

Plasser's Monster Millennium Machine



Plasser & Theurer has developed the Millennium Machine, a formation rehabilitation machine with integrated ballast recycling. It is the longest machine the company has ever built.

PLASSER & THEURER put its new RPM 2002 Millennium Machine on the market at the start of the new millennium in the belief that substructure improvement will become increasingly important to many of the world's railways in the next few years. The first RPM 2002 machine was handed over to the maintenance contractor, RPM Wiebe & Swietelsky, on January 17.

RPM 2002 is designed for the fully-mechanised insertion of a formation protective layer (FPL) and a ballast bed with integral ballast recycling, and for lifting, lining, levelling, and tamping the track. It is 140m long, weighs 560 tonnes, and has a total engine output of 2467kW.

Mechanised insertion of an FPL is an effective and well-proven method of formation rehabilitation that has been used since

the early 1970s. "A good bearing subsoil raises not only the stability of the permanent way and the track geometry, but also has an extremely positive effect on the life cycle of the entire permanent way material. Consequently there is an enormous reduction in track maintenance costs," claims Plasser.

For the first time, RPM 2002 allows all necessary formation rehabilitation work to be performed in one operation. The sequence starts with removal by an excavating chain of the upper layer of ballast. Some of this can be recycled. Cohesive material that fouls the ballast is cleaned using a Wiebe star screen unit.

Ballast then passes through a metal separator before reaching a cone crushing plant where the stones are sharpened. Processed ballast is taken to the ballast distributor units.

The excavation chain then removes the remaining material down to subsoil formation. Excavated material and spoil from the star screen and vibration-screening unit is transported to the front of the machine and loaded into hoppers.

A geotextile can be laid at this stage using an unrolling device. Next, the FPL is inserted, using a regulating device and a slewing conveyor belt to distribute the FPL material evenly over the entire width. Controlled addition of water guarantees

the required moisture content. Six plate consolidators compact the material.

Ballasting is performed in two phases, first being filled into the area underneath the skeleton track, and then with selective ballasting of the tamping zones. The FPL and additional new ballast is supplied from units at the rear of the machine. Finally, the track is lifted, lined, levelled, and tamped by the integrated tamping machine. A measuring-recording unit records track geometry. The RPM 2002 can complete the rehabilitation process at the rate of about 100m/h.

According to Plasser, the advantages of using the RPM 2002 are, from a technical point of view, the high quality of work resulting from carrying out all stages of work in one operation. The trackbound star screen unit also guarantees highly efficient cleaning of the recycled ballast.

The incorporation of ballast recycling within the machine replaces a large number of transport runs that would otherwise be needed either by rail or using highway trucks. Another advantage is that the operation of the machine does not hinder traffic on an adjacent track.

Thanks to short preparation times, short track possessions can be utilised cost-effectively and the completed track can be re-opened immediately for traffic at 70km/h.

IRJ

RPM 2002

Excavated ballast Cleaned ballast/new ballast
Spoil New formation protective layer (FPL) material

