70 years of Plasser & Theurer - turning innovations into standards

The railway is experiencing an unparalleled upswing. More cost-efficient, safer and more sustainable than all other transport systems, it has turned out to be the mobility concept of the future par excellence. Plasser & Theurer is part of the railway and has been working on enhancing this system's appeal from the very beginning. With track maintenance and track construction being among the most efficient industrial fields of activity today, the proof is there. That is because Plasser & Theurer was and is behind many of the crucial innovations in this field.

In the early 1950s, the company recognised that the mechanisation of track work would be a decisive factor in the development of the railway system. What was missing above all was a tamping technology that could consistently withstand the enormous amount of loading on the track. By inventing tamping machines with hydraulic squeezing, operating according to the principle of 'non-synchronous constant pressure tamping', that gap was filled. Today, this innovation is the gold standard in tamping technology. The mechanisation process could begin and Plasser & Theurer played a major role in it. The company holds 936 patents for tamping technology alone and a total of 2,500 active patents.

Manual work processes, such as levelling, lifting and aligning the track, were successively integrated into the machines. Finally, 1967 saw the launch of compaction and profiling machines which made possible the very first fully mechanised maintenance train. So, 1,300 working hours for maintaining 1km of track turned into 130 hours, a saving of nearly 90%.

A complete portfolio creates added value

With the aim of driving the mechanisation process, in a short time Plasser & Theurer developed machines for new tasks such as ballast bed cleaning or formation rehabilitation. The company intensified its efforts to integrate various work processes into larger machine systems. The SUZ 2000 high-speed track renewal train was a milestone in this development. Launched in 1968, it was possible for the first time to lay tracks using the continuous assembly-line method. The main features of this machine technology continue to be used in the modern, more powerful track renewal trains of today.

The assembly-line method was also decisive in improving other machine types. In particular, with tamping machines, the transition from cyclic to continuous working action was possible. It was no longer necessary for the machine to stop for every single tamping process as by decoupling the tamping unit frame from the machine frame, the machine could travel and work at the same speed. This provided enormous

Above: Plasser & Thuerer's co-founder Dr Josef Theurer is pictured in 1975 observing a track renewal train in operation. *Photograph: Plasser & Theurer.*

Below: A ceremony was held in 1972 at West Ealing to mark the handing over of the 300th Plasser & Theurer machine, in this case an 07-16 tamper, to British Rail. *Photograph: Plasser UK.*

Left: In 1983, the first levelling, lining and tamping machine to work continuously - the 09-CSM - was developed by Plasser & Theurer. *Photograph: Plasser & Theurer.*

Above: The development of Dynamic Track Stabilising (DTS) technology led to the delivery of a fleet of DTS machines to British Rail during 1987 and 1988. *Photograph: Roy Hennefer.*

Above: Machines for general infrastructure maintenance have also been manufactured by Plasser & Theurer, such as this TASC-45 pictured at Corrour Summit. *Photograph: NPT Publishing Collection.*

Above: In 1996, the AHM 800-R was developed by Plasser & Theurer as a combined track formation rehabilitation and ballast cleaning machine. *Photograph: Plasser & Theurer.*

Above: First Engineering's Plasser & Theurer 08-4x4/4S-RT Unimat tamper was the first post-privatisation on-track machine to be delivered to a UK contractor in 1997. It also heralded the introduction of a new generation of machines to the country that were designed and constructed to the then new Railway Group Standards. *Photograph: Alex Hall.*

Right: The delivery of two Plasser & Theurer AFM 2000-RT track-finishing machines in 2006 to the joint venture between Swietelsky and Babcock - SB Rail - introduced more new technology to the UK. These machines combine the abilities of a ballast regulator with that of a DTS. *Photograph: SB Rail.*

relief for machine personnel and, at the same time, signalled the beginning of significantly higher working speeds. Where a cyclic-action, single-sleeper tamping machine could tamp 500 metres of track an hour, a continuous-action, four-sleeper tamping machine of modern design is able to tamp more than 2,600 metres of track in the same amount of time.

