European speakers

English presentations!

Utrecht, like many cities in Holland, seems to be dominated by the bicycle. At rush hours the city becomes a sea of metal wheels. Some of us brought up to expect vehicles to appear on the left hand side of the road. Bicycles seem to be everywhere — and they rule. In complete contrast, in the calm of the town’s railway museum, Eurotunnel ran the 2008 Rail Technology Conference concentrating this year on the rail/wheel interface — although the first day dealt with aspects of switch design, installation and maintenance. Presentations were all very high calibre.

It was truly humbling to listen to speakers from all over Europe giving highly technical input and taking equal challenging questions — all in English! From a rail programme I have selected a few subjects for a quick mention this month. Several of the other papers will form the basis of future articles over the coming year.

Geothermal point heating

Whether you look at it, just about all point heating needs a form of non-renewable energy. The gas versions — not that common in the UK these days — are completely non-renewable. The electric ones could get their supplies from hydro-electric or wind power, but they are still a drain on national resources.

The water-glycol versions — they’re heated by natural gas. So, up to now, the heating of large chunks of steel to melt snow and ice in the open air in winter has needed substantial quantities of fuel and needs cabling, pipes and control gear. Pintch Albin on the other hand, has presented a method of heating stations without any external power source. They use geothermal energy.

Most people associate geothermal heat extraction with boreholes, circulated water, heat exchangers, pumps and so on. Mention pumps and straightaway there’s a need for a power supply to power the pump and control to control the pump. Not much power it has to be admitted, but power and cabling nevertheless. Pintch Albin do not use the conventional model. Their system is self contained and relies on the behaviour of CO2. Pressurised CO2 (the working fluid) in a closed vertical pipe is heated at its base by geothermal energy. The CO2 then evaporates and rises up the pipe. Heat is distributed at the top section of pipe and causes condensation of the CO2 gas which then flows back down in the pipe to the bottom. The circulation process starts again.

The pipe is insulated in the middle ‘transportation’ portion. The heat distribution zone is above ground level.

WORKING PRINCIPLE:

1. Pressurised CO2 (working fluid) in a closed vertical pipe is heated at the bottom section by geothermal energy
2. CO2 evaporates and rises up the pipe
3. Heat is distributed at the top section of pipe and causes condensation of the CO2 gas
4. CO2 condenses down in the pipe and circulation process starts again

and is where the heating energy is transferred to the switches. Their first test site is on a tram track in the winter of 2008 and was successful in snowfall and temperatures down to -15°C. All without an external power source and without any control mechanism. Worth looking at!

Railway noise

In the UK, life is pretty simple. If you buy a house next to a railway, you can expect to be affected by noise. It’s just the way it is. Railways are noisy. They were often there first and on the other hand, if someone builds a new railway next to your house, then you can expect to be offered some kind of noise reduction assistance.

In the rest of Europe there seems to be a different attitude. There’s a great deal of effort being expended on noise measurement and noise reduction for everyone — including those who already live next to a railway. The visible result of this is the miles and miles of high noise reduction barriers through urban areas. In accordance with the Law of Unexpected Consequences (or in this case the Loudly Vicious) this has given a wonderful opportunity to armies of graffiti artists who have covered them from end to end with another form of urban pollution. Noise measurement is a growing business. In Holland, BAM Rail bv has installed microphones on their high-speed track recording vehicle. The coach, a converted German postal van, is capable of recording at 200km/h. It is also kitted out with all the other track measurement equipment that would be expected. These are specialist noise measurement — that of the interface between the wheel and the rail surface.

A great deal of work is done to filter out extraneous noise. The resultant noise profile is then calibrated with actual line side measurements. In this way noise profiles for a whole line can be deduced without the need for continuous line side monitoring. Trends can be predicted so that appropriate measures can be planned to control or reduce noise. There are some track condition spin-offs emerging. Component condition can be related to the amount and type of noise detected so giving some indication of emerging component life spans.

In a related presentation by Lloyds Register Rail Europe, examples were given of the dramatic reduction in noise when composite blocks are used. A recording played was of a passing rake of wagons, half of which was fitted with composite blocks with the other half fitted with conventional cast iron blocks. The resultant smoothness of the wheel profile was obvious.