



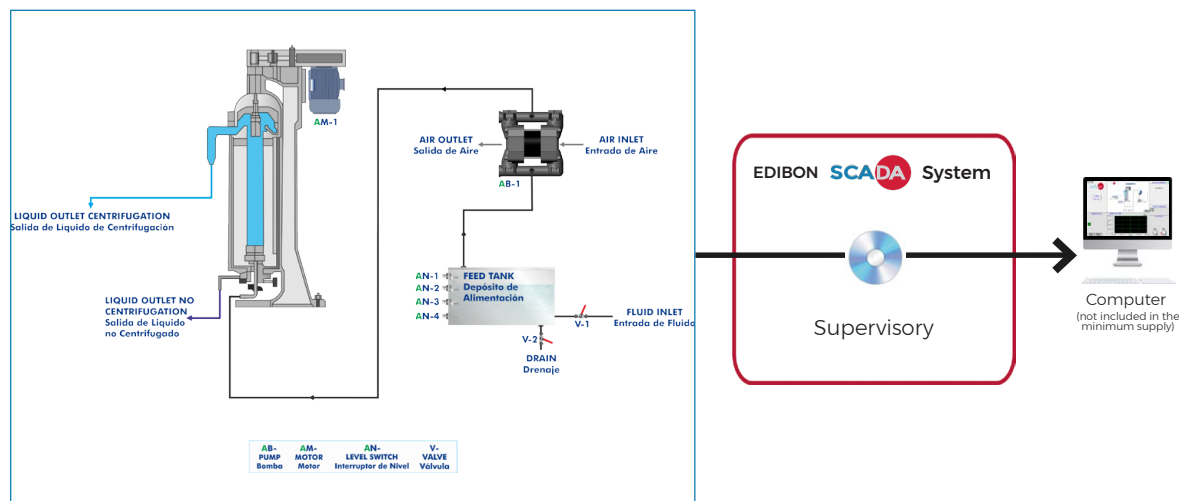
SCS/1000/CTS

Computer Controlled and Touch Screen 1000 I Semicontinuous Centrifugal Separator

5.- ENERGY

11.- CHEMICAL ENGINEERING

CUSTOMIZED-PILOT-PLANTS



- Research units, modular and expandable.
- Custom designs.
- Own manufacture.

INNOVATE SYSTEMS

- Advanced Real-Time SCADA.
- Open Control + Multicontrol + Real-Time Control.
- Specialized EDIBON Control Software based on LabVIEW.
- National Instruments Data Acquisition board (250 KS/s, kilo samples per second).
- Calibration exercises, which are included, teach the user how to calibrate a sensor and the importance of checking the accuracy of the sensors before taking measurements.
- Projector and/or electronic whiteboard compatibility allows the unit to be explained and demonstrated to an entire class at one time.
- Capable of doing applied research, real industrial simulation, training courses, etc.
- Remote operation and control by the user and remote control for EDIBON technical support, are always included.
- Totally safe, utilizing 4 safety systems (Mechanical, Electrical, Electronic & Software).
- Designed and manufactured under several quality standards.
- Optional ICAI software to create, edit and carry out practical exercises, tests, exams, calculations, etc. Apart from monitoring user's knowledge and progress reached.
- This unit has been designed for future expansion and integration. A common expansion is the EDIBON Scada-Net (ESN) System which enables multiple students to simultaneously operate many units in a network.

WARRANTIES



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For detailed product information, visit:

www.edibon.com



INTRODUCTION

A centrifugal separator is a machine that uses centrifugal force to separate liquids of different densities or to separate solids from liquids.

The separation process is based on the centrifugal force generated by the rotation of the centrifuge's cylindrical rotor at high speed. The rotation of the rotor at high speed produces a centrifugal force that displaces the solid (and higher density) particles towards the outer wall of the tube and separates the liquid from the mixture (lower density), which accumulates inside the tube.

The amount of solids removed can be controlled by the rotational speed, feed flow rate and residence time of the mixture in the centrifuge.

GENERAL DESCRIPTION

The Computer Controlled and Touch Screen 1000 I Semicontinuous Centrifugal Separator, "SCS/1000/CTS", is able to show, for further research and study, the obtaining of lignin from lignocellulosic biomass.

