

# Bearings with integrated load measurement

- CE marking
- Custom results acquisition
- Cost-effective
- Reliable

## Bearings

Technical Datasheet Reference n°: FT En CV 3 3



## Introduction

Measuring the vertical loads that pass through the bearings on a bridge can be very useful in order to:

- Balance the loads at the piers by adjusting the deck height;
- Detect land subsidence;
- Monitor loads during deck launching;
- Monitor the behaviour of the anchor and bearings during their service life.

These measurements are normally taken using large hydraulic jacks that are difficult to install.

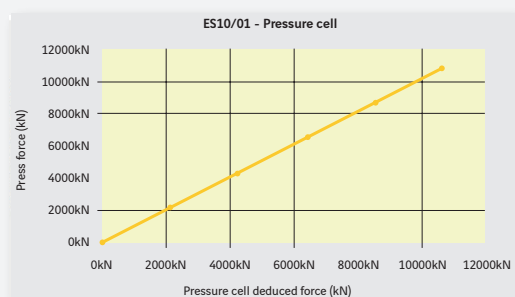
Freyssinet's alternative is to fit sensors to its bearings, which the loads pass through.

## Areas of use

Freyssinet has developed vertical load measurement technology for its entire range of pot bearings, as well as its banded elastomeric bearings.

## Banded elastomeric bearings

The technique used for these bearings is to install an instrumented plate fitted with sensors in between the bearing and its support. The device is calibrated in the factory before being installed on site.



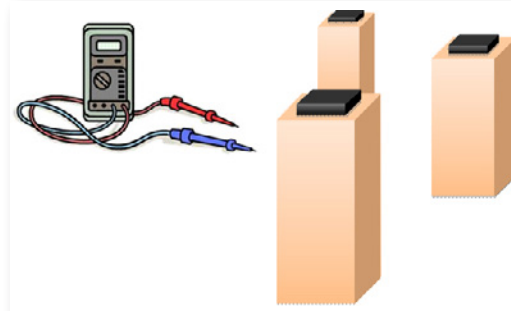
Example of calibration

## Measurement acquisition

The measurements can be acquired in three ways:

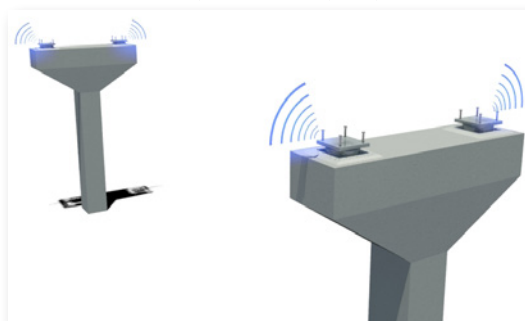
### Direct measurements taken as required by connecting a portable reader to the bearing

This solution is used for periodic monitoring. If there is easy access to the bearings, the measurement is taken directly from the bearing. Otherwise, a remote measurement acquisition point can be installed.



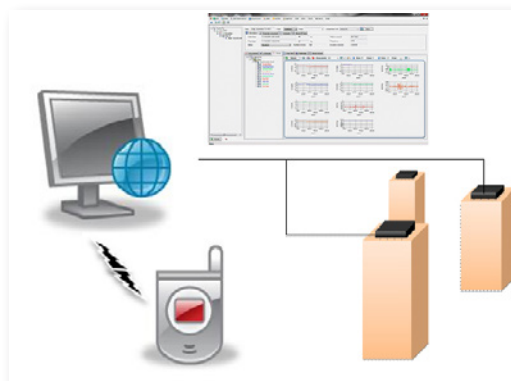
### Log storage and wireless data retrieval

Measurements are automatically taken at set intervals (for example, every hour) to give an overall analysis of the structure. The data is stored locally and then regularly downloaded to a PC with a USB stick via a radio gateway.



### Incorporation of measurements into comprehensive, centralised real-time monitoring

In this case, the data is continuously stored in a remote central unit and can be viewed in real time on any PC connected to the Internet. This type of installation makes it possible to add other sensors (displacement, vibration, inclination, video, etc.), advanced analysis tools and automatic email or SMS alert generation devices.



# Bearings with integrated load measurement



**FREYSSINET**  
SUSTAINABLE TECHNOLOGY

## Pot bearings

An elastomeric disc is contained under pressure in a sealed enclosure formed by the pot and piston of the bearing.

The pressure exerted on the disc is proportional to the vertical load borne by the bearing.

A specially designed pressure sensor fitted into the wall of the pot measures the pressure and gives the load experienced by the bearing.



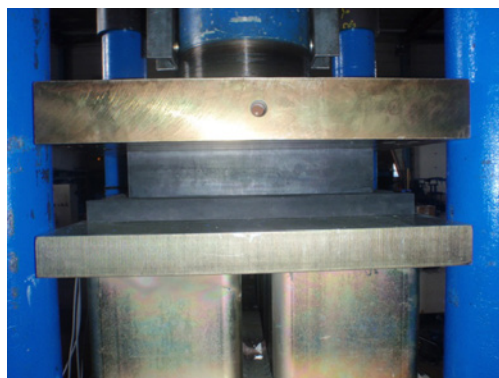
*Remote direct measurement (centralised on a unit)*

## Marking and certification

Freyssinet's TETRON® pot bearings and banded elastomeric bearings are covered by CE marking in accordance with EN 1337-3 and EN 1337-5.



*Detail of connection to bearing*



*Elastomeric bearing in the press*



*Pot bearing in the press*

Pressure sensor installed in sidewall  
Connection between sensor and measuring device

FPC load meter, on-site measuring device



*Rauze Viaduct*



*Vernègues Viaduct*

## Local sales contact