Three-Way Mixing Valve Training Unit

TEV3V

PROCESS DIAGRAM AND UNIT ELEMENTS ALLOCATION
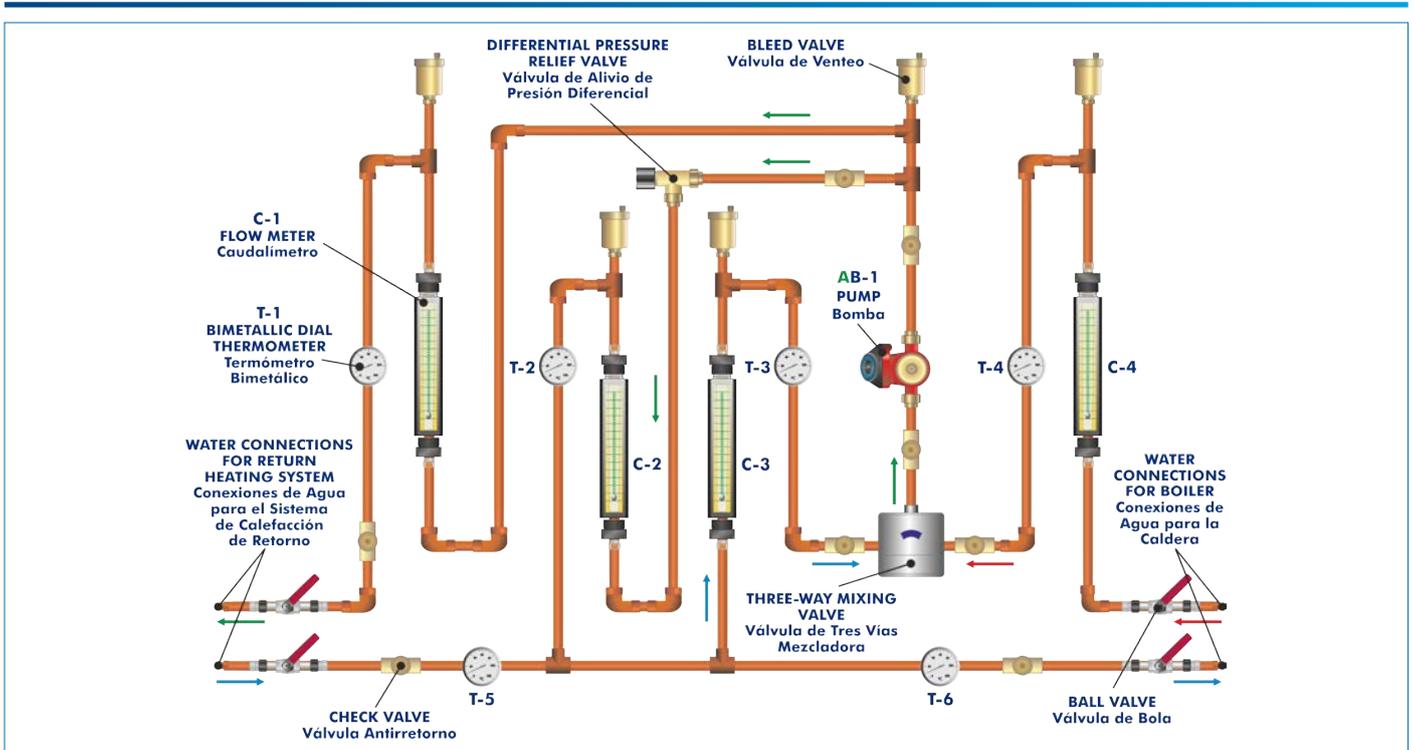
DIFFERENTIAL PRESSURE
RELIEF VALVE
Válvula de Alivio de
Presión Diferencial

BLEED VALVE
Válvula de Venteo

C-1
FLOW METER
Caudalímetro

T-1
BIMETALLIC DIAL
THERMOMETER
Termómetro
Bimetálico

AB-1
PUMP
Bomba

T-2

T-3

T-4

C-4

WATER CONNECTIONS
FOR RETURN
HEATING SYSTEM
Conexiones de Agua
para el Sistema
de Calefacción
de Retorno

C-2

C-3

WATER
CONNECTIONS
FOR BOILER
Conexiones de
Agua para la
Caldera

THREE-WAY MIXING
VALVE
Válvula de Tres Vías
Mezcladora

T-5

CHECK VALVE
Válvula Antirretorno

T-6

BALL VALVE
Válvula de Bola

INTRODUCTION

Mixing valves are designed for mixing two fluids of different temperatures in such a ratio that the desired outgoing temperature is reached. Three-way and four-way mixing valves are commonly used.

Three-way mixing valves mix two inlets into one outlet and mixing is done by throttling/opening the flow in either inlet. These valves are typically used for mixing heating water for heating circuits (floor heating, wall heating, radiators), or for mixing the return line in boilers in order to avoid low-temperature corrosion.

The Three-Way Mixing Valve Training Unit, "TEV3V", allows to train on hot water heating systems and plumbing.

GENERAL DESCRIPTION

The Three-Way Mixing Valve Training Unit, "TEV3V", allows to demonstrate the function of a three-way mixing valve in a hot water heating system. The three-way mixing valve in the heating system regulates the supply water temperature to a heating system.

The unit includes a three-way mixing valve, a boiler water circuit, a return heating system water circuit, a circulating pump, several thermometers and flowmeters.

The boiler water line (hot water) and the return heating system water line (cold water) includes several dial thermometers and flowmeters to visualize the water temperature and flow in the inlets and outlet of the three-way mixing valve.

A pump circulates the mixture water in the system. The differential pressure across the system is limited using a differential pressure relief valve.