The unit consists of a tubular centrifuge, a pump and a feed tank.

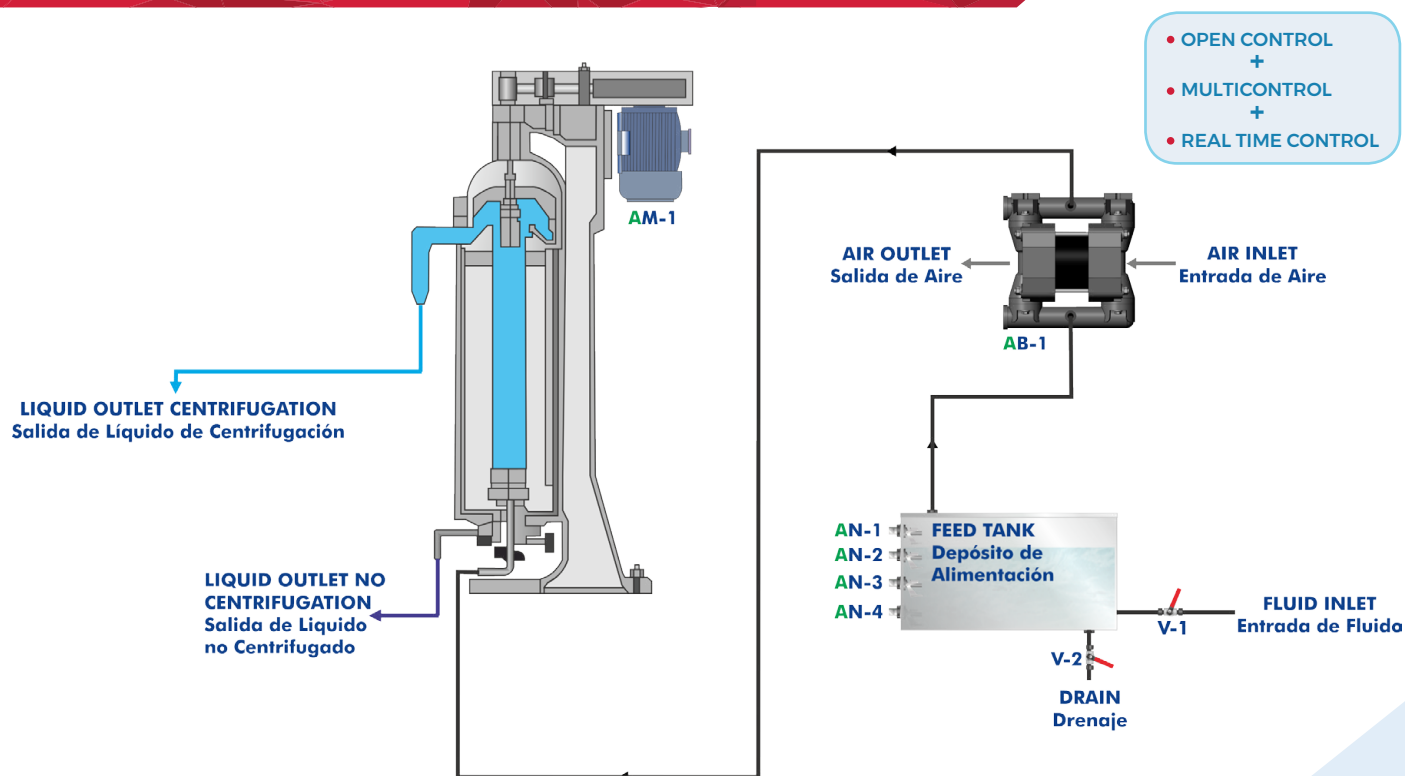
The mixture is fed into the feed tank and pumped into the tubular centrifuge via the feed pump. The mixture, when subjected to the rotation and centrifugal force of the cylinder, will tend to carry the heavier phase to the outside of the cylinder (to the walls).

The mixture without solids (lignin) is extracted through the upper part of the unit, by means of overflow.

This process is carried out at ambient conditions, because lignin at high temperatures behaves like a rubber and makes separation difficult.

This Computer Controlled Unit is supplied with the EDIBON Computer Control System (SCADA), and includes: The unit itself + Computer Control, Data Acquisition and Data Management Software Packages, for controlling the process and all parameters involved in the process.

