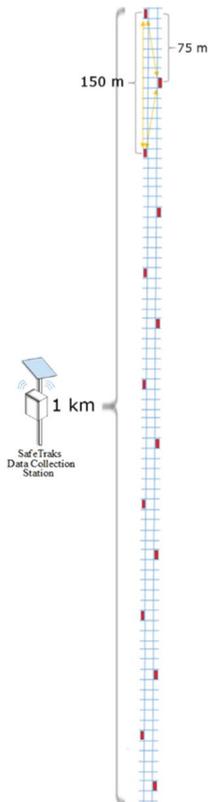
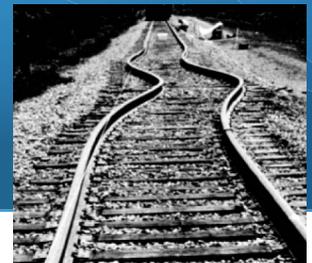


SafeTraks Rail Stress Monitoring System



OVERVIEW

The SafeTraks Rail Stress Monitoring System from DataTraks was created to help prevent temperature-related track buckling, and detect rail breaks. SafeTraks detects changes in neutral temperature on continuously welded rail. SafeTraks Units create a redundant, mesh network to monitor neutral temperature fluctuations, and send this data to a SafeTraks Data Collection Station.

The system allows rail crews to efficiently identify and correct potential problem areas before they become a hazard. If crews know that an area is becoming dangerously stressed, they can be dispatched to de-stress the rail, saving time and money.

SafeTraks deploys a series of sensors along the rails at 75-m intervals. A SafeTraks Data Collection Station is installed every kilometer. The system can be solar powered or line powered.

THE SYSTEM IS COMPRISED OF:

SafeTraks Units: rail-mounted stress monitoring sensor

SafeTraks Data Collection Stations: remote trackside network controller

SafeTraks deploys a series of sensors along the rails at 75-m intervals. A SafeTraks Data Collection Station is installed every kilometer. The system can be solar powered or line powered.

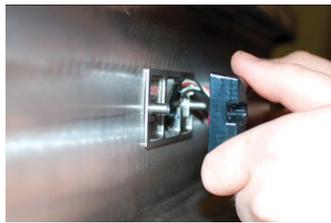


PHYSICAL SPECIFICATIONS

RAIL BREAK DETECTION

Once the network is started, the SafeTraks Units calculate a best path to the data collection station. The best path calibration is configured at set time intervals to update best path and recover from failed units.

Data is sent from the SafeTraks Units to the SafeTraks Data Collection Station once per minute. If the station receives data that is out of the acceptable operating range, alarms can be generated and sent to the end user. Alarm thresholds are user defined.



MOUNTING SAFETRAKS UNITS

SafeTraks Units are spot-welded to the web of the rail and sealed against the weather. This approach to installation is quick and simple, and allows units to be mounted in any weather condition.



CONCLUSION

SafeTraks helps railroads improve safety and decrease maintenance costs. By monitoring for neutral temperature "drift," users can undertake condition-based preventative maintenance. SafeTraks can find rail failures like buckling and breaks before a train does, and reduce the need for speed restrictions.

The system can also be used to monitor the rail before and after track maintenance to detect any changes in neutral temperature.

SafeTraks Data Collection Station	
Power Supply	Solar charge system or line power
UV Resistant	Yes
Temperature Range	-20°C to 60°C
Mounting	Pole mount or integrate into existing building
Communications	Cellular Data Modem or Ethernet
Maximum Range	1 km
Notification System/Protocol	Customer Defined
Voltage Range	9-15V DC

SafeTraks Unit	
Battery Life	1 Year
Removable Battery	Yes
UV Resistant	Yes
Temperature Range	-20°C to 60°C
Operating Radio Frequency	2.4GHz
Strain Gauge Mount	.005" inch spot weld
Unit Mount	VHB tape and/or spot weld
Strain Precision	+/- 1 microstrain
Calibration	Requires zero stress calibration
Maximum Spacing Between Units	150m
Voltage Range	3.7V DC
Current Use (mAh)	TBD

