KiL Yhtiöt Oy
ENGINEERING

Fluentor
Intelligent Solutions

KiL-V3m Virtual machine monitoring and maintenance

Making monitoring easy

fluid HOUSE

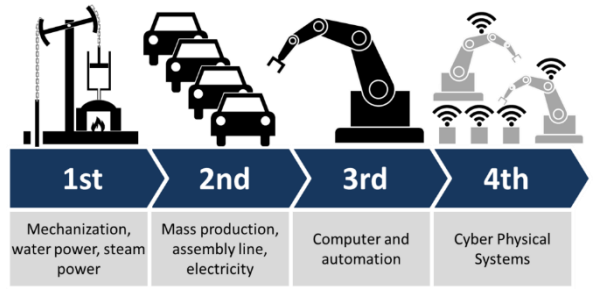
Making monitoring easy with IIOT

KiL-V3m Framework is combination of cloud based monitoring and data storage system with multiple stand-alone portable and remote automation and emebedded solutions to enable easy and reliable monitoring.

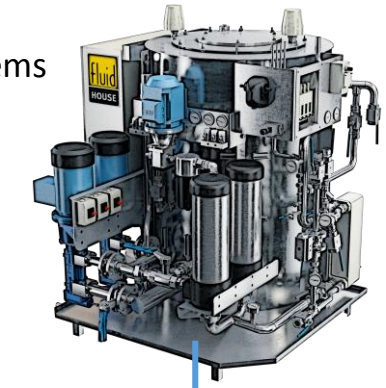
Based on Industry 4.0 / IIOT Service oriented Archetecture.

System can be Summerised using following :

- Any Context - Monitoring, Preemptive Maintainance, Control ,etc..
- Any Time - Always ON monitoring or time based monitoring
- Any place - Connectivity types of 3G , WIFI
- Any Service / Business Types - Industry type indipenedent
- Any Device - Platform Indipenedent



Lubricatiuon systems and energy



Electrostatic Oil cleaning

Monitoring Framework local / cloud

Portable/remote oil filtering and cleaning systems

V3m - Basic Architectue

Reconfigurable - V3m is created to provide a user based reconfigurable virtual control screen, making it possible for each user to maintain a different screen contents as per requirement.

Admin and I/O Based Access - The administrator provides input or output access to the user according to requirement and access levels. Then the user can select which all inputs or outputs he would like to place in control screen.

Widgets - When adding the inputs or outputs the user can select widget type to visualize the data such as digital inputs and outputs, meter gauges and line chart

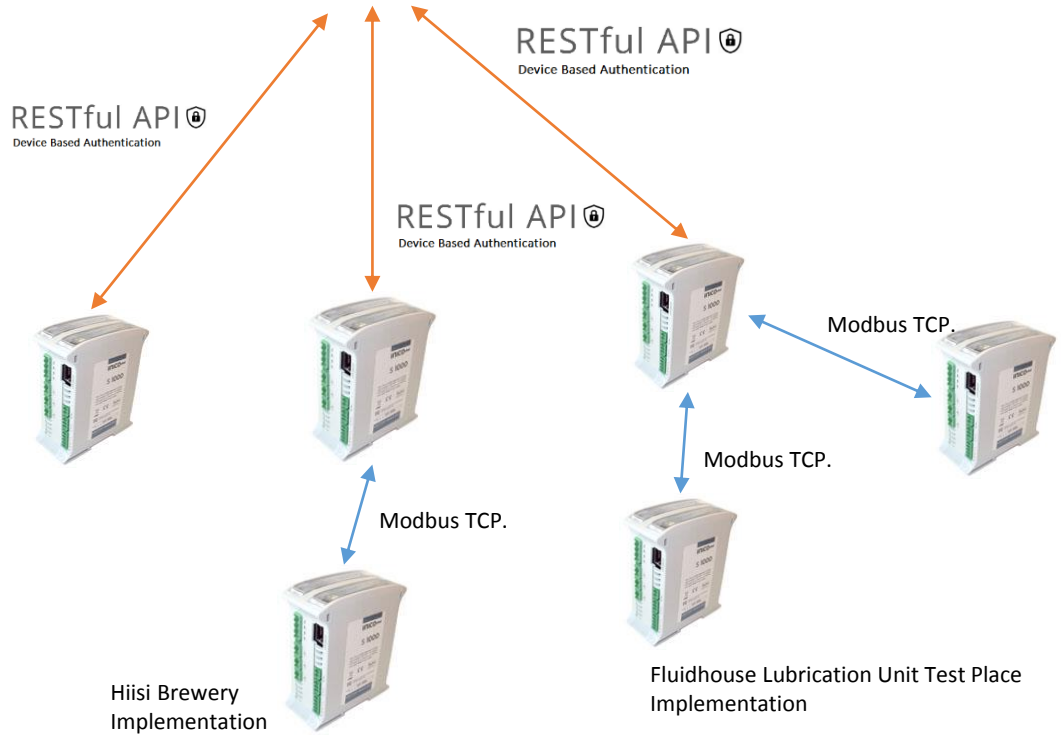
Re-orderable - Once the user adds the widget, the position of the widget can be changed or reordered by dragging and dropping into positon of choice.