PROCESS DIAGRAM AND UNIT ELEMENTS ALLOCATION

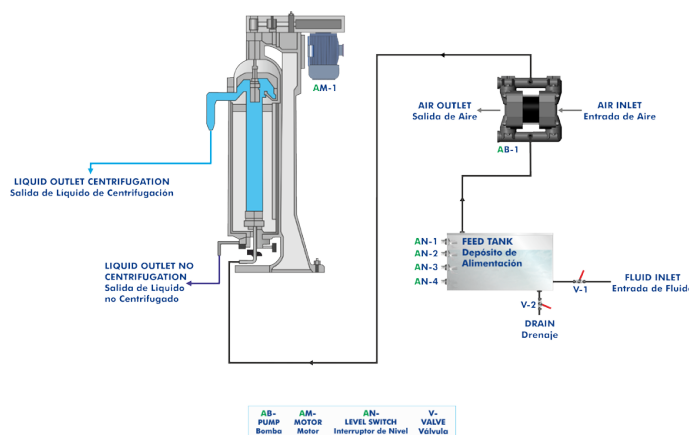


AB-	AM-	AN-	V-
PUMP	MOTOR	LEVEL SWITCH	VALVE
Bomba	Motor	Interruptor de Nivel	Válvula

COMPLETE TECHNICAL SPECIFICATIONS

1. SCS/1000/CTS unit:

- Structure made of stainless 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 main elements of the unit are made of AISI-304 and AISI-316 stainless steel and PP, to withstand the conditions of the process.
- 1800 l polypropylene feed tank.
- Pneumatic feed pump:
 - Maximum flow rate: 0,062 m³/h .
 - Maximum pressure: 8 bar.
- AISI-316 stainless steel tubular centrifuge.
 - Rotor speed: 14000 rpm.
 - Rotor volume: 10 l.
 - Hydraulic capacity: 1,5 m³/h.
 - Power: 3 kW.



The complete unit includes as well:

- Advanced Real-Time SCADA.
- Open Control + Multicontrol + Real-Time Control.
- Specialized EDIBON Control Software based on LabVIEW.
- National Instruments Data Acquisition board (250 KS/s, kilo samples per second).
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2. PLCHMI. IIoT Local/Remote Control and Monitoring with HMI (included):

- The expansion for PLC and HMI, "PLCHMI", is a system composed of an interface that includes PLC modules such as CPU, digital I/O module, analog I/O module, communications module, etc. and a control box with HMI display.

- PLC interface:

PLC controller:

Panasonic FP7 CPS31E CPU.

Digital I/O modules:

Digital inputs; input range 0 V to 24 V.

Digital outputs; relay output.

Analogue I/O modules:

Analog inputs; 16-bit resolution. Input range -10 V to +10 V.

Analog outputs; 16-bit resolution. Output range -10 V to +10 V.

Connectors and Communication Ports:

2-Port Ethernet Switch.

SCSI connector.

USB, DB-9 Series or DB-25 (if required).

The PLC interface may change at any moment, providing the same or better features than those required for the unit.

- HMI control box and display:

HMI display:

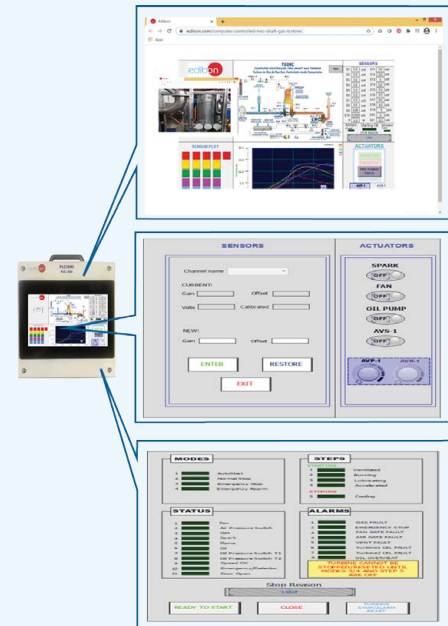
Touch Screen: Analog Resistive.

Size: 10" 16:9 TFT.

Resolution: 1024 x 600, WVGA.

Colors: 64 K.

Ethernet port.



