Grand'Maison Dam, France

osmos
Integrated safety for structures

Corridor for the access to the bends

Preventive monitoring of convergence motions

Client

EDF, French National Electricity Company

Structure

Grand'Maison Dam
The most powerful hydroelectric power station in France

Context

The vertical walls between which the power turbines are located are converging due to Alps rocks instability. The client launched a campaign of topographic measurement, **which resulted by the alarming rate of 1 mm of convergence a year.**
The turbines risked to be damaged, stopping the power production.

Client's Needs

Due to high cost, the client needs to know the moment for which he must stop the turbines and process their replacements, which is a very expensive task

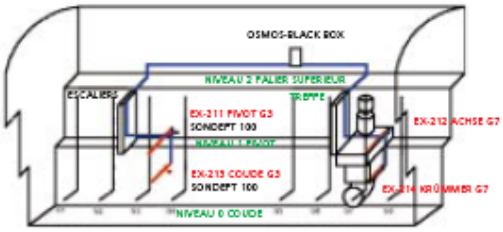
4 optical extensometers have been installed and measure the width of the corridor where the turbines are located.

Initial Results

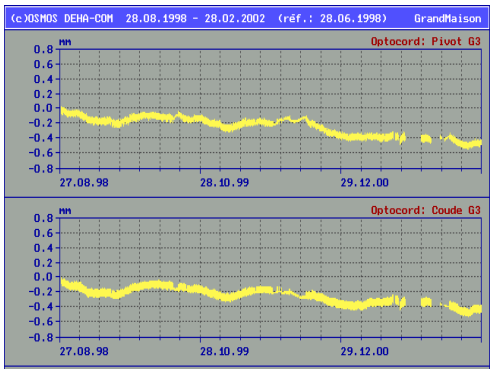
The data gathered by the monitoring have shown **the convergence speed is ten to twelve times lower than initially calculated**.
The difference between the two rates is explained by the turbine activity during the night time, which pumps back the water the higher reservoir, countering the natural convergence motion.

Client Benefits

"*The advantage of the OSMOS system is its continuous monitoring of the structure. Rapid changes highlight the effects of operational cycles, while slower deformations reflect long-term remanent evolutions. The system simplifies data interpretation and makes a positive safety contribution by providing decision-making information for major civil engineering works with a view to effective preventive maintenance.*"
Jean-Louis Amiard
EDF Grand'Maison hydro power plant



General view of the instrumentation



Convergence rate is only ***0,070 to 0,110 mm / year in comparison with the 1 mm*** *initially calculated through topographic measurement.*