Tulip IoT Connected Assembly, Quality Control and Sampling Workstation

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System description

The Tulip IoT **Connected Assembly, Quality Control and Sampling Station** (ERMAFLEX OR ERMASMART) consists of two main parts:

- ✓ The Tulip **gateway** (Tulip Edge IO) and all IoT devices connected to it.
- ✓ The **computer integrated** into the display, enabling the quality control application to be run through the Tulip Player.

The unit guides the user step-by-step through the inspection of products from the ERMAFLEX (jars or bottles) or ERMASMART (small jars, large jars or wide jars) production line, or from another production line, according to the manufacturing order scanned using the station's barcode scanner. This station can be adapted to suit the user's needs, and can also be used as a guided assembly station.

Overview

The **Tulip Connected Assembly, Quality Control and IoT Sampling Workstation consists mainly of** :

- ✓ **Tulip Edge IO gateway**: to link the customer's Tulip instance with all the assembly station devices connected to it. It can also read data from these devices and send them back to the instance, depending on the application developed.
- ✓ **Signal glass:** to provide feedback to the operator, indicating whether conditions are favorable (green) or unfavorable (red).
- ✓ **Blue bins:** for parts awaiting assembly
- ✓ **Presence sensor:** A photoelectric detection sensor.
- ✓ **Barcode scanner:** automatically scans barcodes or QR codes, then transfers the data to the Tulip application
- ✓ **Connected scale:** to weigh products and send data to Tulip in real time.

Application on the Ermasmart line

PACKAGING PROCESS: the inspection will focus on the quality of clipping (height of clipped jar/vial) and weight.

ASSEMBLY process: the check will focus on the presence of all parts, the quality of the screwing (height of the housing) and the correct operation of the gearbox (no hard points).

If a hard spot is detected, the gearbox can be dismantled manually to check the internal components (planet diameter, etc.) using a caliper.

Reference

UC53: Tulip Connected Assembly, Quality Control and IoT Sampling Workstation

CAP CIP - Bac PRO PLP / MELEC / MSPC
BTS CRSA / Electrotechnics / MS
IUT - Universities - Engineering schools

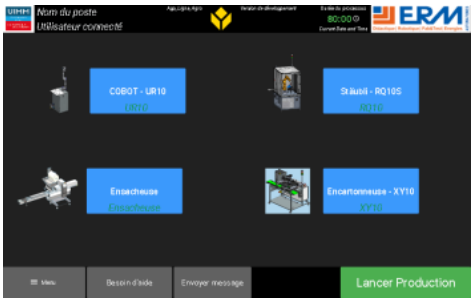
Main Themes

Industrial Maintenance
Production Management
Multi-technology Systems Design
Electrical Engineering and Automation

TULIP

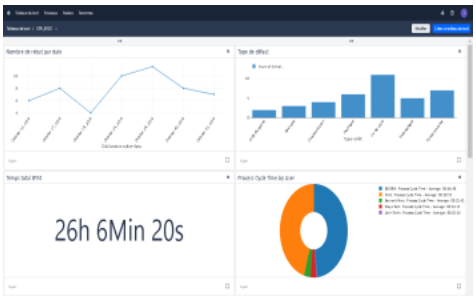
TULIP description

Tulip's main functions:
- ✓ Creation of digital procedures
- ✓ Data, PLC and machine monitoring
- ✓ Communication with ERP (Enterprise Resource Planning)
- ✓ Calculation and display of performance indicators
- ✓ Digitization of quality forms and audits



Highlights

- ✓ **Eliminate** paper documents
- ✓ **Easy to use**
- ✓ **Quick and easy** application programming
- ✓ Mathematical calculations to determine **production indicators**
- ✓ **Visualization** of all production-related data on a tablet or computer
- ✓ **Operator self-training** through visual work procedures
- ✓ **Flexibility** to modify applications and add steps as required
- ✓ **Customization of dashboards**: by machine or by production line or by product, etc.
- ✓ **Communication** with remote machines via the Kepware communication server.
- ✓ Possibility of using **devices connected** to workstations (scales, calipers, cameras, etc.).



ERM "Quality Control" application on TULIP

1- Launching the Tulip Player application

2- Opening a production order

3- Weight control:
Place the product on the **connected scale** and wait for the weight to be displayed on the screen. A message will appear indicating that the **weight conforms** to the thresholds defined in the production order by the user.

4- First check of product closure:
The operator must **visually inspect the product** and press the "Yes 'i or 'No" button. If the product is correctly closed, the LEDs above the blue containers and the sign will light up green. In the event of non-conformity, they will light up **red**.

5- Second product closure check:
This check is carried out using a **connected caliper**.

6- Applying stickers:
If the product conforms, the operator applies a **blue sticker** step by step. If not, **a red sticker**. To do this, each time, the operator takes the sticker below the **LEDs that will light up**.

7- Recording results