edibon

Technical Teaching Equipment

Soil/Water Model Tank

PTSA

PROCESS DIAGRAM AND UNIT ELEMENTS ALLOCATION
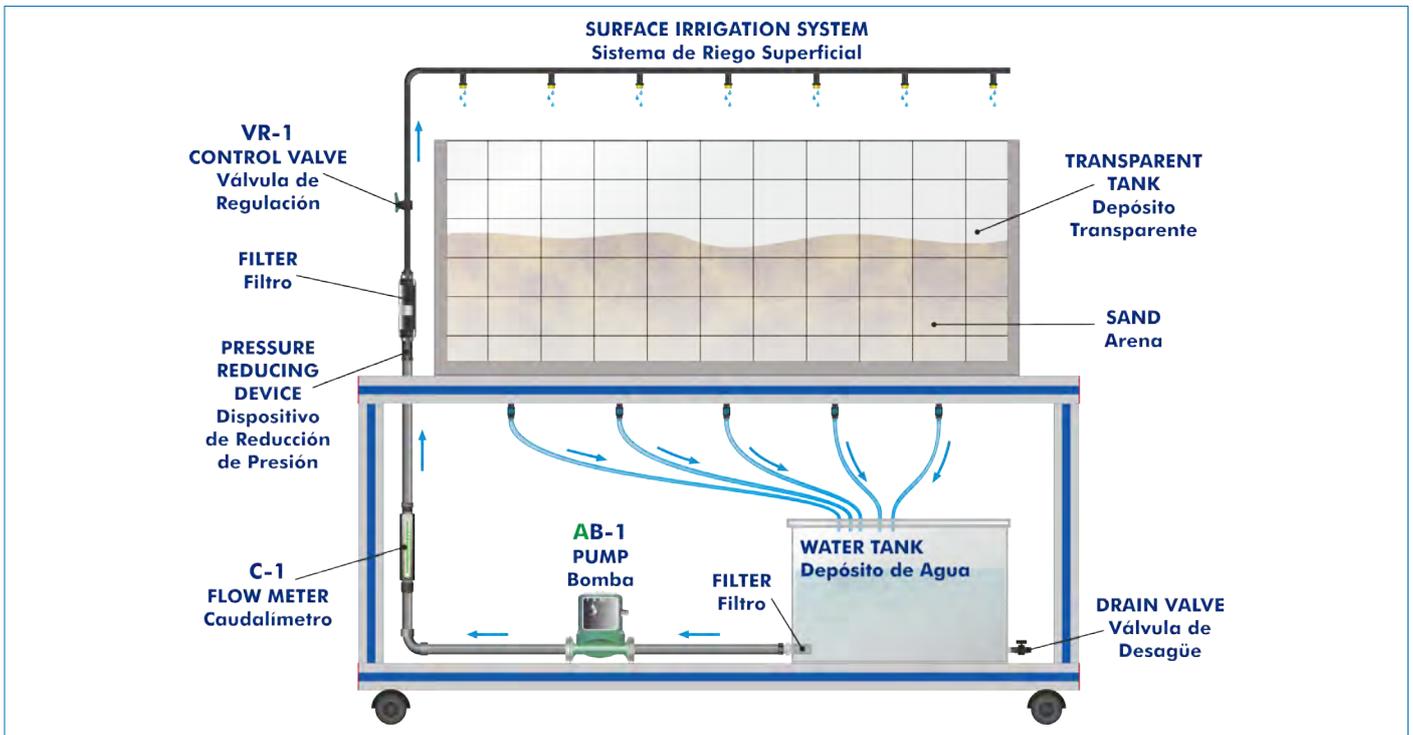
SURFACE IRRIGATION SYSTEM
Sistema de Riego Superficial

VR-1
CONTROL VALVE
Válvula de
Regulación

FILTER
Filtro

PRESSURE
REDUCING
DEVICE
Dispositivo
de Reducción
de Presión

C-1
FLOW METER
Caudalímetro

AB-1
PUMP
Bomba

FILTER
Filtro

WATER TANK
Depósito de Agua

TRANSPARENT
TANK
Depósito
Transparente

SAND
Arena

DRAIN VALVE
Válvula de
Desagüe

INTRODUCTION

The irrigation is the technique by means of which the water is brought to the soil with opportune quantity, rhythm and quality. It plays an important role in the economy of the rational utilization of the agriculture potential of a territory.

The most common irrigation methods are furrow, flood, overhead, infiltration, drip and drain irrigation.

The Soil/Water Model Tank unit "PTSA" allows to study and investigate surface irrigation methods and other related systems.

GENERAL DESCRIPTION

The Soil/Water Model Tank "PTSA" is a laboratory scale unit designed to study the most common surface irrigation systems, as well as to investigate the surface and sub-surface effects of applying water.