OS/Device Independent - The screen is also reactive for resizing the window or using devices with different screen resolutions such as tablets and mobile phones.

Custom Screen - Customer requirement based simple Non-configurable screen .

Report Generator - Customized report with multiple export formats support.

Histogram – Trend plot with date selection and multiple I/o selection for comparative study.



Field / Factory Floor Communication

Modbus TCP / Modbus RTU or any legacy protocol

The main communication protocol used to communicate between the controllers. Modbus is a PLC serial communications protocol originally published by Modicon (now Schneider Electric).

Support for communication between other Field Protocols like **Profibus DP** or **EtherCAT** can also created based on special cases or customer requirements.

RESTful API
Device Based Authentication

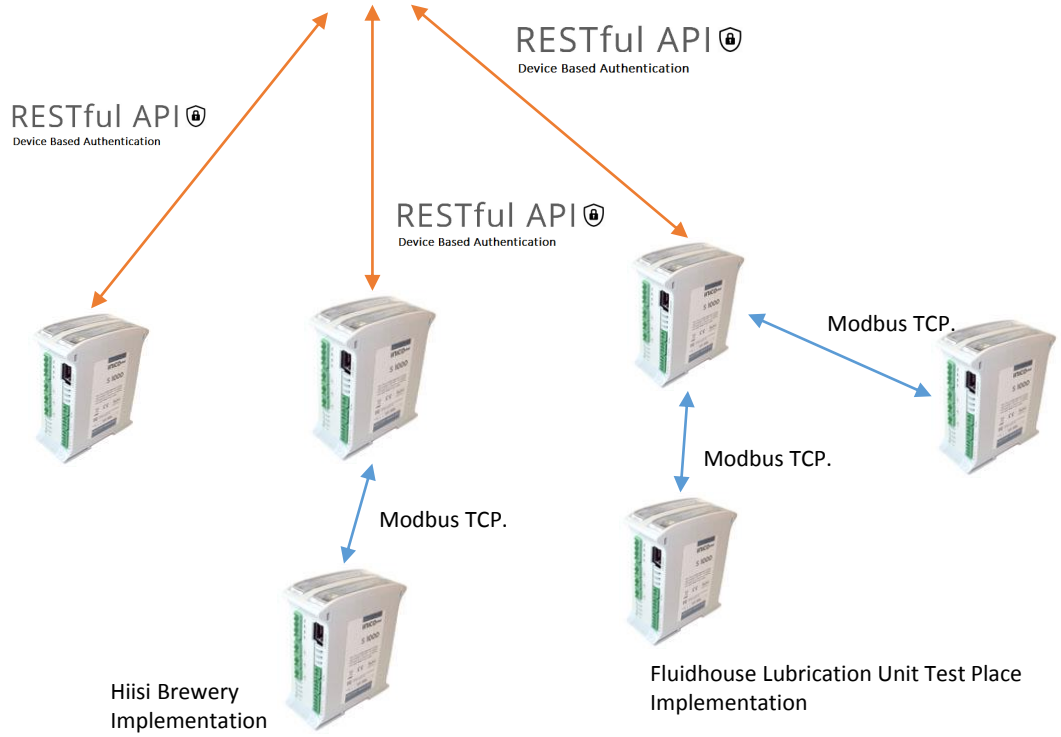
Or MQTT

Representational state transfer (**REST**) or **RESTful** web services is an architecture used to create interoperable light weight communication between devices over internet. It runs over HTTP (Hypertext Transfer Protocol).

