

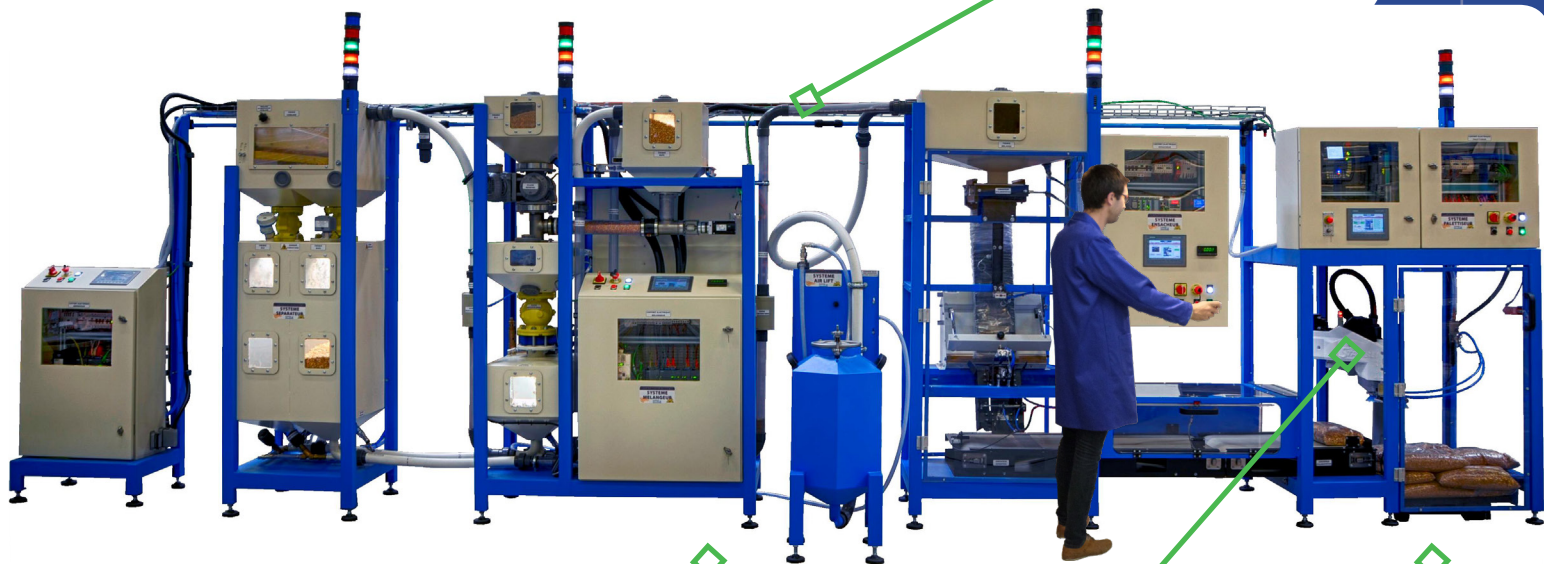
DMS Education

Creative engineering for quality education

Packaging line for a cereal mixture

4 modular and synchronized systems equipped with industrial components that can be cut into 3 autonomous machines

Transport of materials by compressed air



- Up to 4 groups of students
- History of production and maintenance
- Communicating: follow-up, control of production by PC
 - Complete air treatment
 - CMMS software add-on

4 axis robot

Modern technologies:
motors: brushless, asynchronous
sensors: capacitive, inductive, strain gauge, incremental,
latest generation safety PLC
pinch valves

SIEMENS
Siemens Automation & Drives

FESTO

Schneider
Electric

STÄUBLI



video presentation

ROBOTIC PRODUCTION UNIT



DESCRIPTION



This Teaching System representative of a **real industrial system** is specifically intended for the teaching and training of students and apprentices. It is adapted to the reference systems for training in the **maintenance and management of production systems**.

The RPU allows the realization of practical activities both during the Multi-technological studies of the systems but also for the acquisition of the techniques of maintenance, operation of the equipment in the respect of the rules of prevention.

RPU uses electromechanical, pneumatic, communicating automation and industrial computing technologies.

The modular and robust design of the DMS production line allows the multiplication of workstations and the progressive constitution of the complete production line by successive additions of systems.

The Robotic Production Unit is a production line from the agro-industry. It fits into the factory of the future by relying on future communicating technologies such as Virtual Reality and supervision through computer networks.

