, our technical expertise, innovative solutions and in-track services make us a partner of choice for our customers worldwide.

Meet the team



Chris McKeown

Head of Operations for UK, Ireland & Scandinavia

Over 25 years experience in the ATW industry.

Qualified Trainer in:

Pandrol:

PLA, PLK, SRG, APR, AP

Goldschmidt:

SKVE - Standard, Wide Gap and Head Repair

Inspector & Assessor.

9 years with Pandrol.



Denver Tucker

Trainer & Technical Advisor

Over 25 years experience in the ATW industry.

Qualified Trainer in:

Pandrol:

PLA, SRG, APR, AP

Goldschmidt

SKVE - Standard, Wide Gap and Head Repair.

Inspector & Assessor.

5 years with Pandrol.

John Riley

Technical & Training Manager

Over 25 years experience in the ATW industry.

Qualified Trainer in:

Pandrol:

PLA, SRG, APR, AP

Goldschmidt

SKVE - Standard, Wide Gap and Head Repair.

Inspector & Assessor.

4 years with Pandrol.



The future of Aluminothermic Welding

We are designing the equipment of tomorrows normal practices



Compact



Lightweight & Environmentally friendly



Easily transportable



Time-saving



Ergonomic



Safe, Reliable and repeatable



The basics of Welding

- Mould fitment and Sealing
- Preheating
- Casting
- Shearing
- Data Capture



Mould fitment and Sealing

AutoSeal® Mould

Pandrol's AutoSeal Mould seals itself to the rail. No need for the old manual operation of luting.



Saves 5 to 10 minutes per weld



Improves wellbeing of the welder



Less plastic and less material waste – more environmentally friendly



Improves quality of the weld



Preheating



Preheating with the new High-flow Preheater

Pandrol's universal preheating system is fully automated for easier, more reliable operation:



No manual interference or flame adjustment required



Equipment uses propane (no oxygen), reducing costs and weight of equipment



Robust – designed to withstand extreme track conditions



Battery Operated – No need for external power like a generator



Significantly reduces errors caused by Oxy-Propane preheating



Crucible & Ignition

Small Crucible

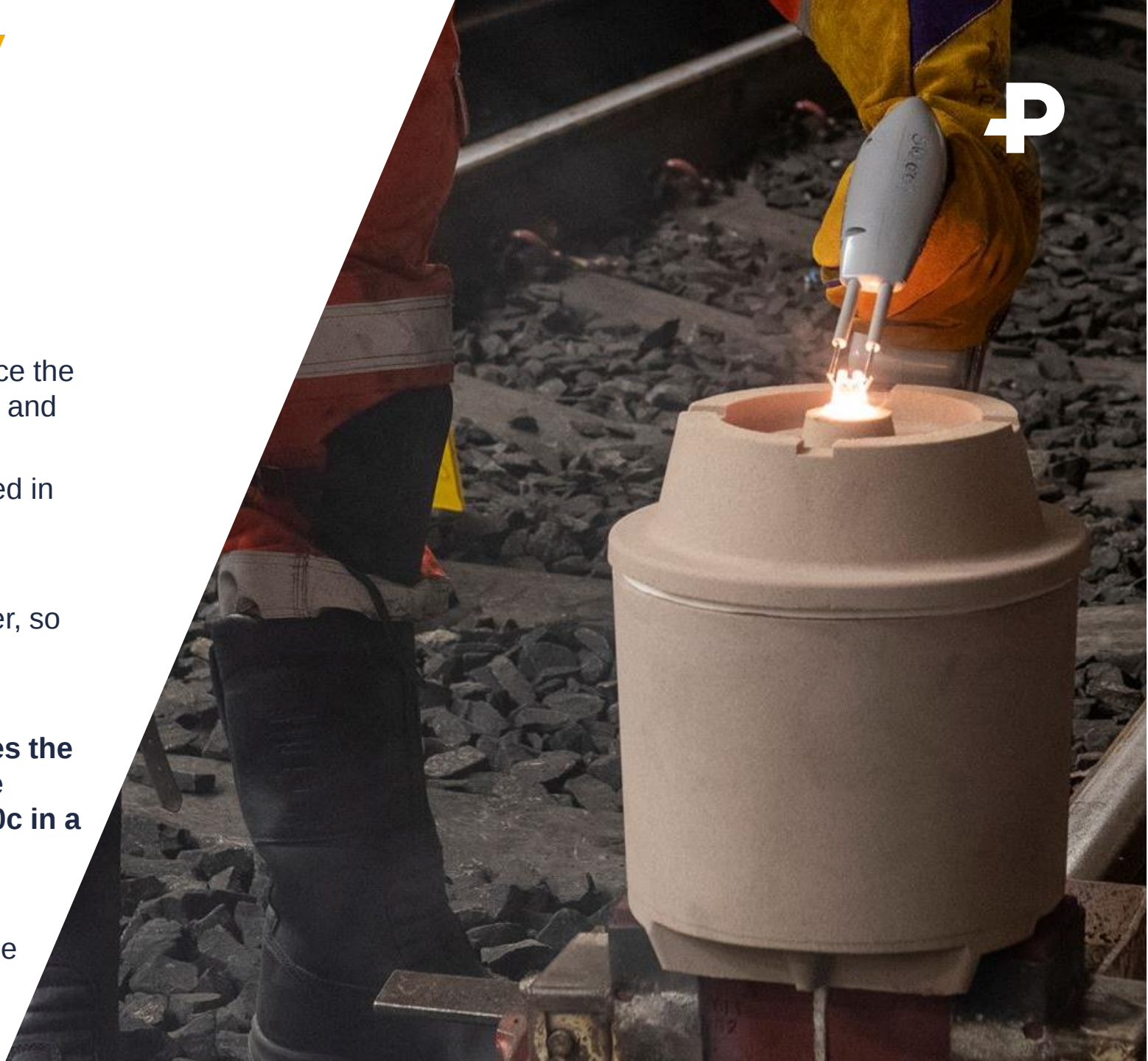
Introduction of a smaller crucible CJ1 (9kg) to replace the CJ2 crucible with the aim of reducing our emissions and waste footprint.

