Hans Hendriksen - Pintsch Aben.

European speakers
English presentations!

Utrecht, like many cities in Holland, seems to be dominated by the bicycle. At rush hour times they swarm through the city streets – a little unnerving for those 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, Europoint 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 of very high calibre. It was truly humbling to listen to speakers from all over Europe giving highly technical papers and taking equally challenging questions - all in English! From a full 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

Whichever way 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.

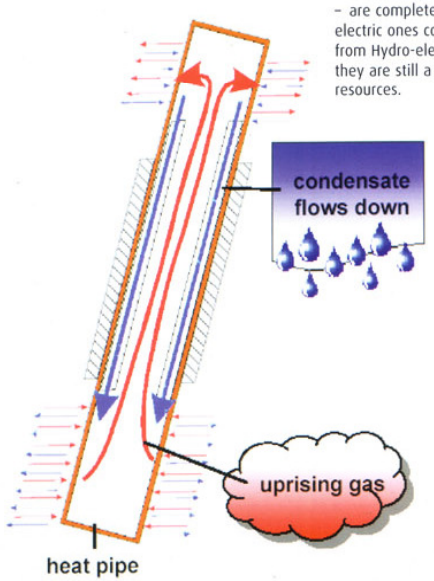
The water-glycol versions – they're heated by natural gas

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. Pintsch Aben on the other hand, have perfected a method of heating switches without any external power supply. 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 controls to control the pump. Not much power it has to be admitted, but power and cabling nevertheless.

Pintsch Aben 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 and is where the heating energy is transferred to the switches. Their first test site was in Munich in the winter of 2006 and was successful in snowfall and temperatures down to -15°C. All this without an external power source and without any control mechanism. Worth looking at!



WORKING PRINCIPLE:

1. Pressurised CO_2 (working fluid) in closed vertical pipe is heated at the bottom section by geothermal energy
2. CO_2 evaporates and rises up
3. Heat is distributed at top section of pipe and causes condensation of the CO_2 gas.
4. CO_2 condensate flows down in the pipe and circulation process starts again

Utrecht Museum.

Bianca Mulder - Lloyds Register Rail Europe.

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 as well. 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 blindingly obvious) 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 have installed microphones on their high speed track recording vehicle. The coach, a converted German postal van, is capable of travelling at 200kph. It is also kitted out with all the other track measurement equipment that would be expected. These are specialist noise measurements – 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 lineside measurements. In this way noise profiles for a whole line can be deduced without the need for continuous lineside 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 where given of the dramatic reduction in noise when composite brake blocks are used. A recording was played 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 with composite blocks gave a marked reduction in noise. There are disadvantages though, because wheel wear rate increases. The challenge is to come to an appropriate compromise.

Sand boxes

In contrast to the, at times, highly technical and esoteric deliveries, Transys Projects dealt with the practical world of sand boxes. These devices for increasing rail/wheel adhesion have been used for generations. It was one of the earliest ways of preventing wheel slip both on acceleration and braking. They are still around and are being used to better effect these days when coupled with the technologies of wheel slip detection. ■