REST is often used in mobile applications, social networking Web sites, and automated business processes. And also one of the main Data Protocol in Internet of Things(IoT) devices and applications.

In our Restful API every communication need an API key Pair(64 bit Device Secret Key + Device ID) which have been generated by V3m before registering the device I/O's. So REST each message is validated using the I/O Channel Name , device name and a 64 bit secret key .

Virtual private network (**VPN**) **–** VPN connections are also available for customers that require more secure connection.



V3m – Industrial Controller

A new generation of automation Controller. In addition of performing all the typical I/O processing that is expected of a modern RTU, such as local control and integration to SCADA systems, the KiL-Controller provides a real-time REST, MQTT and XML/SOAP interface that allows integrating industrial processes and assets into a Service-Oriented Architecture.

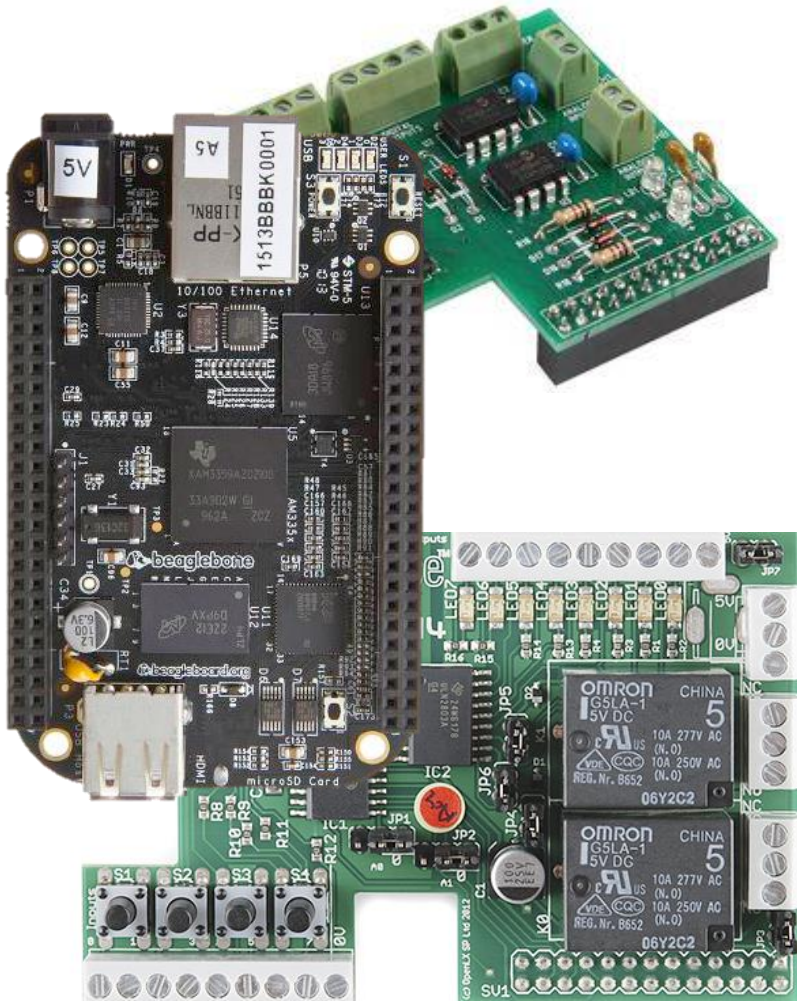
- Real-time control
- Digital and analog I/O
- Expansion I/O modules
- Embedded Web-based HMI
- Events and alarms reporting
- Web-based configuration
- Wireless support
- Enterprise integration using REST/MQTT/XML/SOAP
- 4G modem / WIFI / Ethernet

a) b)

