

## Steam Turbines Case Study: ShockLog® Satellite

**Industry:** Power Generation

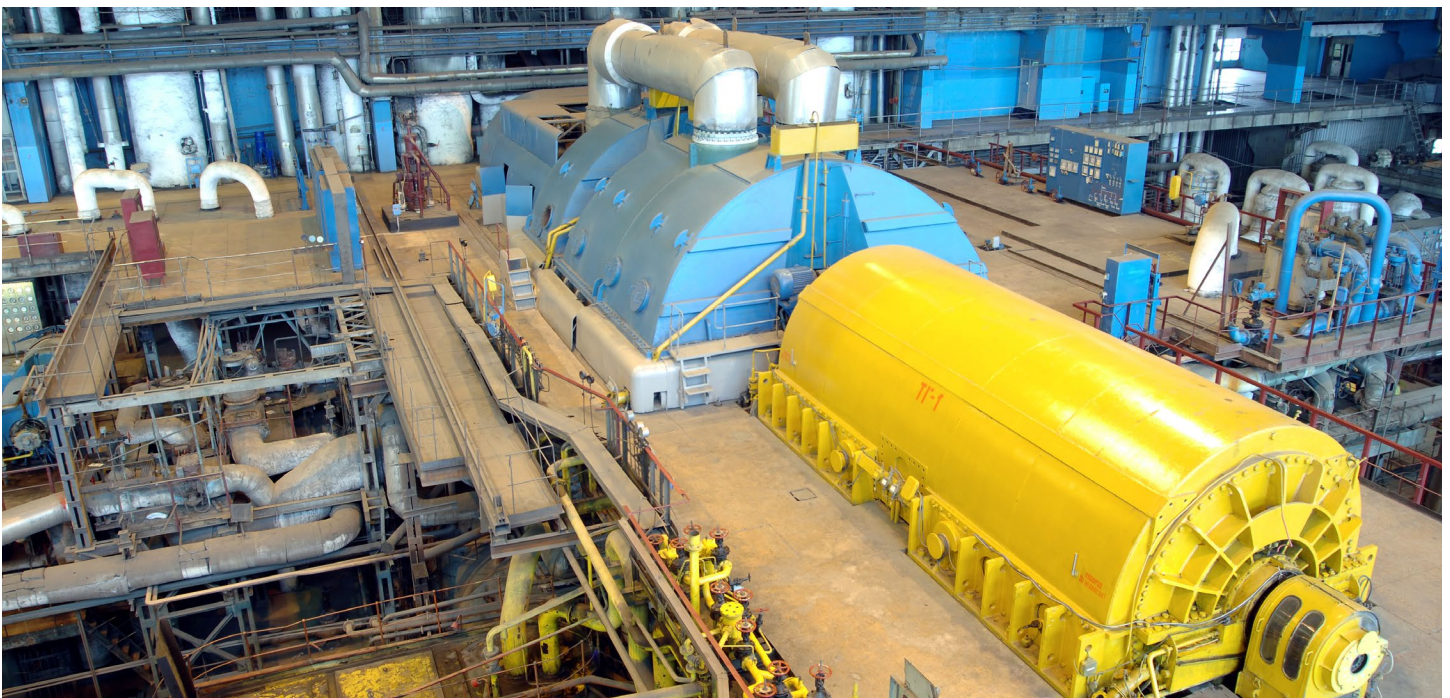
**Application:** Steam Turbine Rail Car Transport

**Challenge:** There's nothing easy about shipping large power generation equipment. The journey manufacturing plant to installation site can often transcend different terrains and cover thousands of miles. An average natural gas turbine can weigh anywhere from 80 to 100 thousand lbs. and a steam turbine can weigh upwards of a quarter of one billion lbs. To ship these massive metal machines, power generation equipment manufacturers use a special type of rail car called a Schnabel car, which sits only a few feet off the ground and is fitted with over a dozen axels to support the weight of a turbine.

Unsurprisingly, the cost to produce a turbine is anywhere from two to five million dollars. If a turbine is damaged in transit, it must be sent back to the manufacturing plant for millions of dollars in repairs, not considering the associated cost of downtime. What is surprising, is that the cost of a specialized Schnabel car is upwards of five million dollars, and also susceptible to damage; meaning that one turbine shipment will involve \$10 million in fragile assets.

One major power generation equipment manufacturer was experiencing damage to their turbines and specialized rail cars during shipment and needed to know what was happening. More specifically they wanted to see the direction, amplitude and duration of impact forces to determine which impacts were causing damage, along with the precise location of the impact.

**Solution:** The manufacturer used the [ShockLog® Satellite](#) impact monitor, formerly ShockTrak, with real-time satellite communication, visualized in the SpotSee Cloud to monitor their multi-million dollars assets. The ability to capture precise location and low frequency impact enabled them to mitigate further rail car damage and product damage by identifying damaging impacts and clarifying responsibility.



## ShockLog® Satellite Overview

### Reduce Costs by Identifying Incidents Before Final Delivery or Installation

With the [ShockLog Satellite](#) Impact Recording and Tracking System, you can receive alerts of unacceptable conditions that your product has encountered. These conditions may affect the performance or safety of your product. Knowing what your product experienced on its journey allows you to act before a shipment is received or plan remediation before final installation of the asset in the field.

### Protect Your High Value Assets

#### ShockLog Satellite Delivers

- 24/7 access to your information around the globe
- Last known location of your assets
- Real-time reporting of unacceptable handling or environmental conditions
- Full journey profile and post-journey analytics
- Robust power source that provides up to 12 months of battery life

Report			
Settings	Slots	Slot Alarms	Summaries
Select Slots	Report Start: 09/11/2011 15:20:02	Report End: 11/11/2011 13:18:22	
Model:	298	Firmware Version:	21
Journey Start:	11/9/2011 3:20:02 PM	Download Date:	11/11/2011 1:19:53 PM
Journey End:	11/11/2011 1:18:22 PM	Recorded Duration:	21Hours 58Min's
Report Start:	11/9/2011 3:20:02 PM	Report End:	11/11/2011 1:18:22 PM
Serial No.:	23740	Slot Alarms:	32

The screenshot displays the SpotSee web interface for a 'Ty Europe Unit10'. It features a map of Europe with a red location pin. To the right, a list of alarm events is shown, including 'Alarm on X' and 'Alarm on Z' with associated G-level and duration data. In the foreground, a red ShockLog Satellite device is visible, featuring the ShockLog logo, 'Satellite' text, and 'SHOCKWATCH' branding. The device also displays the SpotSee logo and the website 'cloud.spotsee.io'.

#### Features

- Provides user configurable alarm conditions and messaging frequency
- Records impact events and internal temperature
- Sends real-time alert when unacceptable events occur
- Specifies location of unacceptable events
- Displays heat maps of trouble spots in the supply chain

### SpotSee Cloud

The [SpotSee Cloud](#) is where trip data is aggregated in real-time. The graphs are easy to read and include data impact with locations, impacts over time, histogram, temperature, and location of events.

#### SpotSee Cloud Features

- Access to your data from anywhere with a secure web portal
- Real-time reporting and tracking of incidents
- Alarms with location, time, impact g-level, and direction of impact
- Impacts-over-time visualization of each asset
- Histogram of the total impacts to an asset

