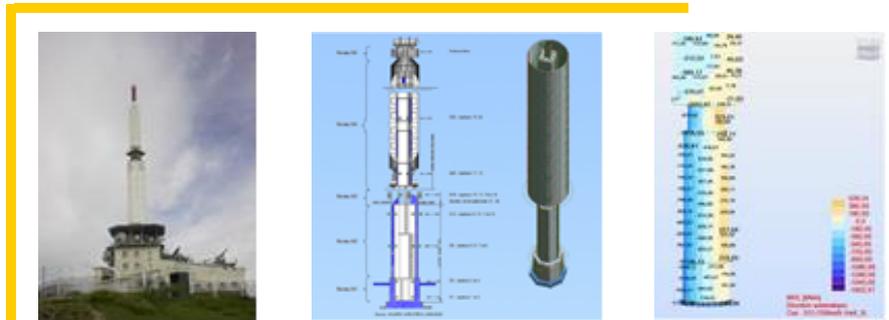


## Lyon Mt Pilat – Drawing up measures relating to the constraints applied to the shaft of the structure



**Client:**

TDF

**Project manager:**

TDF

Engineering and Infrastructures management

**Contractors:**

No works carried out following this task

**Years:**

Planning: October to September 2010

**Principal features:**

50-metre-tall reinforced concrete tower topped with a 20-metre-tall metal pylon.

**Background**

The broadcast operator *Télédiffusion de France* (TDF) owns a transmission tower near Mont Pilat, in the department of the Loire (department 42). It consists of a 50-metre-tall reinforced concrete structure topped with a metal pylon.

Following the storm of 1999, structural studies carried out in respect of the reinforced concrete shaft revealed weaknesses that, in principle, required the structure to be reinforced.

TDF instructed DIADES to carry out a structural assessment based on the instrumentation and monitoring of the reinforced concrete tower in order to help TDF decide whether or not to proceed with the costly reinforcement of the structure.

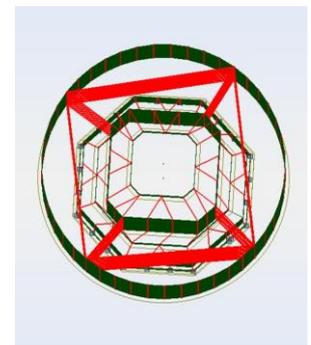
The monitoring instrumentation consisted of 20 distortion sensors, 4 temperature probes and an anemometer.

The analyses showed that the measurements taken matched the tower's real behaviour, which was simulated by a sophisticated model, in order to reveal the effects of the thermal gradient and simplify the reinforcement program.

**DIADES' task**

DIADES carried out an assessment which included:

- Inspection of the reinforced concrete tower and instrumentation specific to the tower's operational constraints,
- Defining the alarm and warning thresholds according to the recorded wind speeds,
- Finite element modelling of the tower to analyse the tower's theoretical behaviour,
- Analysis of the distortions recorded according to wind speed in order to validate the theoretical and the aerodynamic multipliers applied to the structure,
- Regulatory structural checks of the structure in order to determine the reinforcement required pursuant to regulations,
- A summary of the task in order to provide the Client with an understanding of the position and enable it to decide whether to dispense with the reinforcement works and to simplify the works program considerably.



Structural inspection of a very tall reinforced concrete tower

Finite element modelling to compare the real behaviour of the structure, obtained by instrumentation and monitoring, with the theoretical behaviour of the tower, in order to determine the regulation safety margin.

**diadès**

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