



Resulting recommendations for Cluster 1

Highly Performant European Tracks





National habits (switch inspection)

Equipment	Work/Achievement	Reason	Frequency ÖBB	Frequency DB		Frequency SBB	
				high stressed equipment	low stressed equipment	high stressed equipment	low stressed equipment
Point lock	Distance of applied switch blade/ (ÖBB 5 mm/DB 4 mm/SBB 4 mm)	Safety	6 x	12 x	3 x	no clamp lock	no clamp lock
Facing point lock			install.				
Clamp point lock - standard	Push up test (simulation) (minimal overlap of lock)	Safety	6 x	0,5 x	0,5 x		
	Elimination of corrosion	Function	6 x	0,5 x	0,5 x		
	Check all fixings	Safety	6 x	12 x	1 x		
	Check the bolt safety devices	Safety	6 x	12 x	3 x		
	Check switch opening	Function	6 x	1 x	0,5 x		
	Check overlap of lock	Safety Function	6 x	12 x	3 x		
	Check attrition	Function	6 x	2 x	1 x		
	Check relaxation of clamphead	Function	6 x	12 x	3 x		
	Check switch flangeway	Safety	4 x	1 x	1 x		
Connecting rods (between point locks)	Elimination of corrosion	Function	6 x	2 x	1 x	If required	If required
	Check all fixings	Safety	or	1 x	1 x	12 - 24 x	- 6 x
	Check the bolt safety devices	Safety	4 x	6 x	3 x	12 - 24 x	- 6 x
	Check attrition	Function	4 x	0,5 x	0,5 x	12 - 24 x	- 6 x





RAMS design of switch



Better RAMS figures
Less maintenance
due to new **roller**
bearings





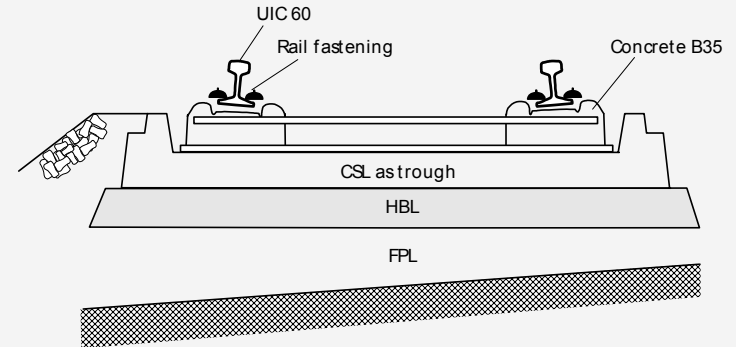
RAMS design of track



The
Future?

↑

• The Past



Passive Expectation
of an answer since
more than 30 years!





Track related, *tab (8)*:

- Systematic experiments in a European test centre for accelerated Service Testing of novel track designs to achieve more experience in a shorter time than would be possible on a normal line.
- Initiatives to start co-operation among construction companies to combine their individual advantages in a common system overcoming trade mark and patent protections.
- Initiatives for a bigger market of innovative track systems with cost-reducing large scale effects by improved technical interoperability, and harmonisation of safety related requirements among railways.
- Establishment of a European board of track experts, independent of manufacturers, who will continuously evaluate individual track systems with regard to technical and economic performance based on available experimental and simulated data and make recommendations, and also consider means to achieve higher interoperability and further progress for track systems in general.





Aut. Diagnosis (Switch) related, *tab (10)*:

- Exchange of experience and agreement among European railways on technical criteria for the inspection of equipment and harmonisation.
- Benchmarking of inspection methods applied by different railways.
- Use of IT developments (AI, pattern recognition, new communication media like GSM-R) to develop and modernise monitoring and diagnostic devices.
- LCC comparison of available systems.
- Common field tests by several co-operating railways.
- Acceleration of introduction and application of diagnostic devices by supporting these steps via policies and funding.





Infrastructure, also *Dr. Bente, tab (3); UIC tab (6):
CER tab (7)*

- Systematic future-oriented RAMS Design with low LCC:
Lean Infrastructure
- Maintenance as a field open to business and competition
- Automation in inspection and maintenance (switch...)
- Further Harmonisation of Equipment to realise the
big European Market (TSIs)
- Good performance must be paid (charging regimes)
- Benchmarking

