



KOALA: an application program for the surveillance of civil engineering structures



KOALA is an application program which was developed by EDF (Électricité de France) to ensure the surveillance of its dams (500), nuclear containment buildings (58), and cooling towers (30). KOALA is designed to carry out all specific tasks related to the surveillance of civil engineering structures including: data collection from instruments, data analysis for structural behaviour interpretation and generation of reports. KOALA is used since 2011 by an amount of 1200 users (on-site surveillance team and engineering centres).

Strong points:

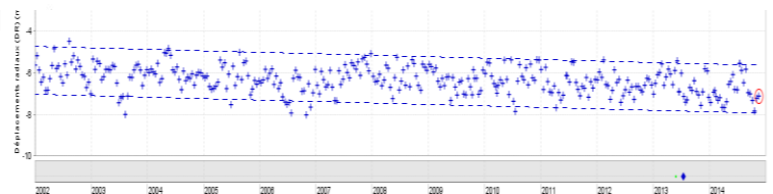
Surveillance

- Management of the monitoring system's performance (collection of measurements, frequency of readings, warnings in case of delay in the acquisition or validation process).
- Automated collection and validation of data in real time
- validation of the measurements by using thresholds and behavioral models.

Site	Ouvrage	Code tournée	Date de mesure	Date d'acquisition	Condition acquisition	Type	Etat du PM
1	RANDENS	AIQUEBLANCHE	16P	06/03/2010 14:26:54	Auscultation	Acquisition manuelle	Dépouillé
2	VOUGLANS	VOUGLANS		29/03/2010 08:07:41	Auscultation	Acquisition manuelle	Dépouillé
3	VOUGLANS	VOUGLANS		27/04/2010 15:17:10	Auscultation	Acquisition manuelle	Dépouillé
4	RANDENS	AIQUEBLANCHE		09/04/2010 15:50:55	Auscultation	Acquisition manuelle	Dépouillé

Validation mesure
Ré-acquies PM
Détail PM
Carnet de suivi
Visualisation graphique
Alarme(s) d'acquisition
Validation-comportement
Supprimer PM

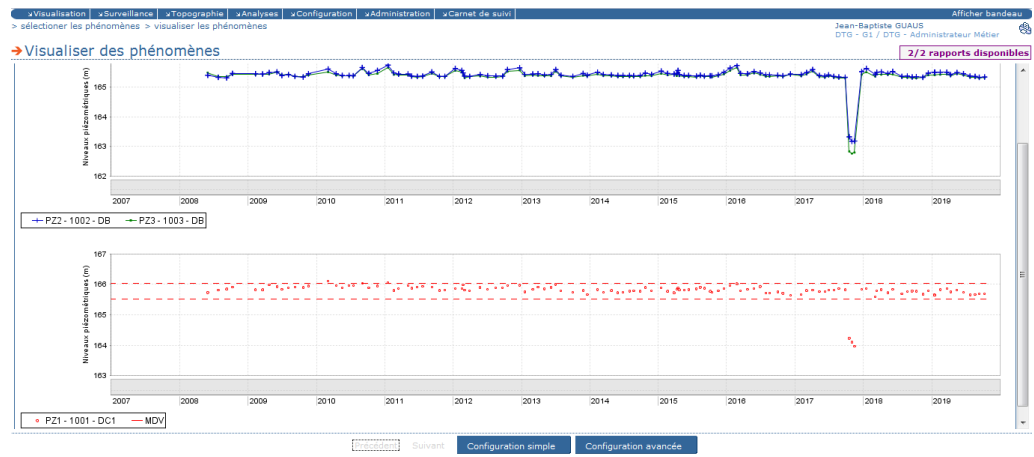
Validation through data visualization



• BC 496-071 - 5501 - DC1 - MOI

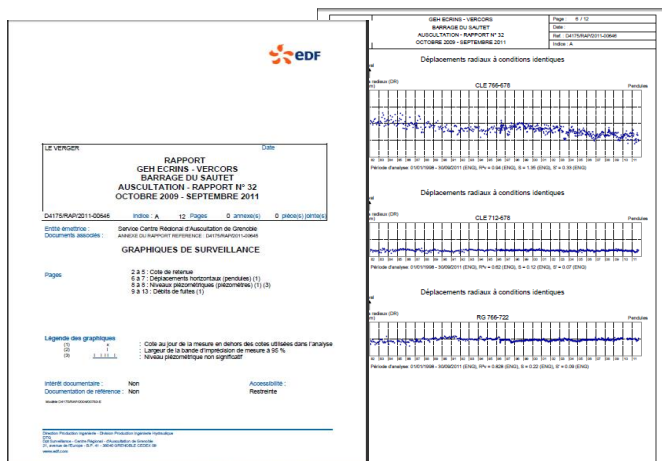
Data visualization

- KOALA is a powerful visualization tool including many features such as a smart display of all information about the data. It is also capable of calculating thresholds, minimum and maximum value, averages and plotting the correlation between the times series of measurements.



Generation of reports

- KOALA delivers reports which are automatically generated. Those reports include text, tables, figures with a predefined format in order to be send to the safety authorities.



