

ALD provides TRSS worldwide projects with a one-stop solution for Safety and Reliability, contributing consistent methodology to design and operation.

CASE STUDY

Thales Rail Signalling Solutions Inc. (TRSS)

The Goal: Since it has pioneered the design and implementation of electronic interlocking systems in Austria twenty years ago, TRSS has been continuously pursuing the technological evolution of a product portfolio in which Safety and Reliability are critical. TRSS's key products must all comply with the highest safety integrity level (SIL 4) defined in the European railway signaling equipment standards (CENELEC).

The Challenge: With its numerous installations around the world and its fast growth, TRSS faces the challenge of complying with the most complex Safety and Reliability requirements, while meeting both time and cost constraints.

The Solution: TRSS has selected ALD to provide a comprehensive Safety & Reliability Infrastructure and Service. ALD has delivered an expert one-stop solution for Safety and Reliability to all of TRSS's projects worldwide, by creating consistent methodology and operation combining software infrastructure with professional service provided by ALD's experienced international teams.

As the world's main Reliability and Safety service provider, ALD boasts an international team of professionals who conduct Reliability and Safety studies for Thales' projects. ALD Service is enhanced by leading and comprehensive ALD Reliability and Safety software including RAM Commander (RAMS tool) and Favoweb (Web based FRACAS application).

ALD establishes a new form of intelligence mastering Fault Management, Prediction and Prevention. ALD Reliability & Safety Solution helps TRSS contain and mitigate incidents, faults and failures from the early design stage all the way through test, manufacturing, operation and maintenance.

ALD's inherent analytical capability, together with its experience and expertise gained in hundreds of projects worldwide for railway industry leaders (ALSTOM, SNCF, DB and others), allow it to offer the solution, which helps TRSS meet the complex safety standards required by Railway Regulatory Authorities.

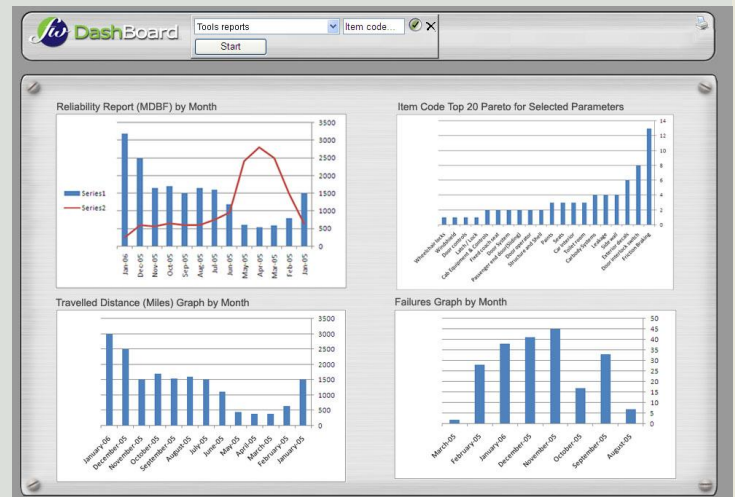
Thales Rail Signalling Solutions Inc. (TRSS) is a world leader and pioneer in critical railway applications, designing, supplying and installing advanced signaling systems to control railway traffic with maximum safety. TRSS delivers and develops complete Rail Signaling Solutions worldwide, with projects in main railroad tracks as well as urban transport systems. Projects include, among many others, the world's longest tunnel, Gotthard Base Tunnel in Europe, Beijing Metro and Mecca Metro in the Middle East.



In Focus: ALD FRACAS, FavoWeb

FavoWeb has been adopted by TRSS in order to centralize all failures and technical issues arising from its various rail installations around the world. TRSS FavoWeb FRACAS application covers the following main tasks:

- Collecting Rail Signaling equipment failure data from each installation around the world;
- Managing and recording the activities done with regard to each failure (verification, repairs, testing and approval);
- Issuing meaningful analyses on equipment failures, such as Pareto analysis of data (by location, symptom, part number, etc.), MTBF, MDBF, MTTR, Reliability Trends, Spares Consumption and many others; and
- Managing the implementation of corrective action on systematic failures as an imbedded part of the failure management process.

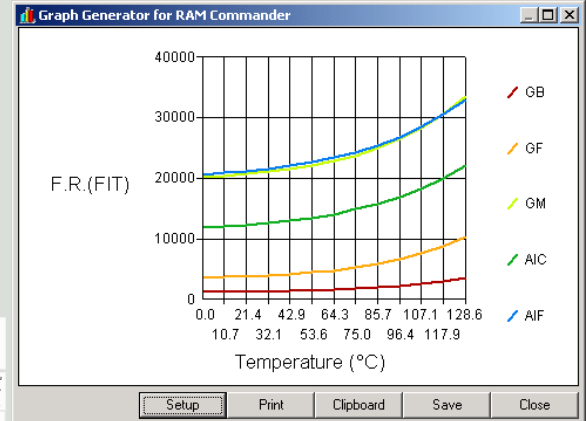
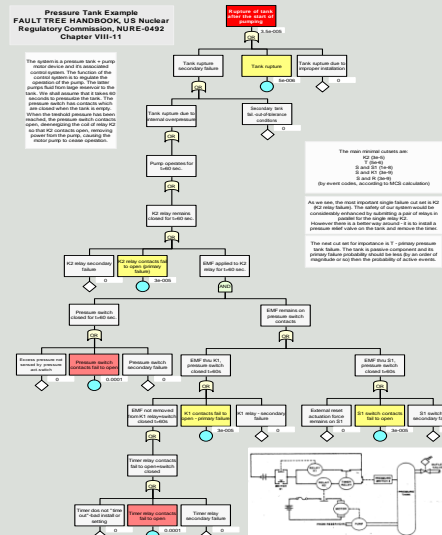


In Focus: RAM Commander

RAM Commander at TRSS is the focal tool for signaling system **Reliability, Availability, Maintainability and Safety**.

RAM Commander constitutes a central RAMS database, which supports International standards (IEC 61508, EN 50128, EN 50129, EN 50126, IEC 62380) and includes:

- Reliability Prediction and Failure Rate Calculations;
- Fault Tree Analysis;
- FMECA; and
- Safety Assessment.



Project Information		Reliability Analysis		Failure Analysis	
Name:	THALES_TRSS	Reliability Block Diagrams	Open	FMECA	Open
Revision:		Available, 10 diagrams		Available, with Testability	
Description:	Communication System	Markov Analysis	Open	Fault Tree Analysis	Open
		Available, 8 diagrams		Done, 6 trees	
		Mission Profile	Open	Event Tree Analysis	Open
		Available, 1 mission profiles		Done, 1 diagrams	
				Process FMEA	Open
				Available	
				Design FMEA	Open
				Available	
Product Tree: Available		Maintainability/ILS/Maintenance		Safety	
Open		Maintainability prediction	Open	Safety Assessment	Open
		Done, MTTR=0.34194 h		Available, 3 failure conditions	
		Spare parts		MMEL	
		Available, 1 scenarios		I/A	
		RCM			
		MSG-3			
		I/A			
Reliability Prediction					
Operating mode	Open				
Done, FR=89.0731					
Non-Operating mode	Open				
Done, FR=14.8262					
Derating/Stress analysis	Open				
Available, 3 scenarios					