

CEMATH

HYDRAULIC EQUIPMENT TEST LABORATORY

Since 1976



Accredited by the French Committee of Accreditation COFRAC for liquid flow-meter calibration in the 35 m³/h - 5400 m³/h range
see the website www.cofrac.fr

CEMATH – HYDRAULIC EQUIPMENT TEST LABORATORY

Since 1976 SCP (Société du Canal de Provence) owns a dedicated facility, called the CEMATH, which enables the company to determine and accurately check the performances of its hydraulic equipment as part of a certification process. The CEMATH capacity and expertise of its engineers and technicians have rapidly interested other customers. An increasing number of companies working on the national and international markets are now using the facilities in order to undertake tests or calibrations, and obtain certification or test reports on their materials.

The CEMATH installations are located at Les Milles, close to Aix-en-Provence (in the South East of France). The facilities are supplied by a 40,000 m³ Canal de Provence storage tank at a static pressure of 15 bars ensuring that very stable flow is delivered to the test facilities.

OUTDOOR TEST LINES



Weighing vessel (110 ton)



Plotting of discharge-pressure curve for a ND200 relief valve calibrated at 2 bars discharging up to 750 l/s



Assembly of several electromagnetic flowmeters for simultaneous calibration

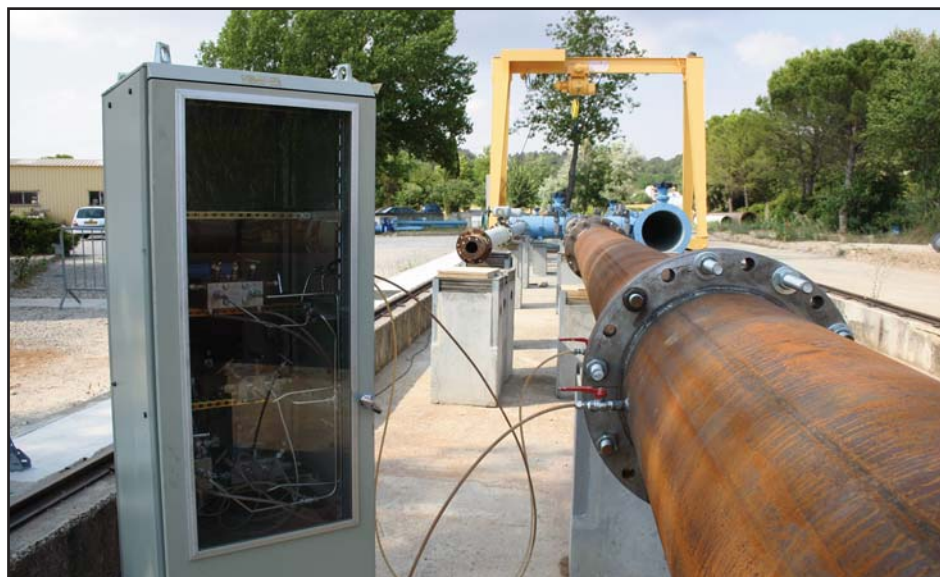
Each of the three pressurized test lines (ND 200, 400, 800) is implemented in a straight length of pipe between flanges spaced at 30 m. All the equipment can be fitted on the line at discharges up to 1 500 l/s, and diameters ranging between 100 mm and 1200 mm.

The test lines are connected to a 110 m³ weighing tank set on scales with ± 20 kg sensitivity. This tank is calibrated annually as part of the French Accreditation Committee's accreditation of CEMATH. Once the discharge has been stabilized, a sluice operated by a double-

acting cylinder directs flow into the weighing tank. This automatically trips a timer. The weight of the tank can then be related to the filling time.

Much hydraulic equipment can be tested (regulating valves, relief valves, filters, fire hydrants,...) or calibrated (meters, flowmeters, Venturi tubes, diaphragms, nozzles) on these lines .

- Max flows range : 0 - 1500 l/s,
- Static pressure : 15 bars,
- Pressure at 1500 liters/sec : 4 bars,
- Diameters : ND100 à ND1200,
- Straight lines : 30 m.
- Master Flowmeters : ND100, ND200 and ND500



Calibration of a ND450 diaphragm

INDOOR TEST LINES



Test lines



Hydraulic testing of a regulating valve ND150

A special test bench has been installed in a covered area of 200 m² in order to calibrate meters and flowmeters. Eight lines are used to test equipment from 15 mm to 300 mm diameter in a corresponding range of flows (0.45 m³/h to 1 200 m³/h).

Each meter is installed on the test line corresponding to its rating based on one line per diameter.

It is then calibrated relative to one of the four flowmeters of reference (ND15, ND40, ND 80 or ND 250) or relative to the 110 tons weighing tank (for flows higher than 10l/s).

- Flow range : 0 - 330 l/s,
- Static pressure : 15 bars,
- Diameters : ND15 to ND300,
- Flowmeters of reference: ND15, ND40, ND80 and ND250.



Hydraulic testing of irrigation hydrant

HYDRAULIC SCALE MODEL PLATFORM



Scale model of a control sluice on a dam on the Huisne



Control sluice built according the scale model conclusions



Scale model of a tree trap on the Béoux River (France-05)



With a platform of 750 m², the hydraulic scale model platform is fed with a maximum discharge of 200 l/s at 10 bars.

Based on the preliminary drawings of the facility and with the possible assistance of mathematical models, hydraulic shapes are initially analyzed in order to :

- define the components to be tested and finalize them on a model,
- define the scale of the model, its method of construction, and the measurements that need to be made.

The observations of flows and their effects are used to finalize structure designs.



Tree trap built according to the scale model conclusions

