



With this equipment you can practice much of the operations, start-up, operation and necessary regulations in a pump installation.

The two pumps that the equipment has are controlled by a frequency variator, which allows varying the speed of rotation. One of the pumps has a mechanical torque measurement system.

The flow rate of each pump is measured by an electronic flow meter.

In addition, you can make an study of the characteristics of a pump, working individually and in groups, in series or in parallel, performing a wide range of practices and experiences.

The whole system is controlled by a computer with touch screen (included), from where the pumps can be switched on or off, or change the turning direction of one (the one which has the torque measurement system).

Moreover, the software allows the recording of data manual or automatically, and show the results into graphs.

LEARNING OBJECTIVES

- Start-up of a pump, analysis and study of different aspects to consider.Ⓢ
- Priming pump.
- Checking the sense of rotation.
- Overcurrent produced in the engine.
- Study and obtain the characteristic curves of a pump.
- Ⓢ - Height - flow (H-Q).
- Ⓢ - Hydraulic power - flow (P-Q).
- Ⓢ - Torque - flow (M-Q).
- Ⓢ - Mechanical efficiency - flow (m-Q).
- Ⓢ - Mechanical power - flow (Pm - Q).
- Ⓢ - Efficiency of the engine - flow (η_e -Q).
- Ⓢ - Electric power - flow (Pe-Q).
- Ⓢ - Total efficiency - flow (η -Q).

- Study of cavitation, and obtaining the N.P.S.H. Curve required-flow.
- Study of the different forms of regulating a pump. Checking similarity laws.
- Variation of the rotational speed. Obtaining the new characteristic curves.
- Changing the operating point by varying the pumping installation.
- Manoeuvred of the discharge valve.
- Analysis of the same and different pumps working in group.
- Characteristic curves operating in serie.
- • Height - flow (H-Q).
- • Power - flow (P-Q).
- • Efficiency - flow (η -Q).
- Characteristic curves operating in parallel.
- • Height - flow (H-Q).
- • Power - flow (P-Q).
- • Efficiency - flow (η -Q).

TECHNICAL DATA

Internal diameter:

- Suction pipe
 - \varnothing internal = 45,2 mm.
 - \varnothing external = 50 mm.
- Drive pipe
 - \varnothing internal = 34 mm.
 - \varnothing external = 40 mm.

Deposit:

- Capacity: 250 l.

Manometer:

- Electronic pressure transducer -1 a 7 bar // -10,33 m.c.a a 70 m.c.a.
- Electronic pressure transducer -1 a 4 bar // -10,33 a 40 m.c.a. (x3)

Pumps characteristics:

- Manometric height 23 m.c.a.
- Maximun flow 160 l/min. a 10 m.c.a.
- Consumed power 750 W.
- Turning speed 3000 r.p.m.

Other elements:

- Flow meters
- Load cell of 5Kg.
- Varimeter from 0 to 1200 W.
- Frecuence varimeter 220V - 1,1 Kw.
- Frecuence varimeter 220V - 0,75 Kw.
- Infomated control and data acquisition system with software (PC with touch screen included and integrated in the structure of the equipment)

Power supply: 230V/50Hz.