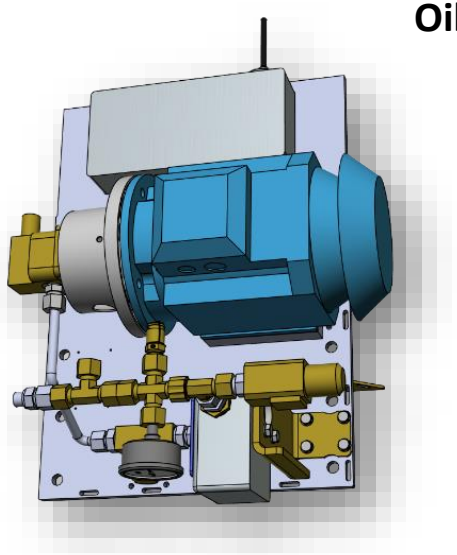
V3m – Embedded Monitoring Solution

Custom Embedded Monitoring - possibility

- Linux Based
- Digital and analog I/O
- Embedded Web-based HMI
- NODE-RED based Web configuration
- USB / WIFI / Ethernet



V3m – Hardware config and Sensors Now Available to Integration with V3m



Oil Condition monitoring

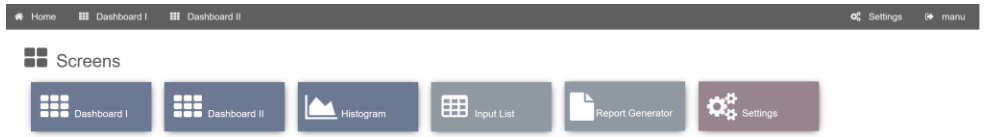
- Temperature Transmitter
- Aqua / Oil Humidity sensor (Can be combination sensor with Temperature also)
- Oil Particle Counter  (ATEX on demand)
- Oil Analyzers, they provide overall status of oil on comparison with the reference oil (unused Oil) 
- Status Indicators with local storage and HMI, is also available with cloud storage and HMI .

Oil Condition monitoring With Filtering

- Temperature Transmitter 
- Aqua / Oil Humidity sensor (Can be combination sensor with Temperature also)

- Oil Particle Counter 
- Oil Analyzers, they provide overall status of oil on comparison with the reference oil (unused Oil)
- State of Art 2 or 5 micron filter . 
- Status Indicators with local storage and HMI, is also available with cloud storage and HMI .

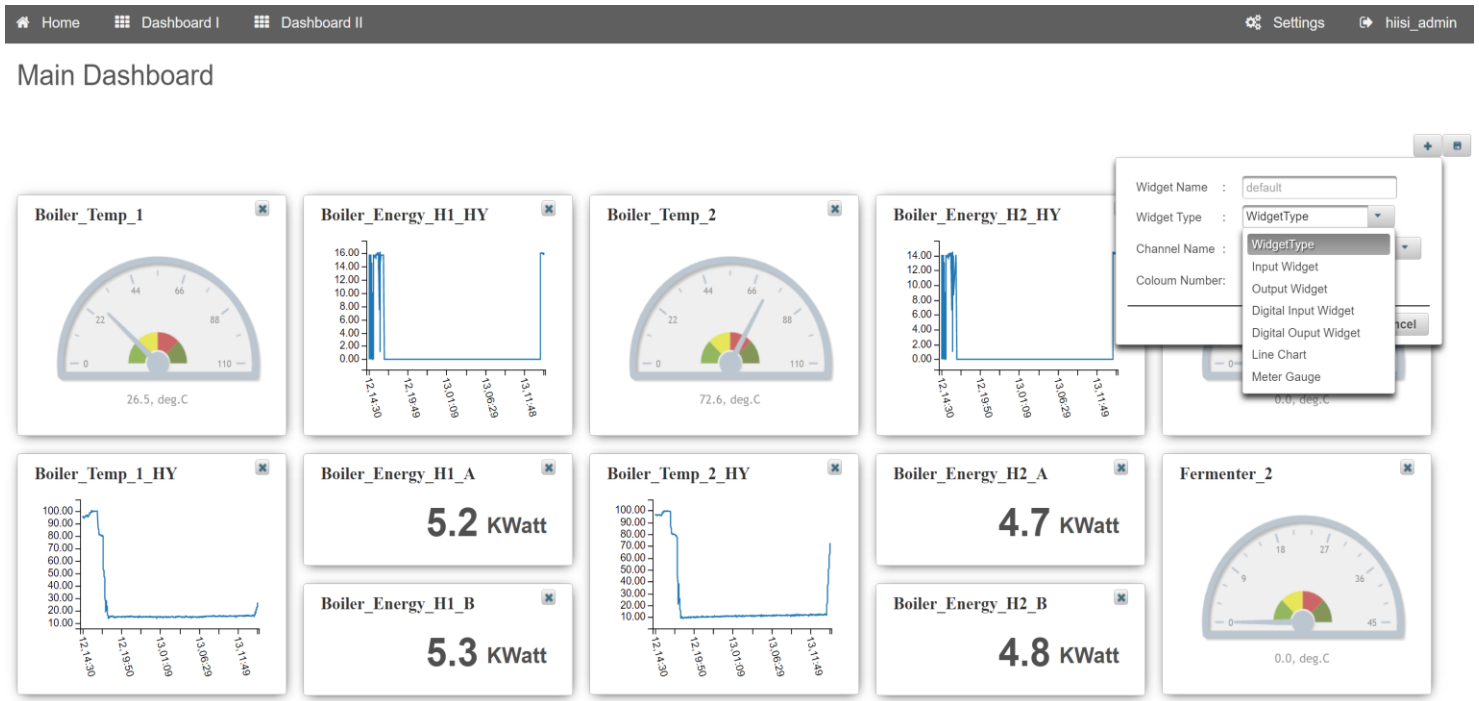
Dashboard



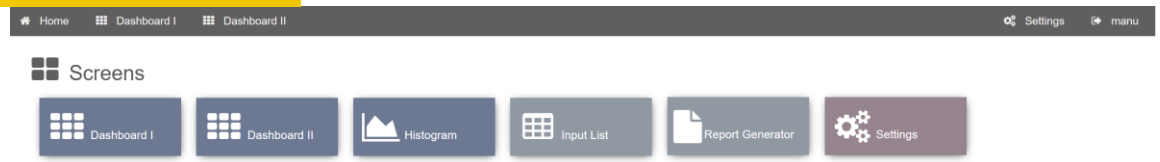
Provides user based custom monitoring screen .

Several Widgets available

- Input / Output - Basic value display
- Digital Input / Output – LED Display
- Meter Gauge
- Line Chart
- And possibility to add more customer based widgets



