

The Box to Optimize any Machine

inPLANTA, with its more than 15 years of experience developing M.E.S. (Manufacturing Execution System), shows you the new inBOX

This new hardware and software package allows you, in the simplest way, to know some Key Performance Indicators to monitor, analyze and optimize any equipment in your production process.

This information will be useful for production and maintenance staff

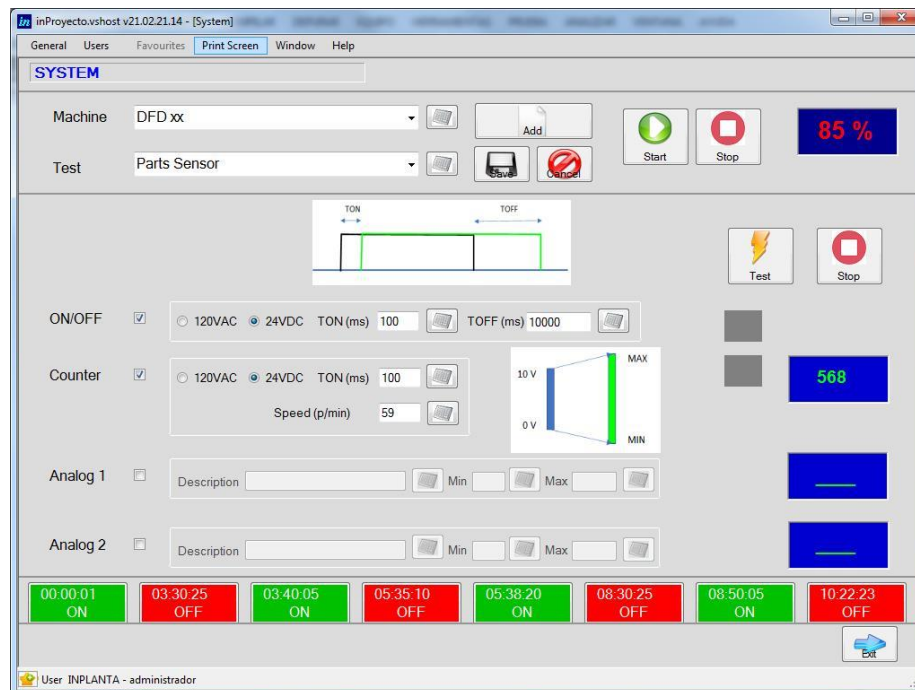
All the information gathered by the system can be exported to CSV/Excel files.



Architecture

The box has the capacity to register 2 digital inputs (230 VAC or 24 VDC). In the Professional version it has 2 extra analogue inputs (0-10 V or 4-20 mA).

The box has an 8,4" TFT Display where the user can configure the signals.



The first Digital Input will be used to received the ON/OFF of the equipment (if you are using a parts sensor, the system will allow you to configure the TOFF to filter the regular gap between parts)

The second Digital Input will be used to count parts (configuring the TON time you can filter to avoid any bad readings). The theoretical speed of the machine can be configured.

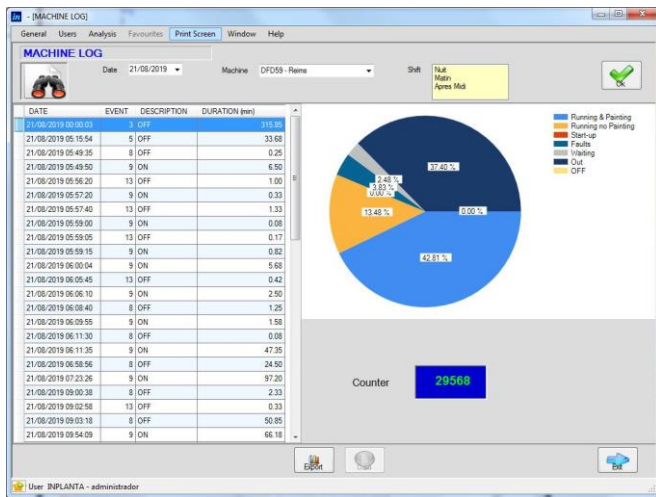
The system will record the values of the scaled analogue information every 5 seconds.

The box is designated to be used in different equipment, with different configurations. Once the box is configured the user can Start the monitorization process.

The screen will show the actual values of the signals, the performance as the quotient between the ON time and the ON+OFF time for the current day.

At the bottom of the screen, you can see the Event Panel with the time of last 8 status changes of the machine.

Analysis



For the day selected the system shows all the changes of the ON/OFF Digital Input and duration (typical log).

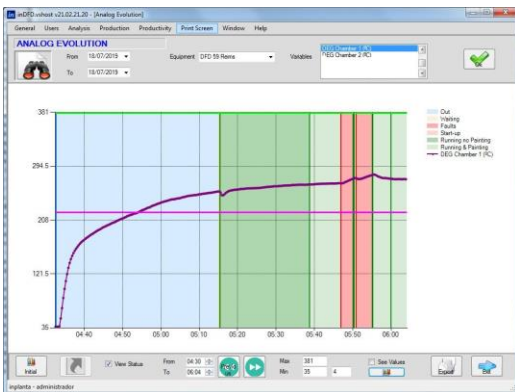
This information could be read using a pie chart. Also, the number of parts detected is showed.

$$\text{Performance (\%)} = \frac{\text{Time ON}}{\text{Time ON} + \text{Time OFF}}$$

$$\text{Speed Loss (\%)} = \frac{\text{Actual Parts}}{\text{Time ON} \times \text{Speed Theoretical}}$$

The Export Button allows to save the data in CSV format to an external drive.

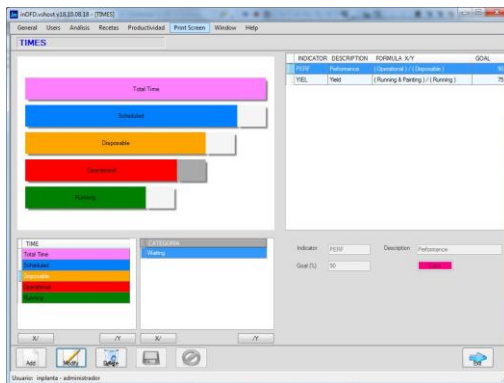
Analog Trend (Professional Version)



In the selected period of time the system shows the evolution of the Analog Inputs.

This information can be combined with the state of the machine to improve the understanding.

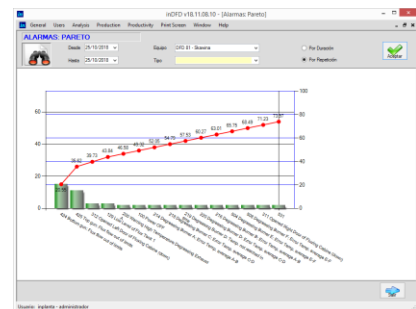
Key Performance Indicators (KPIs) (Full Version)



The system allows to configure different downtime causes related with a Category of the Time Model.

The operator can choose the cause of the stop in the System Screen, pressing each button of the Events Panel.

With this functionality the system provides a Pareto of downtime causes.



More KPI's can be configured and queried in accumulative or evolution through the time.

$$\text{Availability (\%)} = \frac{\text{Operational Time}}{\text{Disposable Time}}$$

$$\text{Speed Loss} \times \text{Performance} \times \text{Availability}$$

Versioning

- **Lite:** the system uses 2 digital inputs.
- **Professional:** the system uses digital and analogue inputs.
- **Full:** Professional + The operator can specify the downtime causes.