

## Functions and principles of control

- Area scan cameras : ⇨ **Fastenings images - missing or broken bolts**
- LASER sensors : ⇨ **Trigger on concrete or wooden sleepers**
- LASER sensors : ⇨ **Profile scan of the 4 bolts**
- DOPPLER sensor : ⇨ **Position measurement**

## Conditions of measurement

Maximum speed: 80km/h – 49 mph  
Climatic conditions

- Temperature: from 0 to 40°C – 32 to 104°F
- Humidity: from 20 to 80% without condensation
- Period of sunshine: From sunset to sunrise by dry weather or any weather in tunnel

## Environmental features

Name	Base of measurement	Sampling step
Concrete or wooden sleepers	Trigger for survey and images acquisition	4 mm
Bolt on concrete or wooden sleepers	Height: about 20 mm Large: about 20 mm	4 mm
Campaign duration	Few meters to hundreds of kilometers	-
Images	For each missing or broken bolt	Triggered with measurement

