

*Established Since 1979*



## On Track with Harrington Generators



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## On Track with Harrington Generators

*Since 2000, HGI have closely partnered the UK's rail infrastructure managers and maintainers to provide generators, distribution equipment and warning systems designed to make life easier for the user and to promote availability of the route and associated assets.*

*The Company already had a series of generators which were approved for Trackside operation and with them, a range of Audible Warning Devices but in 2000, things got bigger - literally – when the Orient Express Company invited HGI to quote for the supply of a 27kVA generator to provide “hotel power” on its luxury Northern Belle service.*

*This machine would provide lighting, catering and general power for the train during its tours and would be the first venture for HGI into the world of vehicle-mounted installation. Although nobody could know at the time, this was the first of several hundred HGI machines which would be installed on rail vehicles over the years to come.*

*Later that same year, the Company took another step up when HGI were selected to produce a 100kVA 650V generator for mobile standby use to support signalling systems. Working in close collaboration with the (then Railtrack) Zone Engineers, HGI designed a machine which would replace the existing 30+ year-old design while maintaining familiarity and accessibility for the users and with availability and reliability as high priorities. The first such unit was delivered for Christmas 2000 and the HGI Railguard range was born.*

*These two very different requirements led to an extensive examination of the needs of the rail industry user, a deep understanding of Group and Company Standards and formed the foundations on which HGI would build to become the industry's premier supplier of rail-related generators and associated power equipment.*



**Northern Belle with HGI 27kVA**



**100kVA 650 Volt Railguard  
(Signalling Standby)**

## HGI and the Channel Tunnel

HGI's venture into the rail industry was a timely one and in 2001, the Company won contracts to supply a significant quantity of generators for two major Railtrack investment projects.

Working with two Yorkshire-based, American-owned companies (Thrall Europa and Wabtec Rail), HGI designed and supplied ultimately some 200+ generators for use on the MRA Side-tipping ballast wagons (with Thrall) and the HQA HOBS (High-output Ballast System) Auto-ballaster (with Wabtec), the latter going on to become a significant feature in the construction of CTRL (Channel Tunnel Rail Link).

Both designs were an iterative process, further developing HGI's understanding of the rail-dynamic environment and resulting in two highly sophisticated and very different machines to meet the demanding requirements of these radical new vehicles.

Through a process beneficial to all involved, HGI further extended their understanding of the needs of the rail customer and the result produced two machines which dramatically increased productivity in ballast handling for the end user.

The involvement and exposure associated with these projects brought further benefit to HGI when in 2002 the Clark Chapman (Cowans Sheldon) Company approached HGI with a requirement to power its own revolutionary track placement system – the RDT (Rail Delivery Train). This vehicle system would deliver and position 32 pieces of CEN60 rail, each up to 216 m long, laying simultaneously either side of the train and again, with systems powered by a Harrington Generator.

Later that year, HGI were approached by Railtrack East Anglia with the result that the Company went on to supply four more 100kVA 650V mobile sets in a variation of the original 2000 LNE specification.



**HQA Auto-ballaster  
30kVA Air-Cooled set  
Channel Tunnel Rail Link**



**MRA Side-tipper  
30kVA water-cooled set  
Radio-controlled tipping**



**RDT (Rail Delivery Train)  
12.5kVA Water-cooled set**



**100kVA Road Tow  
AMF 650 Volt**

## Infrastructure Monitoring and Measurement

In early 2002 and in a period of heavy investment by Railtrack, HGI were again in discussion with this valued customer and the result this time was a series of vehicle-mounted 100kVA, three-phase generators. Installed in pairs in modified coaching stock, these systems provided more general purpose power for a variety of requirements, including (in the early days) cable-laying trains for Southern Region before later becoming incorporated into the NDS IM Fleet.

After an initial experiment with vehicle roof removal, a system of installation was developed which required minimal interference with the vehicle body structure and so consequently eased the approvals and scrutiny process once the completed vehicle was ready for service.

This would form a key feature of HGI's philosophy to be taken forward and applied to future vehicle-based projects.

Having produced a considerable quantity of generators now providing power to track replacement systems, in mid-2002, HGI were proud to be invited to bid for the supply of a 60kVA generator to power the recently-refurbished and re-equipped "Lab 5" track monitoring vehicle.

Working with AEA Technology Rail, HGI produced a generator which while meeting all the technical requirements of the project and achieving full compliance with Railtrack structural standards, was again capable of being installed without interference with the vehicle bodywork.

The unit also required careful air management to maintain ventilation and a more sophisticated control system than would have been employed for a commercial generator. This in turn would become the basis of many derivatives as more Harrington machines became part of the IM fleet.



NDS DBSO Vehicle



## Innovations and Solutions

Having now developed strong relationships with experienced and key figures within the industry, in late 2002, attention returned to the Railguard series when HGI were invited to discuss the creation of something which as yet had not existed.

