



ErmaFlex #5

Weight control Jars & Bottles

System for controlling the quantity of products with ejection of the pots or bottles

Checkweighing Jars & Bottles at a glance

Highlights & Key Activities

- Study of electrical, pneumatic and mechanical technologies
- Quality control
- Programming, settings and control, production analysis

Specific components

- Weighing system for strain gauge control
- Circular transfer system powered by a stepper motor
- Vane chain conveyor with a geared motor controlled by a dimmer
- Control cabinet with Siemens S7-1200 PLC and Siemens KTP700 dialogue terminal with colour touch screen

This system is accompanied by a technical and educational file

References

- PF30** : Checkweigher for Jars & Bottles and its conveyor
- UC13**: Supervision for a machine
- AE10** : Siemens S7-1200 PLC / Web Server with TIA-Portal Basic license
- EA61**: Environment 4.0 PLC + Pond Control Desk with 3D Digital Twin on Virtual Universe Pro
- MN12**: Programmable 3D digital model Checkweighing
- UC90**: Option: Fault box for electrical cabinet, remotely configurable on a tablet (Not supplied)
- IO00**: IO-Link package for electrical and pneumatic measurements
- SK22**: Smart IoT Gateway Kit Sick TDCE & Smart Sensors for Ermaflex Weight Control
- UC51**: Option: Visual Instructions & Monitoring of Production Indicators on the Tulip open application environment and touch pad, for one machine
- UC52**: Option Visual instructions on Tulip open application environment and touch pad, for one machine

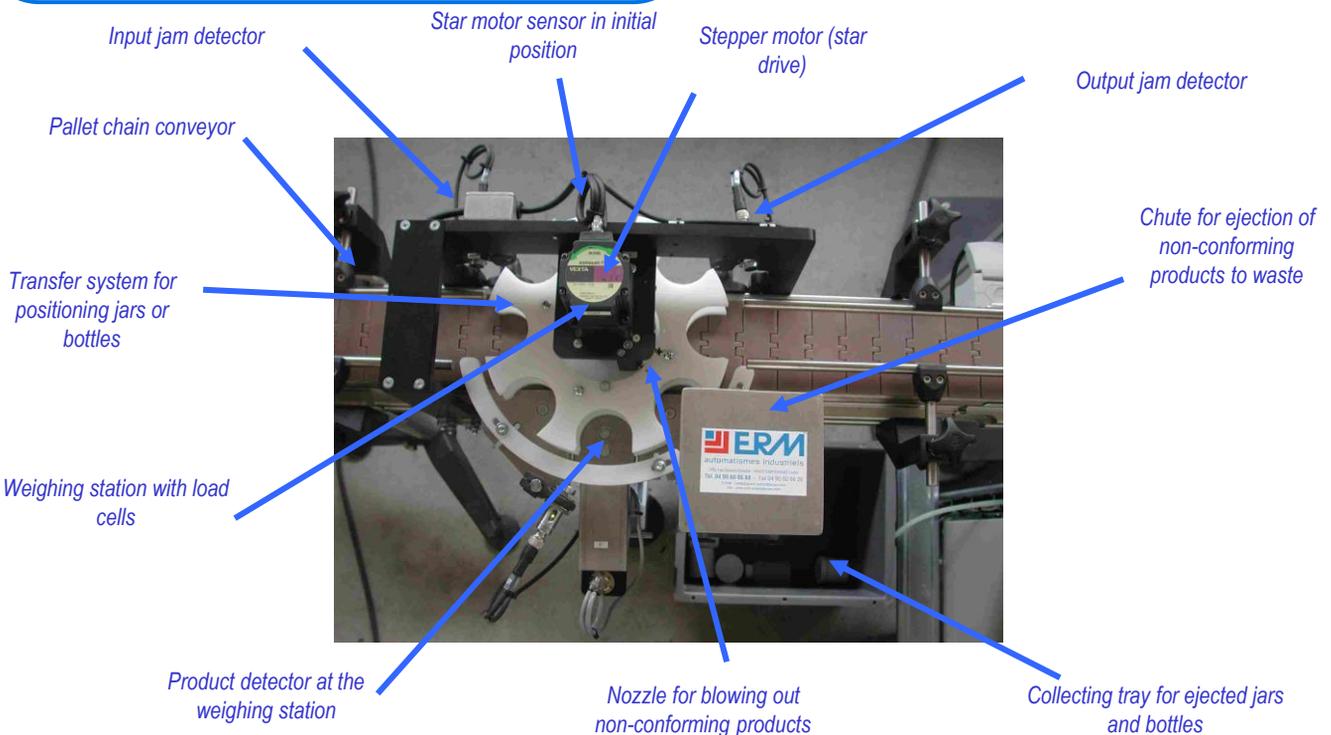
CAP CIP - Bac PRO PLP - MSPC
BTS MS - IUT
Universities - Engineering schools

IoT Sick Pack

IO-Link

Trouble-shooting box

TULIP





Functional architecture (continued)

Functional description

The Ermaflex Automated Checkweigher is a system designed to check the mass of products leaving the packaging unit

Maximum instantaneous weighing rate

- ✓ In the operating mode weighing 1 pot in 5 and with sufficient conveying speed
 - 3000 pots Ø 60 / hour (filled with at least 60 ml of granules)
 - 3000 bottles Ø 50 / hour (filled with at least 60 ml of water)
- ✓ In the "Continuous weighing" operating mode and at a sufficiently high conveying speed
 - 1500 pots Ø 60 / hour (filled with at least 60 ml of granules)
 - 1500 bottles Ø 50 / hour (filled with at least 60 ml of water)

Sub-assembly Conveying of jars and bottles

- ✓ It allows the containers to be introduced from the packaging unit into a circular transfer starwheel.
- ✓ It mainly consists of a pallet conveyor driven by an asynchronous gear motor with adjustable side rails.