The "PTSA" unit is mounted on a movable bench consisting of a metallic frame and panels made of painted steel. It includes wheels to facilitate its mobility.

It has a narrow rectangular tank to be partially filled with different kinds of soils/sand (not included). Its frame is made of aluminum and the rear and front walls are made of glass so that water movements can be visualized. The front wall of the tank includes a grid to facilitate the measurement of water penetration rate in the soil.

It is a self-contained unit and it includes a water tank from which a pump impels water passing through a flow meter to measure the flow. The water circulates through a pressure regulator and a filter and the flow is controlled by a regulation valve. The water outlet in the rectangular tank can be either by flood or drip system to demonstrate the different types of surface irrigation. The irrigation system is manually modified to allow the two types of surface irrigation.

The unit allows to change and to remove easily and quickly the soil samples using the rear lateral plate made of aluminum. There is an overflow system to remove surface water.

SPECIFICATIONS

Unit mounted on a movable bench with metallic frame and painted steel panels.

It includes wheels to facilitate its mobility.

Main metallic elements made of stainless steel.

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

Rectangular tank (to contain the soil/sand):

- Dimensions: 1050 x 25 x 500 mm.

- Frame made of aluminum.

- A rear wall and a front wall made of glass to visualize the water movements, dimensions: 1020 x 460 mm.

- The front wall of the tank includes a grid to facilitate the measurement of water penetration rate in the soil.

Water supply tank, capacity: 75 l.

Water pump, power: 0.077 KW.

Regulation valve to regulate the water flow.

Flow meter, range: 0.2-2 l./min.

A pressure regulator for the suitable performance of the flood and drip system.

Two filters to prevent impurities from passing to the irrigation system.

A flood and drip system to demonstrate different types of irrigation. It is made of:

- Four drip output valves.

- Three flood output valves.

Overflow system to remove surface water.

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

Flood valve   Drip valve
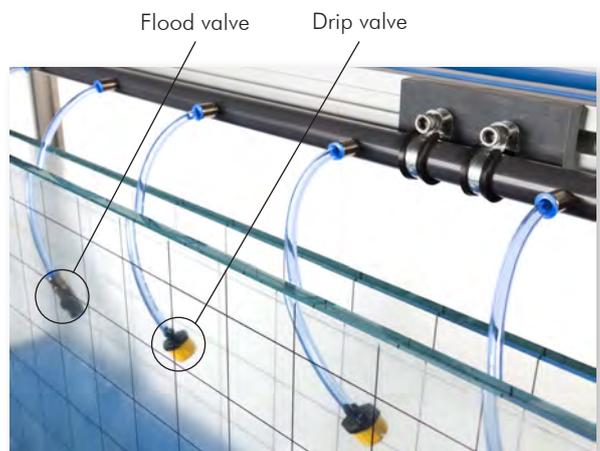
Detail of surface irrigation system

EXERCISES AND PRACTICAL POSSIBILITIES

1.- Study and visualization of drainage systems.

2.- Visualization of the surface irrigation systems.

3.- Study and understanding of surface and sub-surface effects of surface water application.

4.- Study of the filtration rate.

5.- Visualization of the effect of crusting on infiltration.

6.- Visualization of the effect of soil particle size on infiltration.

Additional practical possibilities:

7.- Study of infiltration and surface run-off.

8.- Study and demonstration of optimum irrigation application rates to maximize infiltration and minimize surface run-off.

REQUIRED SERVICES

- Electrical supply: single-phase, 220V/50Hz or 110V/60Hz.
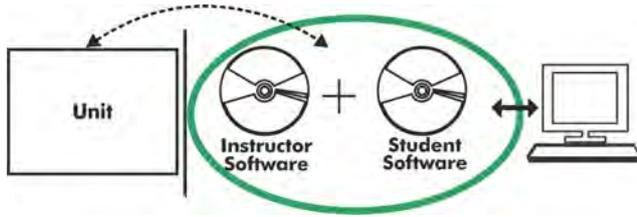- Water supply and drain.

REQUIRED ACCESSORIES (Not incluided)

- Sand or soil.
- Chronometer.

DIMENSIONS AND WEIGHTS

-Dimensions: 1200 x 600 x 1200 mm. approx.

(47.24 x 23.62 x 47.24 inches approx.)

-Weight: 80 Kg. approx.

(176 pounds approx.).