Several bleed valves (air vents) remove the air from water and are situated in different points of the circuits. Several valves allow control the boiler water flow and the return heating system water flow.

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 includes:

Three-way mixing valve with actuator motor:

Size: DN20.

Setting angle: 90°.

Opening time: 100 s.

A circulating pump:

Power consumption: 70 W.

Max. flow rate: 60 l/min.

Max. head: 5 m.

Four flowmeters:

Three flowmeters situated in the boiler water circuit (hot water), the return heating system water circuit (cold water) and the three-way mixing valve outlet, range: 2.5 – 28 l/min.

One flowmeter situated in the outlet of the differential pressure relief valve, range: 0.6 – 6.5 l/min.

Six bimetallic dial thermometers, range: 0 – 100 °C.

Five bleed valves (air vents) to remove the air from the water.

Two water connections with quick-release couplings for boiler water (hot water), size: DN15.

Two water connections with quick-release couplings for return heating system water (cold water), size: DN15.

Four ball valves allow control the boiler water flow and the return heating system water flow.

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.- Study of the function and operation of a three-way mixing valve.

2.- Study of the function and operation of a differential pressure relief valve.

3.- Study of the effect of mixing ratio on feed flow or circulating flow temperature.

4.- Study of the effect of mixer setting on the flow rate.

REQUIRED SERVICES

- Electrical supply: single-phase, 220 V/50 Hz or 110 V/60 Hz.
- Hot water supply, flow: 30 l/min.
- Cold water supply.
- Drainage.

DIMENSIONS AND WEIGHTS

TEV3V:
  -Dimensions: 1900 x 550 x 1700 mm approx.
                (74.80 x 21.65 x 66.93 inches approx.)
  -Weight: 100 Kg approx.
                (220 pounds approx.).

TEV3V/ICAI. Interactive Computer Aided Instruction Software System:
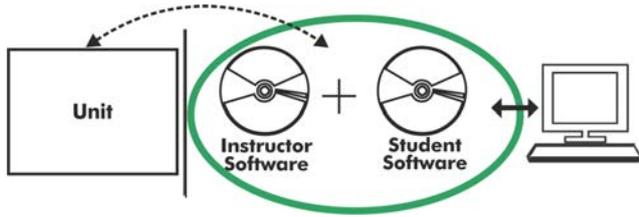
With no physical connection between unit and computer, **this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF).** Both are interconnected so that the teacher knows at any moment 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.
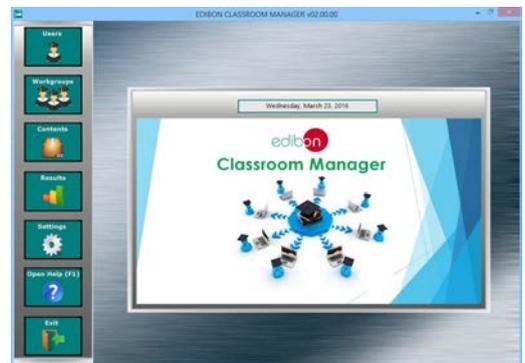
ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application Main Screen

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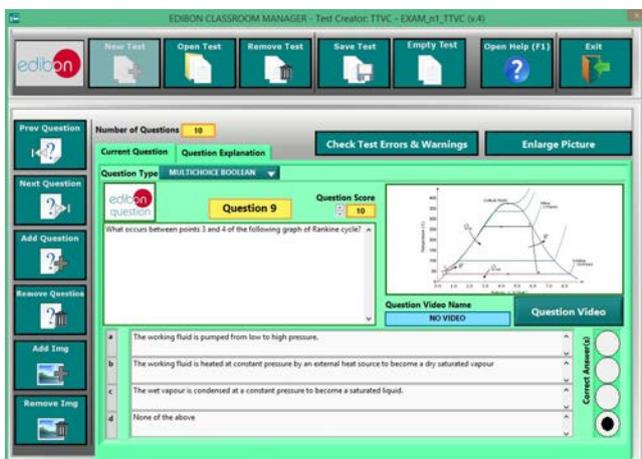
ETTE. EDIBON Training Test & Exam Program Package - Main Screen with Numeric Result Question

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

- 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
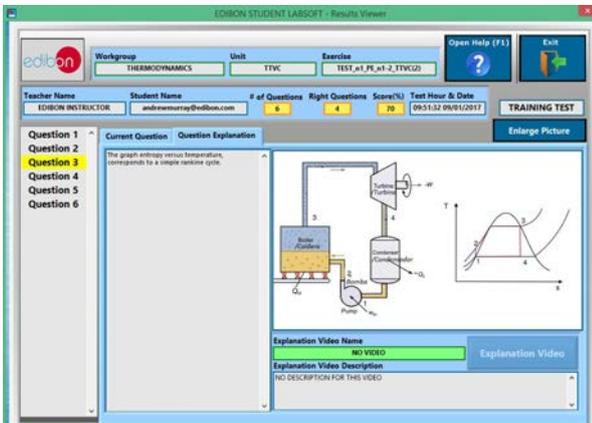
ERS. EDIBON Results & Statistics Program Package - Question Explanation
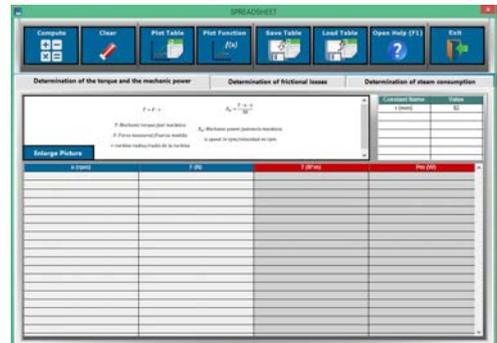
ECAL. EDIBON Calculations Program Package Main Screen

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

REPRESENTATIVE: