MECHANICAL BEHAVIOUR OF RAILWAY EQUIPMENT

Railway equipment which is used for rolling stock or infrastructures is faced with remarkable mechanical stress and has to be investigated according to its expected life profile. Standards have been established to assist equipment development (EN NF 61 373, NF EN 12663, EN 50 125, EN 50 155...), but it is known from experience that there is no guarantee for the robustness and reliability.

To complete the application of these standards, VIBRATEC has developed a method which can be used at every stage of the development process:

- Numerical conception and optimisation,
- Multy-Body Simulation,
- Conception validation of mechanical components by test and simulation,
- Fatigue and reliability analysis of rolling stocks parts,
- Infrastructure fatigue and damage analysis,
- Redesign in case of failure during use.

This methodology is based on a hybrid approach (numerical and test) which supplies better input data:

- Realistic loads for models,
- Realistic conditions for experimental validations,
- Assessment of load cases for new designs based on existing material.

VIBRATEC has used this methodology for over twenty years on industrial projects with major Railway accounts and support them for the following activities:

- Calculation on FEM and MBS models,
- On-site measurements and tests with a large number of channels and/or difficult environments,
- Test validations in laboratories,
- Application of the methodology in design departments.

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