That is **25 Tons** of sand, cardboard and plastic saved in 2021 alone.

We also wanted to make the ignition procedure safer, so we installed an **Electronic Ignition System**.

Our Electronic Ignition System (Startwel) reduces the need for the traditional ignitor method which are classed as 1.4G Explosives and burn up to 1,000c in a welders hand.

The installation of an electronic ignition directly in the crucible makes this procedure **easier** and **safer**.



Weld Shearing

Battery Operated Semi Automatic Weld Shear

The weld shearing procedure is normally a task people shy away from.

- Heavy machine
- manual pump which can take several minutes of hard manual input.

Pandrol have created a **Lightweight Welding Shear** that utilises a **battery** operated drill to shear the weld.

Our Weld Shear is One of the lightest products on the market (if not the lightest) with the significant advantage of being battery operated.



Data Capture

Data capture on a computer has been a long desired product for many welding & site managers.

Currently, most of the industry is using paper TEF's (Track Engineer Forms) which are completed on site by hand.

This paper is then handed in for someone to capture the data and input on a computer system. It is often then sent elsewhere and captured by another person wanting the data of the form.

This is a very time consuming task on many parts and often with information that is incorrect or missing.

897 int 205291

Aluminothermic Welding Installation Form: TEF/3006 Issue 3, June 2008

Sheet of

Welder's Name (Print)		Welder's Signature		Welding Assistant's	
Simone / A Green		D Simone / A Green		D Simone / A Green	
TME / TSM		Work Site Location		Job Cost No.	
		Prestbury			
Defect No. Removed		Start Time		Finish Time	
		23:00		06:00	

	Weld 1		Weld 2		Weld 3		Weld 4	
ELR	MCH		MCH					
Mileage	6 m 1500 y		6 m 1500 y		m y		m y	
Track ID	1100		1100					
Back to low mileage) Rail	Left	Right	Left	Right	Left	Right	Left	Right
GPS Co-ordinate (North)								
East / East (delete appropriately)								
Linespeed	110		110					
Tunnel / Platform / Lineside etc	Open		Open					
Sleeper type	SLAB TRACK		SLAB TRACK					
Consolidated	Yes	No	Yes	No	Yes	No	Yes	No
Rail	LH Rail	RH Rail	LH Rail	RH Rail	LH Rail	RH Rail	LH Rail	RH Rail
Manufacturer	LUCAS LUCAS		LUCAS LUCAS					
109 110A 113A CEN60) Profile	600 600		600 600					
(eg NG, Grade A, HT, 220, 260) Grade	A A		A A					
Wear	0 mm	2 mm	2 mm	0 mm	mm	mm	mm	mm
Rail cutting method	Flame	Disc	Flame	Disc	Flame	Disc	Flame	Disc
Welding gap	25 mm		25 mm		mm		mm	
Alignment method	WEDGES		WEDGES					
Rail temperature								
Weld type	PLA		PLA					
Mould type	A		A					
Fuel gas	propane	acetylene	propane	acetylene	propane	acetylene	propane	acetylene
Gas kit number	WIK 306		WIK 305					
Portion batch number	902350		850840					
Portion number								
Tapping time	20		22					
Kit number	///		///					
Pressure at end of preheat	///		///					
Pressure immediately after shearing	///		///					

	Weld 1		Weld 2		Weld 3		Weld 4	
Weld conforms to NR/L2/TRK/0032	Yes	No	Yes	No	Yes	No	Yes	No
Weld stamp details	KMTSR		KMTI					
Non-conformance report completed	Yes	No	Yes	No	Yes	No	Yes	No
Weld clamped	Yes	No	Yes	No	Yes	No	Yes	No
Welders comments/Reason for non-conformance report	D1C4712 3011							

Data Capture

Data Capture with Pandrol Connect:

Pandrol Connect is a welding hub. It can connect to the surrounding equipment download valuable information and the user can log all site details for traceability



Delivering traceability



Quick Recap

We are designing the equipment of tomorrows normal practices



Compact



Lightweight & Environmentally friendly



Easily transportable



Time-saving



Ergonomic



Safe, Reliable and repeatable



What Next?

Technical

- Finish AutoSeal and HFP Trial – Planned for the end of November 2022
- Write AutoSeal and HFP into Trafikverket standards – December 22 / January 23
- Please note: All Standard PLA equipment is available today

Trials & Demonstrations

- Please speak to me to discuss available options

chris.mckeown@pandrol.com

Mobile: +447779614226

Thank you.

PANDROL