Sub-assembly Transfer of pots and bottles to the weighing station

- ✓ It allows the container to be brought to the weighing station.
- ✓ It consists mainly of an 8-station rotary transfer system (Star) driven by a stepper motor.

Sub-assembly Weighing of pots and bottles

Function performed at the weighing station via a load cell (strain gauge)

VUE32 PC supervision (optional)

Supervision allows remote control of the station, It also allows you to obtain :

- output (number of products per minute)
- the number of products weighed
- machine uptime and downtime
- visualization of graficets
- the mass curve of the products...

Sub-assembly for ejection of pots and bottles

It allows the ejection of non-conforming products into the recovery bin
 ✓ It mainly consists of a blowing nozzle to eject the non-conforming pots, a chute and a tray.

Control cabinet

It consists mainly of :

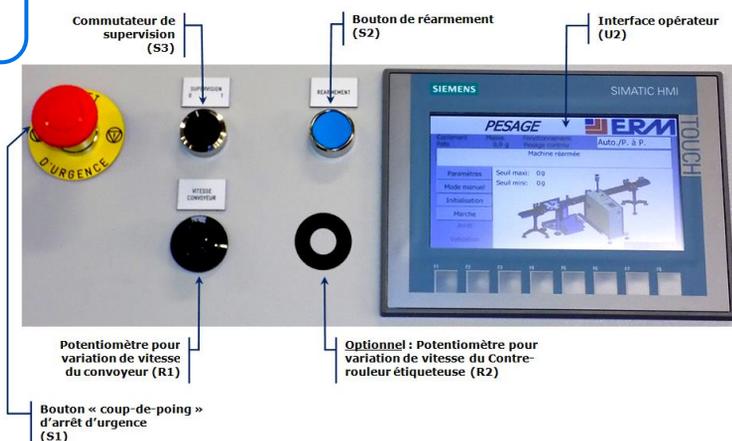
- A Siemens S7-1200 programmable logic controller
- A Siemens Siwarex weighing card (Siwatool software for calibration supplied) linking the weighing system to the PLC
- A variable speed drive for the asynchronous motor of the conveyor
- 2 control boards for the stepper motor of the rotary transfer system
- A variable speed drive for the motor of the labeller's counter roller (optional)
- The Siemens TIA PORTAL basic software is supplied with the system (PLC and operator panel programming)

Operator console

It contains all the dialogue components for operating the checkweighing station, including
 Siemens KTP700 dialogue terminal with colour touch screen
 Potentiometer for conveyor speed variation
 Supervision switch

Features

L/ W/ H: 2700 x 1300 x 1850 mm
 Electrical energy: 400V three-phase + neutral
 Pneumatic energy: 7 bar
 Mass: 250 kg



Educational activities

- ✓ Functional analysis
- ✓ Study of technologies: electrical, pneumatic and mechanical
- ✓ Production control
- ✓ Weighing card settings and calibration
- ✓ Statistical control
- ✓ Quality analysis of a production
- ✓ Preventive maintenance, corrective maintenance and maintenance
- ✓ Programming: the Siemens TIA PORTAL basic software is supplied with the system (PLC and operator panel programming)

PLC & Touch Panel + Digital Twin in VU Pro



Programming in the Siemens environment then simulation in the digital twin



Related and complementary products

Industrial IoT for Ermaflex Checkweighing



The Sick TDCE Smart IoT Gateway & Smart Sensors for Ermaflex Ponderal Control Kit (Ref: SK22) contains:

- Sick Smart IoT Gateway TDC-E200EU
- SIG100 module for implementing logic gates and timers
- 2 photoelectric sensors (1 input and 1 output) for counting scrap manually removed from the machine by an operator
- Cabinet temperature sensor
- Engine temperature sensor



SICK
Sensor Intelligence.

Sick TDCE Smart IoT Gateway Kits & Smart Sensors



SICK
Sensor Intelligence.

www.erm.li/sk10

Smart IoT Sick TDCE & Smart Sensors Case (SK00)

The Smart IoT Sick TDCE & Smart Sensor Gateway Toolkit contains several industrial smart sensor application cases.



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IO-Link electrical and pneumatic measurement package (IO00)

Study and implementation of an energy measurement system, communicating and IOT compatible



www.erm.li/io00

Ethernet IO-Link Master Kit, Supervision & IO-Link Sensors (IO01)

Design and implementation of IO-Link master and IOT compatible sensors

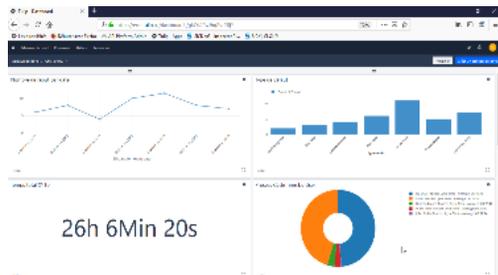


www.erm.li/io10

Visual instructions & Monitoring of production indicators (UC51-UC52)

Tulip is a web-based environment for creating applications on tablets and touch screens designed to digitalise workstations

- ✓ Visual 0-paper intervention procedures
- ✓ Supervision of machines by OPC-UA to retrieve production data
- ✓ Declarations of production stoppages and defects
- ✓ Suggestions for continuous improvement by operators
- ✓ 0-paper control thanks to connected tools (Scale...)
- ✓ Dashboards for monitoring production indicators (OEE, output, etc.)
- ✓ Easy to modify applications and create new ones (100% graphical)
- ✓ Implementation of lean manufacturing concepts (Andon, 5S...)



TULIP



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