**High output rail (transit) grinding on the Metro**

Phil Kirkland, Head of Rail Infrastructure Engineering, Nexus Rail, describes how Harso Rail’s twin-unit RGH20C rail (transit) grinder illuminates Tyneside as it goes back to work for Nexus.

**Here again!**

Sitting quietly in the Network Rail loop at East Boldon on South Tyneside, the GBRf conductor on-board the Harso Rail RGH20C rail grinder receives the midnight call to move forward to Pelaw Junction. Here the signal feather on the Down Main indicates a directional move to the left, off the main line via Pelaw Chord and soon the machine arrives at Signal 764, ready to transfer on to the Nexus Tyne and Wear Metro system. A flurry of calls and Network Rail Tyneside IECC hands the machine over to Metro SDC and GBRf hands the machine to the Nexus Rail conductor. Signal 764 is a hive of activity tonight. In a matter of minutes, the RGH20C rail grinder powers itself into the refuge siding at Pelaw Station and ties down, ready for the start of its contracted works with Nexus Rail.

During its previous visit the RGH20C had remained on the south side of the Tyne due to structure gauge clearance restrictions. However, Nexus Rail and Harso Rail engineers had worked together to improve the overall cross-section of the machine, so that a physical running trial could be undertaken through the Central Area tunnels and into North Tyneside. This had been achieved through modifications to roof-mounted equipment, exhaust ducting and other ancillary equipment.

**Trial run**

Friday/Saturday night (2nd-3rd March) would be the night of the trial. With a full isolation between Heworth and Gosforth to allow ‘at height’ physical checks, accompanied by Nexus Rail and Harso Rail engineers, the RGH20C would set off beneath Göteborg, out across the Queen Elizabeth II Bridge over the Tyne, under Newcastle city centre, eventually arriving in Top Shed at South Gosforth. The operation, supported by the Nexus Rail overhead line maintenance teams, proved a complete success.

This success would mean a full programme of shifts without OLE isolation could then be implemented and delivered on North Tyneside. These works would range from rail reprofiling, defect grinding and corrugation removal between Longbenton and Monkseaton. Additionally, on its return journey, the RGH20C would complete grinding between Central Station and Gateshead across the Queen Elizabeth II Bridge.

**All-in-one machine**

The RGH20C is a self-contained, high-output machine designed to give maximum results in terms of quantity and quality. On-board recording and measuring systems give a constant analysis and update of railhead condition and situation to attending engineers and Grinding Supervisory Managers (GSMs). The 20-stone grinding configuration lends itself to increased production and finer controls with each pass undertaken. This, combined with noise suppression and dust collection systems, make the RGH20C a particularly attractive and efficient machine for use within the urban Nexus environment.

The entire works programme was finished in complete safety, to plan and to budget, delivering a particularly successful and satisfying contract package. The success is measured in terms of ‘spark time’ output, i.e. that element of actual track time given to the grinding team and not including the time spent taking and giving up possessions or travelling to/from worksites. The improved structural clearances having eliminated the need for OLE isolations yet further increased the amount of ‘spark time’ available and, additionally, the operating rules allowing transit of the RGH20C directly to the protecting signal ahead of possession again contributed to increased ‘spark time’ availability.

The final results were an impressive 9,308 metres of route grinding with an average of 10.35 passes and total ‘spark time’ of 51.3 minutes. This provided an impressive output of 1,089 metres of grinding per hour. The grinding team set a new, all-time record on Nexus by achieving 1,268 metres in a single shift, made all the more impressive when you consider the possession window is only 00.30 to 04.30 at best. RGH20C is unique in being built to the highest EU Interoperability standards, making it flexible for most light or heavy rail administrations.

**Worthwhile results**

In the quest for improved wheel/rail interface management, Nexus Metro customers (and neighbours) should experience a quieter and smoother ride. Engineers of different disciplines will see a benefit from improved track durability and quality, along with reduced wheel wear and, therefore, less wheel lathe activity.