Other features:

Data collection from instruments

- Handheld electronic device which send the measurements to the database
- Manual import of files
- Automated system that can remotely read the instruments and place the data into the database

→ Saisie tournée : VOU: PZT - VOUB - 14/04/2010 00:00:00

Code ouvrage	Date	Code	Nom	Sais	Influs
VOUB	14/04/2010 00:00:00	COT053	COTE RETENUE		
VOUB	14/04/2010 00:00:00	PZT101	PG9		
VOUB	14/04/2010 00:00:00	PZT102	PD7		
VOUB	14/04/2010 00:00:00	PZT103	PD9		
VOUB	14/04/2010 00:00:00	PZT104	PD10		
VOUB	14/04/2010 00:00:00	PZT105	PD2		
VOUB	14/04/2010 00:00:00	PZT106	PD4		
VOUB	14/04/2010 00:00:00	PZT107	PD5		
VOUB	14/04/2010 00:00:00	PZT108	PD6		
VOUB	14/04/2010 00:00:00	PZT109	PD4		

Interrompre saisie paquet de mesure Valider acquisition



Handheld electronic device

TSF2023 - VOU: PZT - VOUB - 14/04/2010 00:00:00

Appareil: PZT101 PG9

Code: PZM001

Lectures: Historique

Manomé...

0.2L

0.2L

0.2L

0.2L

< Prec. Acc. Auto. Suiv. >

+/- Non fait Com.

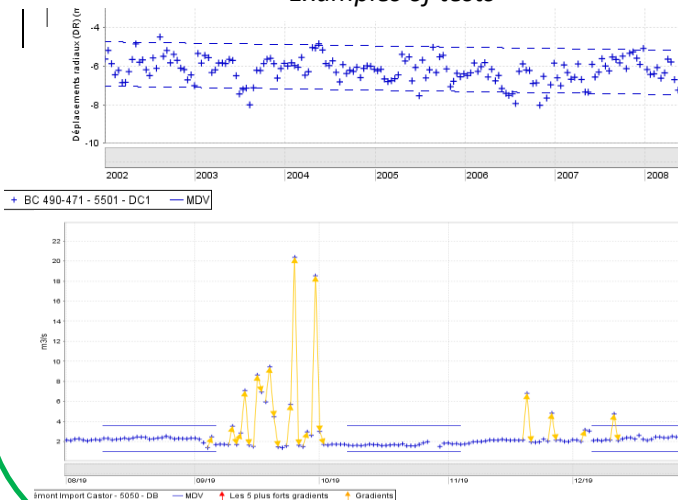
Interrompre Visualiser Terminer

Acquisition Liste d'appareils

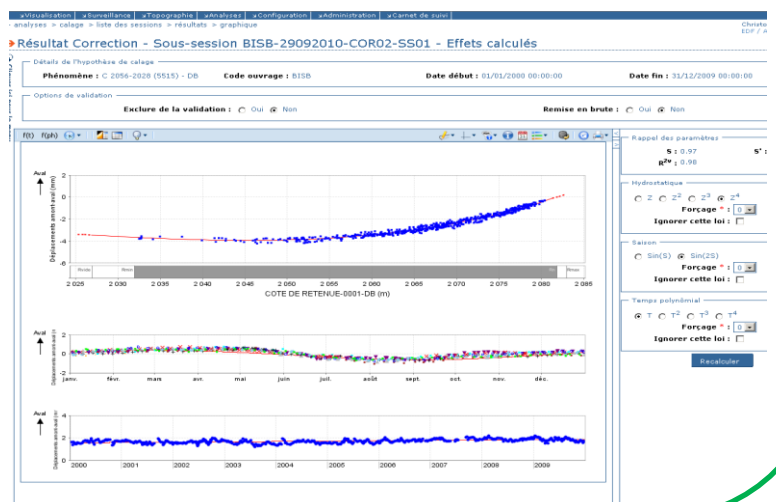
Calibration of tests and behavioural models

- KOALA enables the users to set up limits and elaborate tests in order to help detect any anomalies. Behavioral models, such as the most common HST (Hydrostatic, Seasonal, Time) or such as more complex ones taking account for the air temperature or for the diffusion of water inside the embankment are also implemented.

Examples of tests



Example of graphs issued from behavioural models



Management of measurements from topographic survey

- KOALA offers specific features dedicated to the treatment and the management of measurements from topographic survey.

The screenshot displays the KOALA web application interface. At the top, there is a navigation bar with tabs: Visualisation, Surveillance, Topographie, Analyses, Configuration, Administration, and Carnet de suivi. Below this, a breadcrumb trail shows 'topographie > tableau de bord'. A sidebar menu on the left lists options: Tableau de bord, Topographie, Suivi des opérations, Dépouillement en série, Acquisition, Configuration, and Etude Helmert. The main content area contains search filters: 'Site' (with a dropdown), 'Date début' (set to 01/01), 'Ouvrage' (with a dropdown), 'Date fin' (set to 14/05/2020 16:36:35), and 'Type' (with a dropdown). A 'Rechercher' button is located below these filters. At the bottom, a table header is visible with columns: Opération, Version, Type, Etat, Date de mesure, Opérateur, Date de dépouillement, and Date de validation.

book of traceability

- This electronic book enables the users to collect, exchange and store the information of all events (climatic events, drift of sensors, ...) that can affect the quality of measurement.

Storage, download and upload of data

- All data are stored in a single database which is secured.
- It is possible to download and upload massive amount of data using csv format.

Technical support:

Help for users:

A hotline is available during working days and hours. This hotline helps users solve their issues with KOALA and with the use of the handheld electronic device which sends the measurements to the database.

Training:

Technical support is provided so as to efficiently increase the skills of users when using KOALA or the handheld electronic device. This technical support is given thanks to tutorials, e-learning, in situ demonstrations or by videoconferences. Training can also be carried out on request by the EDF Hydro training campus in Grenoble.