Histogram



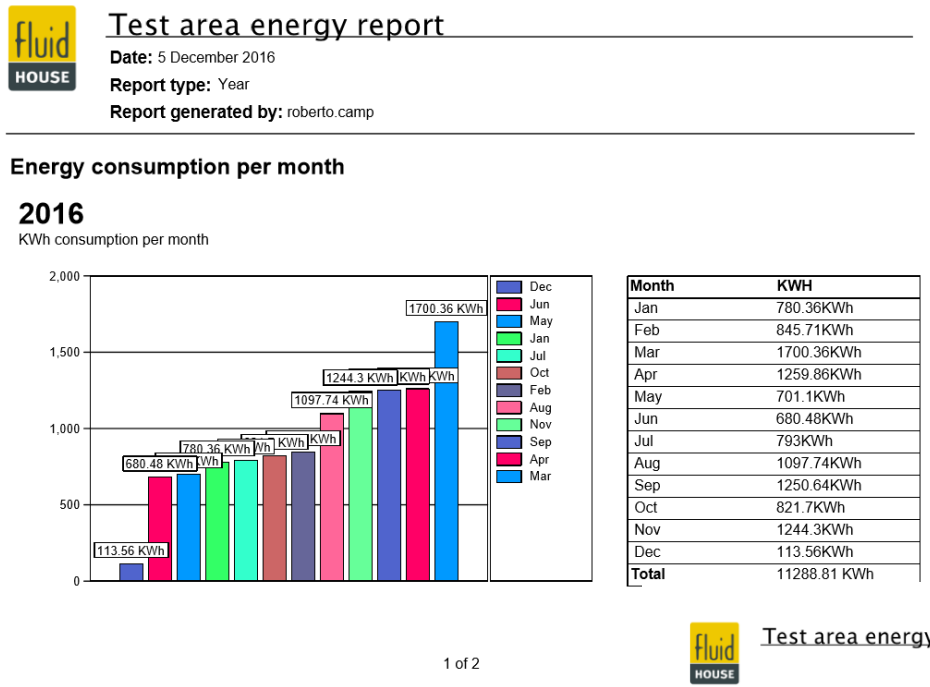
Dual Display

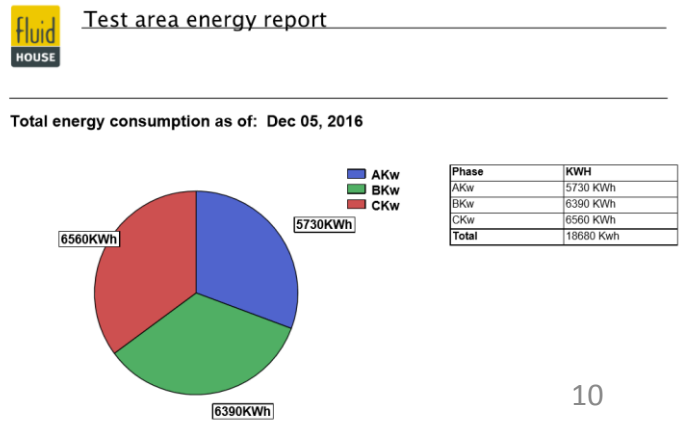
- complete Data set between two respective dates
- Average Data based on day month and year between two dates
- Multiple Channel Selection, Channel selection remains in memory during login section

Report Generator

Report generation

- Support for mainstream document formats like .docx, .xlsx, pdf
- Based on State-of-Art report platform
- Customized reports based on the requirements .





Refernce implimenmtation Fluidhouse Oy test Area Jyvaskyla

The Hydraulic power unit installed in Fluidhouse test Area Monitoring consists of different sensor types like energy meter, oil quality sensor, and temperature and saturation combination sensor. This sensor configuration resembles the sensors normally found in a portable oil cleaning system used to service of a hydraulic automation/lubrication system.

Sensor's used are :

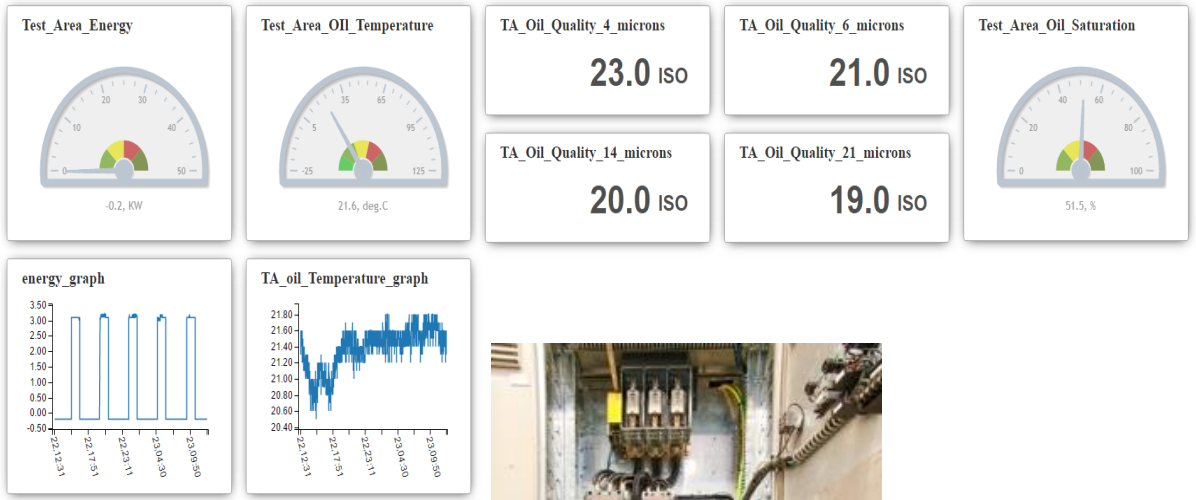
- Energy meter with Phase A,B, C coil-sensors
- Temperature & Saturation(Aqua) sensor
- Particle counter based on ISO4406