The vision of completely mechanising track construction became reality. As a full-range supplier, Plasser & Theurer provides machine technologies for practically every work process - tamping, ballast management, stabilisation and compaction, ballast cleaning, formation rehabilitation, material logistics, track renewal and tracklaying, mobile rail treatment, measuring work - the ideal machine concept being available for every requirement. Nevertheless, new technologies are still necessary. Three major drivers are behind this - sustainability, the shortage of skilled workers and the digitalisation of the railway.

Hybrid drive systems: the beginning of a new chapter

Even with the machines always contributing to climate protection as part of the most environmentally friendly transport system, Plasser & Theurer is addressing the topic of sustainability from a technological point of view. The first hybrid track maintenance machines were made by Plasser & Theurer and went into service in 2015. Equipped with E³ drive technologies, they use the electrical energy from the contact wire or battery power, reducing local emissions - of both pollutants and noise - to a minimum on the worksite. The largest order in the company's history, which was awarded following an EU-wide invitation to tender, confirms this role as an environmental pioneer. The Austrian company will supply 56 vehicles to

Right: The combination of the continuous-action tamping on three sleepers and DTS technology is offered by Plasser & Theurer in the 09-3X-D-RT machine. First introduced to the UK in 2005, a total of nine examples have been delivered. *Photograph: Plasser & Theurer.*

the ÖBB's green maintenance fleet, with an option available for an additional 46 vehicles.

Decisively shaping digitalisation

The topic of digitalisation is creating an equally strong momentum. It opens completely new opportunities for Plasser & Theurer machines and infrastructure, which is why the company is pursuing it so intensely. One example of this is the Plasser TampingAssistant, the modular turnout tamping assistance system. For the first time, this system makes it possible to automatically perform all the steps involved in turnout tamping from start to finish. Another example is the EM-VT track inspection vehicle series which is equipped with the latest measuring systems featuring 360° 3D laser scanners and high-resolution colour cameras, among other things. With these vehicles it is possible to completely measure a 50km railway line within two days and provide all the data for generating a digital twin. Experts agree that this is ushering in a new era of railway infrastructure planning, one in which planning processes speed up significantly and costs go down drastically.

Right: Whilst the ballast cleaning of track has been undertaken for many decades, the high output method was brought to the UK by Plasser & Theurer in 2004. A total of four high output ballast cleaning systems have now been supplied. *Photograph: Plasser & Theurer.*

Left: One of the latest examples of Plasser & Theurer tamping machines for the UK market is the 09-4x4/4S Dynamic. The first example was delivered in 2013 with a total of 10 examples now being in operation and further machines currently in build. *Photograph: Plasser & Theurer.*

Supporting customers over the entire life cycle

Even with all of these futuristic technologies, the Plasser family company is more than just a manufacturer. The company's machines are in operation for decades, which must be taken into account for its servicing solutions. Customers across the globe can count on a network with 22 partner companies. In addition, a highly dynamic Customer Services team supports customers over the entire service life of their machines. When it comes to customer services, one fact alone reflects how great the demand is, out of 17,400 machines that Plasser & Theurer has delivered, 50% are still in operation.

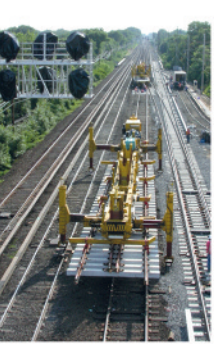
To find out more about the history of the company, please visit: www.plassertheurer.com

Left: The world premiere of the 09-4X E³ Dynamic tamping express machine took place in Salzburg, Austria, in 2015. This was the first track construction and maintenance machine to work with a hybrid drive system. *Photograph: Plasser & Theurer.*


PLASSER RAIL


Plasser&Theurer


70
YEARS
Plasser & Theurer




RM 900-RT


09-3X