Working with Jarvis Rail, HGI designed and developed a 16kVA multi-voltage road-tow generator, capable of providing not only 650V single-phase for signalling but also 230V and a true 110V CTE output for site equipment and power tools. The unit was intended as a complete, all-round packaged solution which could be deployed by a wider range of vehicles than the larger 100kVA units and would also provide a more versatile solution under breakdown or emergency conditions.

Staying as close as possible (as a mobile would allow) to the spirit of SSP generator specification, the machine was a success and also gained Network Rail Product Acceptance. It was quickly followed by another unique innovation (inspired by the same Rail Engineer) when HGI went on to create a system of emergency signalling cable reels.

This system was intended to provide up to 1km of approved signalling cable in a form that could be deployed by one man (if necessary) and delivered where required in one (small) van. The result was a reel system, each comprising 65m of B2 cable, weighing under 25kgs each and capable of interlinking. The modus operandi was to deploy the cable trackside, bypassing the fault/damage and allowing power (and thus signals) to be restored sooner than had previously been possible. All saving lost minutes and relieving pressure on repair staff.

This system was soon followed by a 5kW 650V petrol portable set, allowing access where even the 16kVA road tow could not be used and again, restoring power quickly and saving lost minutes (and the resultant charges).

**16kVA Road Tow  
650/230/110V**



**Portable Signalling Generator  
Petrol powered 650 Volt**



**2.4kW to 6kW  
Petrol Generators**

## The Power Engineers “And there’s more…….”

HGI’s involvement with the (now Network Rail) Infrastructure Monitoring Fleet took a further step in 2002 when the Company began work on a series of 100kVA three-phase generators which would become part of the NMT (New Measurement Train).

Working with Interfleet, Hunslet-Barclay and directly with Network Rail, the existing design for the 100kVA vehicle-mounted set was adapted to suit this new requirement and with another – yet more sophisticated – control system, the machines were installed (again with minimum interference) in the vehicles which would go on to transform the future of track measurement and recording on the UK rail network.

As the IM Fleet became more centralised and its mission more defined, working closely with the Senior Fleet Engineer, HGI would go on to develop, supply and install a wide range of generators across an equally wide range of vehicles. For this application, a common control and interface philosophy was developed allowing train crews (both operators and maintainers) to interchange between vehicles with a minimum of re-training and while retaining familiarity with the now-common “front end” systems used.

Similarly all the machines in service (now accounting for over half the fleet) include the same CO<sub>2</sub> fire detection and suppression system, similar (where not identical) control modules and as many common features as can be retained regardless of the size of set (now ranging from 12.5 – 100kVA).

In 2006, HGI took another quantum leap when the Company began work on its first 850V DC generator, again for the Orient Express Company. The machine was intended to reduce reliance on ETH-equipped locomotives by providing the train with its own, independent ETH supply. The 205kW machine was designed to have a simple operator interface (almost literally “on and off”) while still incorporating more extensive diagnostic facilities for the maintainer and fulfilling its function in the safest possible way.



**NMT (New Measurement Train)**



**Pullman  
205kW 850V DC Generator**

## Current Activities

The experience with the large VSOE project was one which would come back to HGI in a variety of ways over the ensuing years as various ROSCOs looked at ways in which they might exploit the mostly under-used capacity of DVT vehicles. A similar question was received from Iarnród Eireann while exploring ways in which the notoriously unreliable HEP (Head-end Power) supply of the IE201 could be supported but it was Chiltern Railways who finally brought life to the concept.

HGI were approached by a consultant working on behalf of Chiltern and after some discussion it became clear that HGI could offer an innovative solution which would result in the CRCL DVT vehicles providing 250kW of ETS supply, allowing the noisy Class 67 locos to be shut down while stabled or in stations yet still providing power along the train. In fact the HGI generator will not only provide the 850V DC supply required by the MA sets but an integrated compressor will also maintain the train air systems at the same time.

The machines are currently going to production with first deliveries scheduled for Autumn 2011.

HGI are also in discussions with a view to providing a further set of solutions to the NDS IM Fleet as more vehicles become due for refit and modernisation. The first of these is expected to be a 100kVA unit which will replace an older machine and with others to follow.

In 2011, HGI are also looking carefully at the provision of stationary machines for use in SSP/PSP installations and are engaged in productive discussions with major suppliers of such equipment.

Also key to the future of the Company is a desire for HGI to extend its asset management service and apply this to rail infrastructure and plant. The Company has an extensive capability, developed and proved over several years of monitoring and maintenance of generator sites in critical (emergency services) applications and will seek to develop and extend this capability to the rail industry.





1979 to 1998



1998 to 2001



2001 to 2005



2005 to 2008

2009 to-date