HMI type:

- In-bulid web HMI of the Controller

Controller type :

- Smart Industrial IOT hardware
- Oil heating
- Auto pump start to get Oil Quality data



a)

a)

b)

Refernce implementation Hiisi Brewery Jyvaskyla

This implementation consist of a main controller with two closed loop PID heating control's. Another controller monitors the fermenters separately. The sensor types are energy meter, temperature sensor and heaters for boilers and temperature sensor for fermenters.

Sensor's used are :

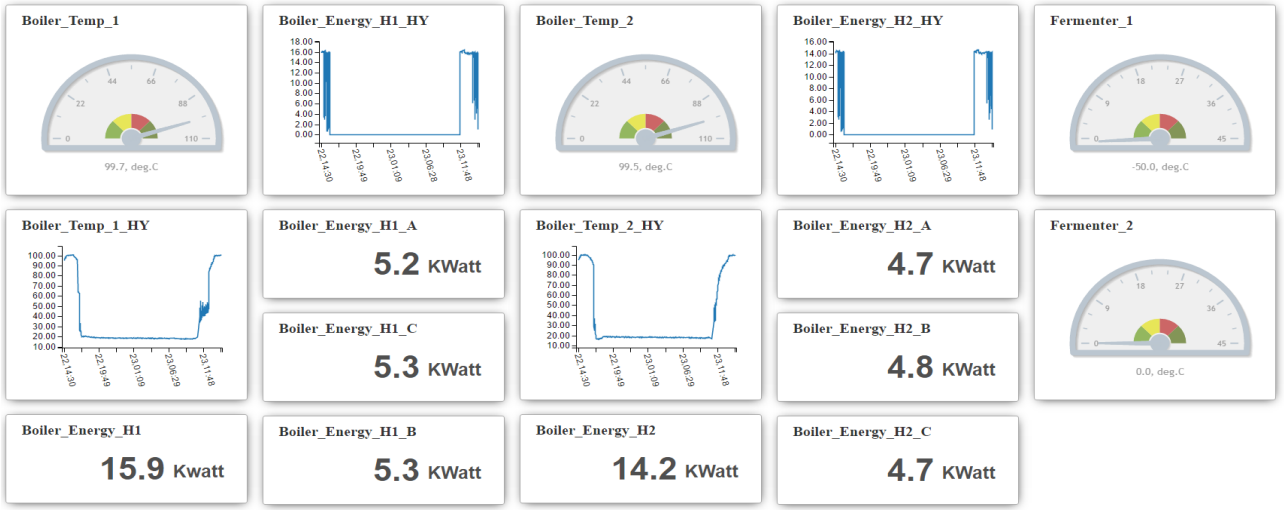
- Energy meter with Phase A,B, C coil-sensors
- Temperature sensor
- Heaters for boilers and fermenters.

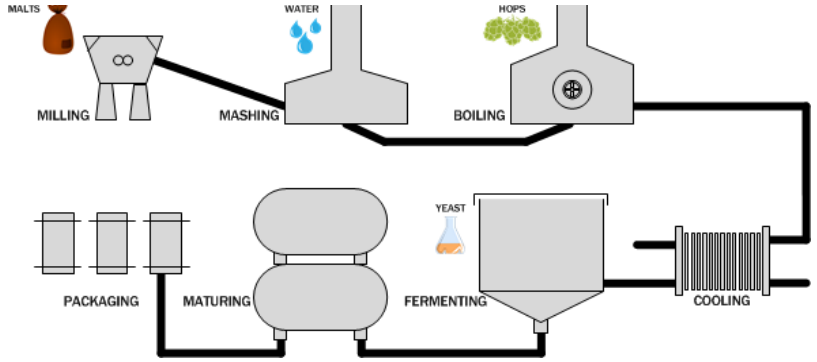
HMI type:

- Basic Touch Screen Control
- Modbus protocol

Controller type :

- Smart Industrial IOT hardware
- Two reddened PID control loops.





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Thank You

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