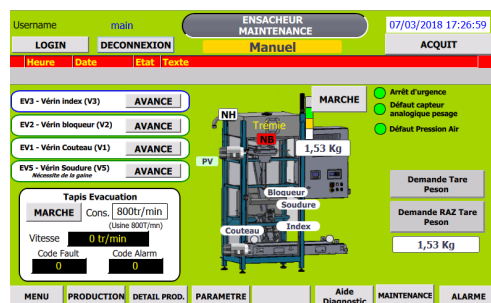
The function of this line is the **production and packaging** of cereal mixtures intended for animal feed, such as products distributed in garden centers or cooperatives in two bag capacities (1.5 or 4 kg), and provides **four transformations** :

- sorting/storage of raw materials (wheat - maize);
- mixing the two raw materials ;
- packaging in unit bags ;
- palletizing before shipping.

The packaged raw material is **reused** at the start of the DMS production line through the separator. The RPU therefore does not require any consumables other than the bagging bags.

The line we offer allows several operating modes:

- **manual mode** : configuration and individual qualitative test of each system ;
- **degraded mode** (semi-auto): independent operation per module;
- **the automatic mode** for the production of sachets organized on a pallet.



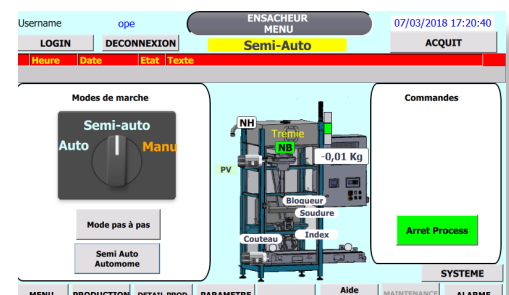
HMI - Manual mode



Virtual reality



Innovative air distribution from Festo



HMI - Welcome screen

✓ The URP is made up of the following elements :



Separator - screener: sorts the raw material.

- adjustable unbalance vibrator (vibration study possible) ;
- different level detector technologies : capacitive, paddles, etc.
- pneumatically operated needle valves ;
- high-performance S7-1200 PLC.

Mixer : produces a mixture of two raw materials in predefined proportions according to recipes.

- rotary valve coupled to an asynchronous motor ;
- Archimedean screw coupled to a brushless motor ;
- knife gate valve - pinch valve ;
- different level detector technologies: capacitive, inductive, weighing ;
- remote pressure adjustment ;
- latest generation safety Siemens PLC S7-1200 ;
- temporization tank - material flow management.

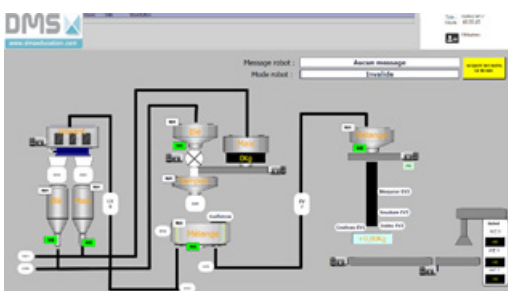


Bagger: Conditions the mixture in 1.5 Kg or 4 Kg bags:

- real-time weighing ;
- thermal welder ;
- S7-1500 PLC allowing programming by grafcet ;
- drum motor ;
- configurable ultrasonic sensor ;
- optical sensor.

Palletiser : positions the bags of seeds on a pallet for shipment.

- Stäubli TS60 4-axis industrial robot ;
- brushless motorization conveyor ;
- command console (called: teach).



Communication and interconnections in TCP/IP: profinet, modbus.

Supervision with Siemens winCC portal client.

DIGITAL ACCOMPANYING DOCUMENTS

- The systems and components of the DMS **robotic production unit** make it possible to approach professional activities in accordance with the certification standards of the diplomas concerned, targeting skills, for example :
 - Functionally analyze an installation
 - Diagnose failures
 - Conduct an analysis of the causes of breakdowns or malfunctions
 - Repair, troubleshoot and possibly return to service
 - Prepare corrective and preventive maintenance interventions
 - Propose and/or design multi-technical improvement solutions
 - Determine process control parameters and associated values
 - Realize driving
 - Compare technical solutions to standards and regulations
 - Respect and enforce the instructions related to a QHSSE approach.
- A **complete technical file and resource** is provided in digital format, including :
 - notices and manuals as well as installation, driving, safety and handling instructions
 - adjustment procedures
 - description and definition of the system in SysML format
 - 3D modeling in step format
 - electrical, pneumatic and mechanical diagrams as well as the layout plans in the cabinets- les caractéristiques des constituants
 - source programs of the Programmable Logic Controllers and the following software: Tiaportal professional, WinCC Runtime, SoMove...
 - manufacturer data.

We provide teachers with a service for accessing and updating documentation via the Internet.

TO ORDER

The “Robotized production unit” teaching system is offered in six references.

- Consult us to define together the reference adapted to your needs.

Necessary prerequisites : *Air network : 7 bars - 25 m³/h per module*
 Single-phase electric : 230V - 2,5 KW per module



Document non contractuel



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