



TAWS

Train Approaching Warning System

KEY FEATURE

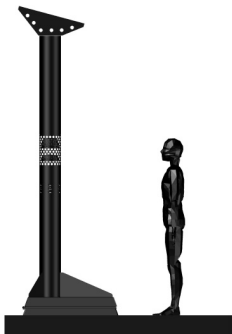
Sound & Light Alarm

Safety Improvement
at Critical Locations
Along the Track



HIGH RETURN
ON INVESTMENT

TAWS® is a simple, automatic and autonomous signaling solution aiming at improving safety by generating light & sound alarm at critical locations of a rail network (schools, community areas, populated neighborhoods, non-guarded crossings, tunnels, blind curves, etc.) to announce a train approaching. It is remotely controlled and can be monitored by traffic regulators.



Add Safety to the Track

Main Features

TAWS® is composed of :

- One or two stainless steel poles at each site equipped with beacon, solar panels, batteries, local intelligence and communication device(s)
- A central software to monitor in real time the position/speed of each locomotive and the working status of each TAWS pole
- Data communications devices (GPRS and satellite modem are standard, Tetra or VHF radio are optional extras)

On board locomotives (option 1):

- A specific software for the loco driver using his DMI/HMI display or a standalone Android device (smartphone/tablet/etc.)
- An intelligent GPS tracker on board each locomotive

Alternatively (option 2):

- A tailor-made interface with third party TCS (Train Control System) to know the geoposition of the trains

Innovations along the Track

Technical Specifications

TAWS® pole main components:

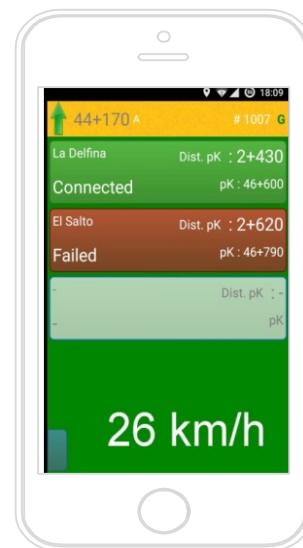
Circuit board	Microcontroller-based local intelligence with resilient logic firmware
Light signal	Class1 360° Super-LED flashing beacon
Sound signal	Adjustable high output siren
SAT modem	Satellite-cellular
Solar panel	Communication Terminal
Batteries	Solar 50W polycrystalline panel
Regulator	12 volt 90Ah dry fit solar battery
Security	Solar charge IP65 controller
	Anti-theft, anti-vandalism sensors

Robust, Efficient, Indispensable.

Main Characteristics

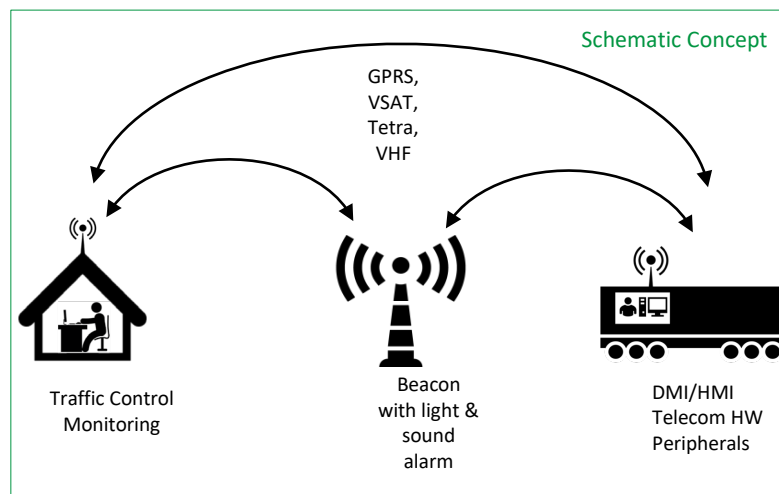
TAWS® has been designed to meet challenging operating conditions:

- **State-Of-The-Art** technology
- **Autonomous:** fully automatic operations, self-diagnostic features, no external cables
- **Strategic:** providing critical warning functionality to enhance operational safety
- **Robust:** anti-theft design, onboard technology, limited theft-prone track side equipment
- **Energy-low consumer:** powered by solar energy
- **Innovative:** remote control of local intelligent logic, individually customizable
- **Connectivity:** may integrate other operational systems such as:
 - ATRAC On-Board ®
 - Train control system ("TCS") providing safe line clearance/authority to proceed
 - Automatic level crossings
 - Motorized rail switches



Driver Smartphone/HMI showing next TAWS signals and their status

EXPERIENCE THE BEST RAILWAY SAFETY DEVICES



TAWS Train Approaching Warning System

TAWS® has been designed and is now produced by **FUTURE RESOURCES sa**, a Belgian company developing innovative and cost effective solutions for small to medium size railways in Africa and South America.

TAWS® and its portable version **MobiTAWS®** were developed in collaboration with railway engineering partners and railway operators.

For any further information, please contact:

Bernard Defalque at bdefalque@futerresources.eu,
www.futerresources.eu