RAIL PAINTING PROCESS

By Pacific Edge Pty Ltd

INTRODUCTION

In 2005 Pacific Edge Pty Ltd was requested by RailCorp (RIC) to arrange painting of rails (5km of track) on the Carlingford Line between Camelia and Carlingford stations in Sydney.
The Directors of Pacific Edge initiated Rail Painting in New South Wales whilst employed by the NSW Rail Industry
The experience showed a vast reduction in rail temperature and Rail Painting is now an approved risk mitigation process against heat buckling in the NSW RailCorp Civil Technical Notes. (addendum to Standards)

SCOPE

The tasks required to complete the works included:

- Purchase of 1500 litres in total of Solacoat heat reflective paint and anti rust primer
- Provision of paint application equipment previously compiled for North Coast Rail Painting woks
- Modification and fitting of equipment to a hirail truck
- Training of staff in the fitting and operation of the apparatus
- Applying the paint to the main line during track possession

DETAIL

The following illustrated journal reveals the step by step process of preparation and application.

1. A steel mounting Frame is attached to the rear of a hirail truck. Hoses are used to connect the 4 spray guns required to paint the Rails. A small landing is supplied to allow a person to stand near the spray guns and adjust the guns or clear blockages as required.

2. A Graco Airless Pump is positioned on the hirail truck

3. All hoses are laid out on foam to stop rubbing. The hoses are long to absorb high impact hammer effect of the pump. All hoses (5) are connected via the distributor fitting

4. The frame is bolted in an elevated position whilst travelling to the worksite

5. Paint is transferred to the hirail from the support vehicle

6. The loaded hirail is positioned on the running line. As painting can only be carried out in the forward direction, the hirail will propel to the start of the worksite.

7. The Frame is now lowered to the working height

8. The spray guns are adjusted to the correct working height

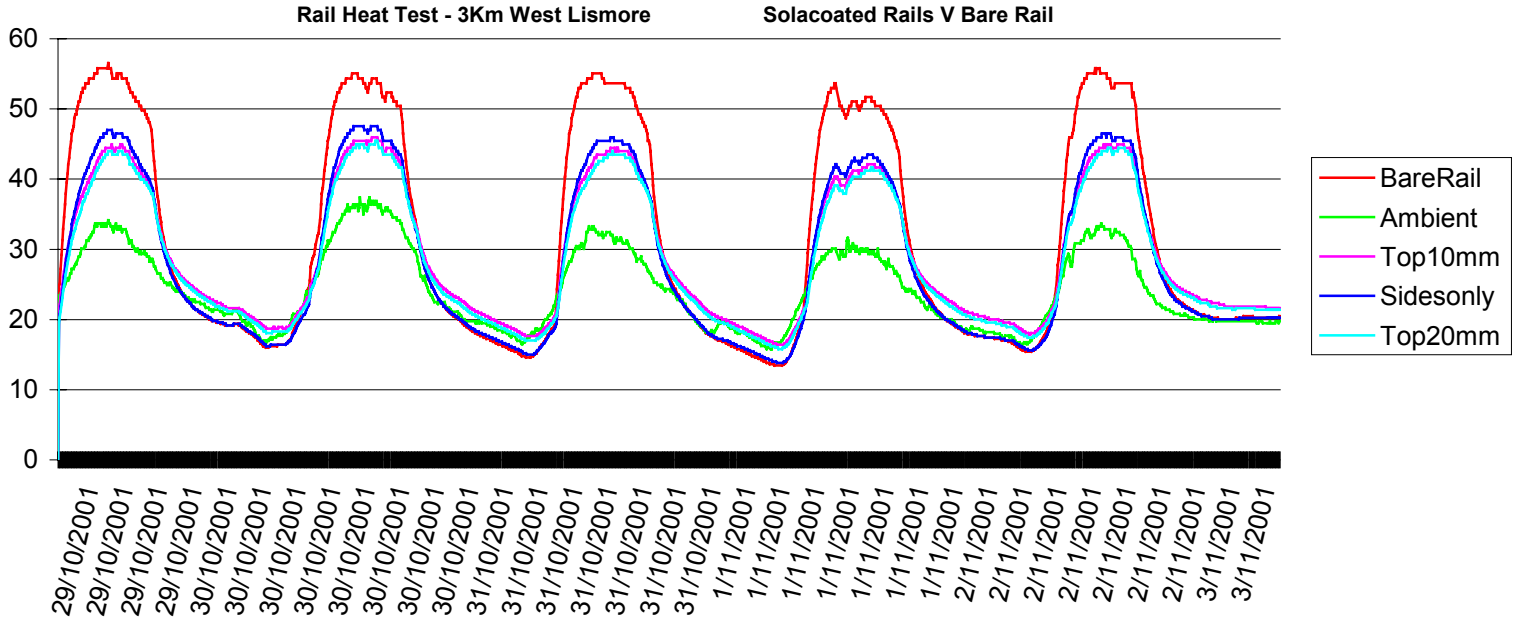
9. Spray tips are adjusted to achieve optimum cover to the rail

10. A staff member stands on the platform and adjusts spray tips and clears blockages on the run. The hirail travels at 5 kph

11.

12. The finished product. Note the paint covers the sleeper plate and the ballast adjacent to the rail. This reduces heat radiating to the underneath of the foot of the rail. The rail received 2 coats of primer and 2 coats of Solacoat heat reflective paint.

13. Another view of the finished product



The above chart shows results from North Coast Tests on Painted Rails in 2001.
In 2 variations, the paint was placed 10 mm and 20 mm onto the head of the rail (note the pink and light blue lines)
These tests continuously logged ambient and rail temperature for painted and non painted rails.
Over 5 days the ambient temperature peaked between 30 and 37 degrees.
Rail Temperature peaked at 53 to 55 degrees for unpainted rail.
Rail Temperature peaked at approximately 43 to 48 degrees for painted rail.
If Rails are adjusted to be stress free at 35 degrees Celsius, then the compressive stress due to rail temperature is approximately halved for painted rails.

Thermal contact paste should be applied to the rail thermometer if field measurements are to be taken. Rusty rail tends to show a lower temperature reading without such paste.
Approximately 100 kms were painted on the New South Wales North Coast Railway Line in 2002 and 2003.