PTSA/ICAI. Interactive Computer Aided Instruction Software System:

Whit 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 Workgroups, Tasks and Training sessions.
>
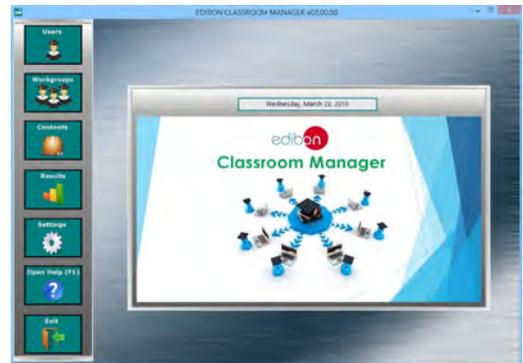> Creation and Integration of Practical Exercises and Multimedia Resources.
>
> Custom Design of Evaluation Methods.
>
> Creation and assignment of Formulas & Equations.
>
> Equation System Solver Engine.
>
> Updatable Contents.
>
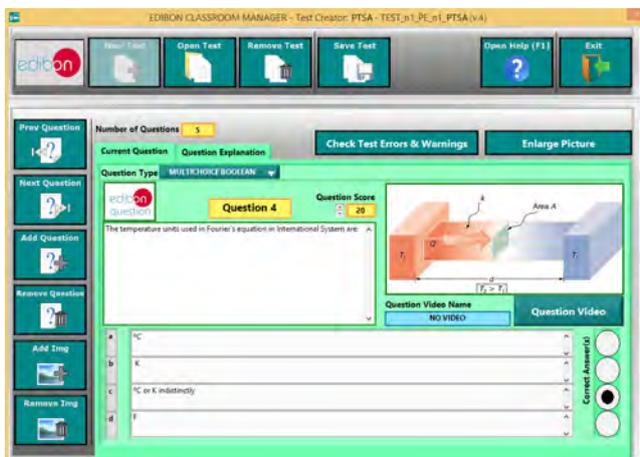> Report generation, User Progression Monitoring and Statistics.

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

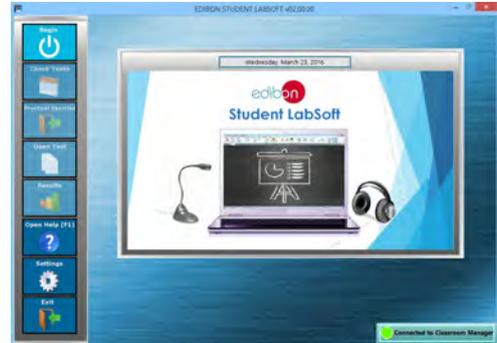ERS. EDIBON Results & Statistics Program
Package - Student Scores Histogram

-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.

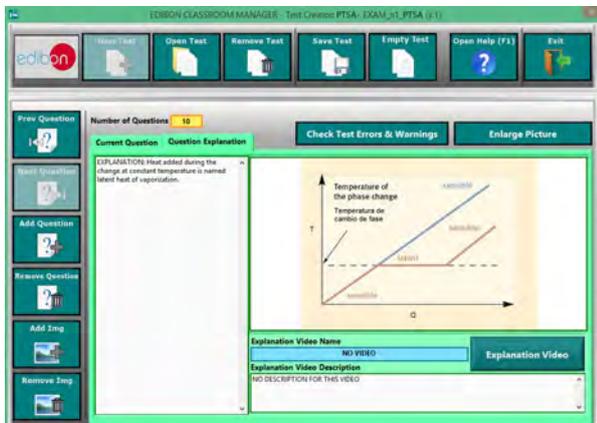For more information see **ICAI** catalogue. Click on the following link:

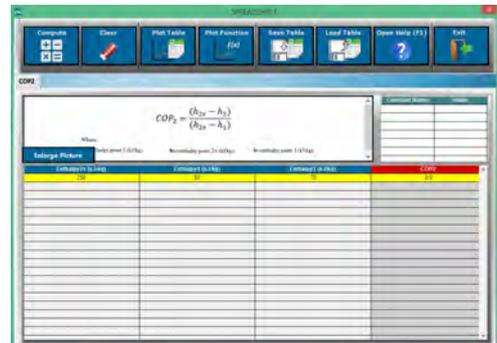**www.edibon.com/products/catalogues/en/ICAI.pdf**

ESL-SOF. EDIBON Student LabSoft (Student Software)
Application Main Screen
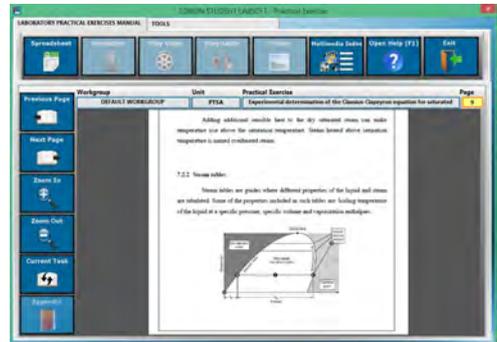
EPE. EDIBON Practical Exercise Program Package Main Screen

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

INTERNATIONAL

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