3. SCS/1000/CTS/CCSOF. Supervision Software + Control Software + Data Acquisition Software + Data Management Software:

SCADA System is composed of four Software Package with the following features:

- The Supervision Software** is in charge of monitoring in real time start and stop elements, unexpected conditions and process evolution. In case of being necessary, it actuates on the system and notifies the user the incorrect operations.
- The Control Software** allows to manage multiple process and variables in real time either a manual way or automatic way. Several type of algorithms of control such PID CONTROL are implemented depending on the field of study.
- The Data Acquisition Software** focus on measuring and processing signals from the process with very high accuracy getting a synchronized and fast response of the system. A calibration system is part of this software to adjust the sensor measurements.
- The Data Management Software** stores and represents, alarms, variables and process evolution in real time both in a graphic format and in a numeric format such time charts or process diagram. Printable reports can be generated or historian data can be loaded to study the experiments in detail.

The Software is open and flexible architecture that facilities to access different work levels both instructors and students. It is supported by current Windows operating system and industrial standards. The graphical user interface is intuitive and user- friendly.

4. Cables and Accessories, for normal operation.

5. Manuals:

This unit is supplied with 8 manuals: Required Services, Assembly and Installation, Interface and Control Software, Starting-up, Safety, Maintenance, Calibration & Practices Manuals.

References 1 to 5 are the main items:

- SCS/1000/CTS.
- PLCHMI.
- SCS/1000/CTS/CIB.
- Cables and Accessories.
- 8 Manuals for enabling normal and full operation.

REQUIRED SERVICES

- Electrical supply: three-phase, 380 VAC – 400 VAC/50 Hz or 190 VAC – 240 VAC/60 Hz, 1 kW.
- Water supply and drainage.

DIMENSIONS AND WEIGHTS

- **SCS/1000/CTS:**
 - Dimensions: 1800 x 1450 x 800 mm approx.
(70,86 x 57,08 x 31,49 inches approx.)
 - Weight (without load): 400 kg approx.
(881 inches approx.)
 - Weight (loaded): 2000 kg approx.
(4409 inches approx.)

ADDITIONAL RECOMMENDED ELEMENTS (Not included)

- Spill and Splash Protection System for SCS/1000/CTS.

SIMILAR UNITS AVAILABLE

Offered in this catalog:

- SCS/1000/CTS. Computer Controlled and Touch Screen 1000 I Semicontinuous Centrifugal Separator.

Offered in other catalogs:

- SCS/60/CTS. Computer Controlled and Touch Screen 60 I Semicontinuous Centrifugal Separator.
- PSMC. Computer Controlled Magnetic Separation Unit.
- AFPMC. Computer Controlled Plate and Frame Filter Press.
- TFUB. Continuous and Batch Filtration Unit.
- TFUC. Computer Controlled Continuous and Batch Filtration Unit.
- QCDIC. Computer Controlled Disc Centrifuge.
- PFTC. Computer Controlled Drum Cell Filter.
- EFLPC. Computer Controlled Deep Bed Filter Unit.
- EFLP. Deep Bed Filter Unit.

ADDITIONAL RECOMMENDED ELEMENTS (Not included)**Spill and Splash Protection System for SCS/1000/CTS**

The system consists of protection screens that cover the entire unit. Protective doors at the front of the system allow access to the unit.

The system also has an anti-drip tray to protect against spills.

All the components of this system are easy to assemble.



ORDER INFORMATION

Main Items (always included in the supply):

1. **SCS/1000/CTS. Computer Controlled and Touch Screen 1000 I Semicontinuous Centrifugal Separator.**
2. **PLCHMI. IIoT local/remote Control and Monitoring with HMI.**
3. **SCS/1000/CTS/CCSOF. Computer Control + Data Acquisition + Data Management Software.**
4. **Cables and Accessories**, for normal operation.
5. **Manuals.**

*IMPORTANT: Under SCS/1000/CTS we always supply all the elements for immediate running as 1, 2, 3, 4 and 5.

Optional items (supplied under specific order):

• **ADDITIONAL RECOMMENDED ELEMENTS:**

Spill and Splash Protection System for SCS/1000/CTS.

QUALITY CERTIFICATES



WARRANTIES



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Edición: ED01/24
Fecha: April/2024

REPRESENTATIVE: