edibon

Engineering and Technical Teaching Equipment

Drinking Water Installation Unit

TIAP

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⇨PRODUCTS
  ⇨90.- THERMODYNAMICS
      & THERMOTECHNICS

SINGLE HANDLE MIXER Grifo Mezclador Monopalanca

BALL VALVE Válvula de Bola

VENT PIPE Tubo de Venteo

THERMAL DISCHARGE SAFETY DEVICE Dispositivo de Seguridad de Descarga Térmica

TWO HANDLE MIXER Grifo Mezclador Bipalanca

PRESSURE VESSEL WITH ELECTRICAL BOILER Recipiente de Presión con Calentador Eléctrico

VENT PIPE Tubo de Venteo

SHOWER SPRINKLER Cabezal de Ducha

AB-1 PUMP Bomba

ST-1 TEMPERATURE SENSOR Sensor de Temperatura

SYSTEM OF SAFETY DEVICE Sistema de Dispositivo de Seguridad

WASH-BASIN Lavabo

SYSTEM SEPARATOR Separador del Sistema

DRAINAGE Drenaje

ANGLE SEAT VALVE Válvula de Asiento

REVERSIBLE FLOW FILTER Filtro de Caudal Reversible

PRESSURE REDUCING VALVE Válvula Reductora de Presión

DRAINAGE Drenaje

WATER METER Contador de Agua

INTRODUCTION

Drinking water supply to a building implies three types of installations: the cold water and hot water installations and the sanitation installation, which includes the removal of wastewater and rainwater.

Drinking water or water for human consumption is water that can be consumed without restriction to drink or prepare food. Drinking water must not contain substances or microorganisms that can cause disease or damage to health.

Drinking water can be heated and then it is called domestic hot water (DHW). It is used for sanitary uses (baths, showers, etc.) or cleaning uses, among others.

The appropriate temperature of the DHW can vary depending on the hot water generation system used, for example combined boilers and boilers with storage tanks.

GENERAL DESCRIPTION

The Drinking Water Installation Unit, "TIAP", has been designed to demonstrate domestic water heating from the cold water supply. A typical domestic drinking water system is attached to the front panel of the unit. The unit includes the most common elements of a drinking water installation and is designed for training in the plumbing sector. The unit is divided into three sections: cold water system, hot water system and drainage system.

The water inlet to the system is regulated with two seat valves and the flow rate entering the installation is measured with a water meter. The water then passes through a reversible flow filter and is divided into two pressure reducing valves. The first line is directed on the one hand to the two-lever faucet and single lever mixer lever to come out as cold water, on the other hand it goes to the separator of the system and ends in the drainage system. The second conduit passes through a safety device and is introduced into the pressure vessel with heater, where the water is heated and driven by a pump to the two-lever and single lever mixer taps.

The pressure vessel with heater allows to control the internal pressure with a manometer and the temperature with a thermocouple, it can also be regulated through a display. The hot water circuit includes safety devices (thermal discharge safety device, safety device system, non-return valve, system separator and vent pipes). These show how drinking water installations are protected against the flow of wastewater.

The drainage system is located at the back of the equipment. Collect the remains of water from the vent pipes, the water discharged with the thermal discharge safety device, the safety device system, the waste water from the reversible flow filter and the system separator and the water collected from the basin.

SPECIFICATIONS

Anodized aluminum frame and panels made of painted steel.

The unit includes wheels to facilitate its mobility.

Diagram in the front panel with distribution of the elements similar to the real one.

The unit is divided in three sections: cold water system, hot water system and drain system.

Cold water system:

Three angle-seat valves: two valves situated at the water inlet to regulate the flow and one valve situated at the pipes system inlet.

Rotary vane water meter, range: $0 – 2.5$ m^3/h.

Reversible flow rate filter with pressure reducing valve. This valve includes a manometer, range: $0 – 10$ bar.

System separator. Risk class: 4.

Outlet valves to drain the water.

Valve for cold water.

Hot water system:

Safety device system, maximum pressure: 6 bar. It includes:

Non-return valve.

Pressure reducing valve with manometer, pressure range: $0 – 10$ bar.

Shut-off valve.

Pressure vessel with heater (a small electrical boiler):

Heating element power: 3500 W approx.

The vessel includes a manometer and a thermocouple type "J"; pressure range: $0 – 10$ bar, temperature range: $0 – 120$ °C.

Thermal discharge safety device, maximum working temperature: 95 °C.

Circulating pump with timer:

Max. flow: 0.7 m^3/h.

Max. head: 1.5 m.

Max. working temperature: 120 °C approx.

Power consumption: 20 W approx.

Valve for hot water.

Waste water system:

This system collects the rest of water from the vent pipes, the water discharged with the thermal discharge safety device and the safety device system, the wastewater of the reversible flow rate filter and the system separator, and the water collected in the sink. It includes:

A drain pipe DN 40 with high temperature stability.

Vent pipes.

Sink.

Safety devices: they show how drinking water installations are protected against wastewater backflow.

Safety device system.

Thermal discharge safety device.

Non-return valve.

System separator.

Vent pipes.

Elements to discharge water in the wash-basin:

Single-handle mixer with a shower sprinkler.

Double-handle mixer.

Electronic console:

Metallic box.

Digital display for the temperature sensor.

ON / OFF switch for the pump.

Digital display to visualize and control the temperature.

Connector for temperature sensor.

Manuals: This unit is supplied with the following manuals: Required services, Assembly and Installation, Starting-up, Safety, Maintenance and Practices manual.

EXERCISES AND PRACTICAL POSSIBILITIES

1.- Familiarization with the most common components in a drinking water installation.

2.- Study of the function and operation of a water meter.

3.- Study of the function and operation of a pressure reducing valve with a reversible flow filter.

4.- Study of the function and operation of a pressure reducing valve without a reversible flow filter.

5.- Study of the function and operation of a system separator.

6.- Study of the function and operation of a non-return valve.

7.- Study of the function and operation of a pressure vessel with heater.

8.- Study of the function and operation of a circulating pump.

9.- Study of the function and operation of a safety device system.

10.- Study of the function and operation of a thermal discharge safety device.

REQUIRED SERVICES

- Electrical supply: single-phase, 220 V/50 Hz or 110 V/60 Hz.
- Water supply and drainage (1.5 bar).

DIMENSIONS AND WEIGHTS

TIAP:
  Unit:
    -Dimensions: 1900 x 550 x 1900 mm approx.
        (74.80 x 21.65 x 74.80 inches approx.)
    -Weight: 170 Kg approx.
        (374.7 pounds approx.)
  Electronic console:
    -Dimensions: 490 x 330 x 310 mm approx.
        (19.29 x 12.99 x 12.20 inches approx.)
    -Weight: 10 Kg approx.
        (22 pounds approx.)

TIAP/ICAI. Interactive Computer Aided Instruction Software System:

With no physical connection between unit and computer (PC), **this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF).** Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.
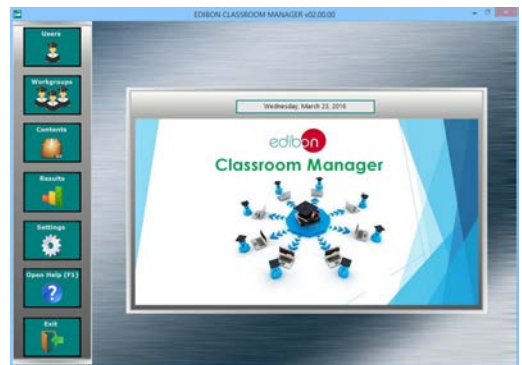
Instructor Software

- ECM-SOF. EDIBON Classroom Manager (Instructor Software).

ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual students, workgroups, units, etc... so the teacher can know in real time the level of understanding of any student in the classroom.

Innovative features:

• User Data Base Management.

• Administration and assignment of Workgroup, Task and Training sessions.

• Creation and Integration of Practical Exercises and Multimedia Resources.

• Custom Design of Evaluation Methods.

• Creation and assignment of Formulas & Equations.

• Equation System Solver Engine.

• Updatable Contents.

• Report generation, User Progression Monitoring and Statistics.

ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application Main Screen

ECAL. EDIBON Calculations Program Package - Formula Editor Screen
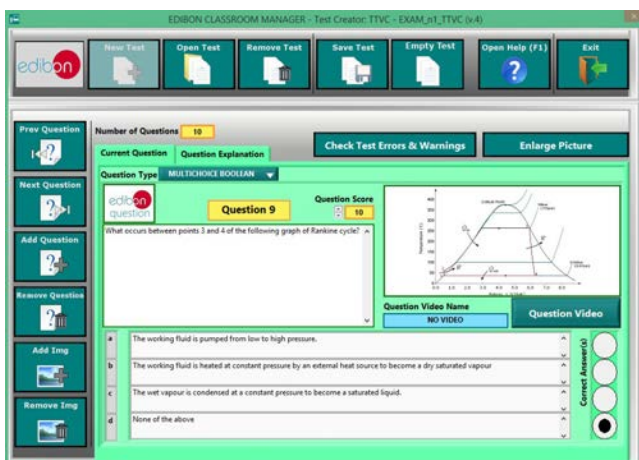
ETTE. EDIBON Training Test & Exam Program Package - Main Screen with Numeric Result Question

ERS. EDIBON Results & Statistics Program Package - Student Scores Histogram

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- ESL-SOF. EDIBON Student Labsoft (Student Software).

ESL-SOF is the application addressed to the Students that helps them to understand theoretical concepts by means of practical exercises and to prove their knowledge and progression by performing tests and calculations in addition to Multimedia Resources. Default planned tasks and an Open workgroup are provided by EDIBON to allow the students start working from the first session. Reports and statistics are available to know their progression at any time, as well as explanations for every exercise to reinforce the theoretically acquired technical knowledge.

Innovative features:

- Student Log-In & Self-Registration.
- Existing Tasks checking & Monitoring.
- Default contents & scheduled tasks available to be used from the first session.
- Practical Exercises accomplishment by following the Manual provided by EDIBON.
- Evaluation Methods to prove your knowledge and progression.
- Test self-correction.
- Calculations computing and plotting.
- Equation System Solver Engine.
- User Monitoring Learning & Printable Reports.
- Multimedia-Supported auxiliary resources.

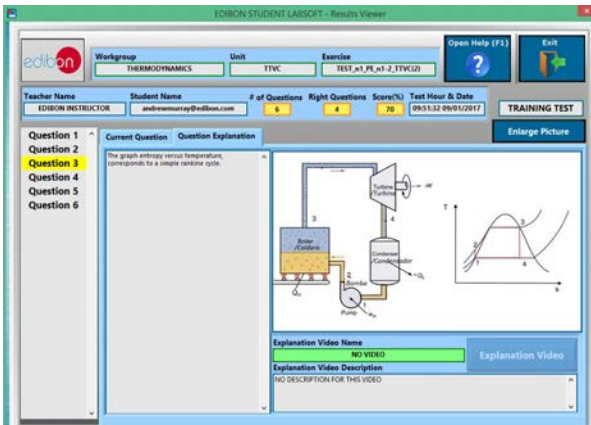For more information see **ICAI** catalogue. Click on the following link:

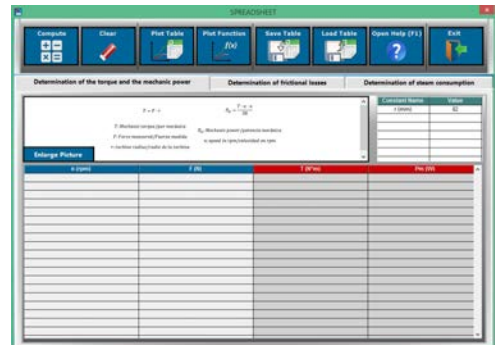www.edibon.com/en/files/expansion/ICAI/catalog

ESL-SOF. EDIBON Student LabSoft (Student Software)
Application Main Screen

EPE. EDIBON Practical Exercise Program Package Main Screen

ERS. EDIBON Results & Statistics Program Package - Question Explanation

ECAL. EDIBON Calculations Program Package Main Screen

✴ Specifications subject to change without previous notice, due to the convenience of improvement of the product.

REPRESENTATIVE: