DEVELOPING A RAIL CORRUGATION THEORY FOR BRITISH RAIL STRAIGHT TRACK

Corrugations (undulations of the longitudinal running top profile of the rail) were a serious problem to BR, causing increased noise levels, damage to sleeper fastenings and more rapid deterioration of the vertical track profile. Rail grinding can contain the problem, however this has proved expensive.

Conclusions of the report are:

- The small creepage theory provides the most likely explanation for the corrugation growth on much of BR's straight track.
- The mild wear process assumed in the small creepage theory has been partly verified by laboratory wear tests, although further work is required to gain a thorough understanding of mild wear processes.
- Track receptance measurements have shown the significance of a superimposed static vertical load.
- A computer program has been written to predict corrugation behaviour using the small creepage theory. Predictions based on theoretical and measured track receptances are broadly consistent with service experience.
- Further work should be performed to validate the theory more fully and to perform a more extensive parametric study.

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