



MODULES and FEATURES OF KIO (Klemsan Internet Objects)



LIST OF KIO MODULES



Basic Module



Advanced Reporting Module



Advanced Monitoring Module



Invoice Management Module



Sensor and I/O Module



WEB SCADA Module



Mobile Application



Energy Efficiency (ISO 50001)
Module



Multi-conditional Status Module

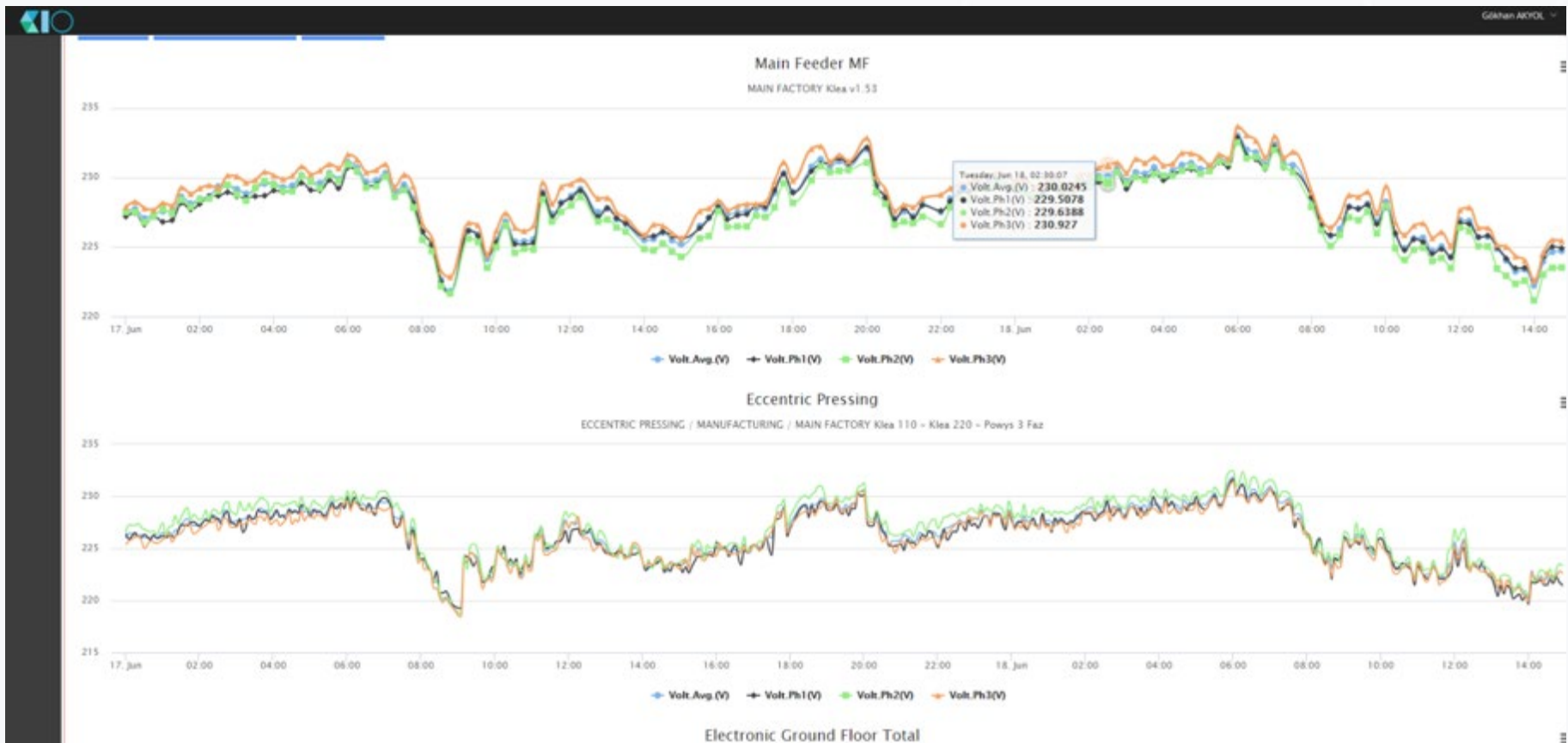


Data Transfer Module

Advanced Reporting Module



You can set up scheduled reports, make budgets and regression analysis, and get weather information with the advanced reporting module.



Advanced Monitoring Module



You can monitor energy efficiency, make unit cost calculation, pin devices from different locations on the map and make comparisons on organizational, device or device group basis.



Invoice Management Module



You can create invoices according to the invoice tariffs formed in the parametric structure, see the invoice amounts of the devices for different periods, and track charging of issued invoices. You can use this module in order to cut energy of the devices in case of unpaid bills.

| | |
|----------------------------|----------------------------|
| Subscriber Title: | Power Factor Controller MF |
| Description: | Power Factor Controller MF |
| Facility - Device | 34534534 - 34523434 |
| Invoice Tariff: | Elec. Single Time Term |
| Invoice Term: | Test |
| First Index Date: | 2/28/18 11:45 PM |
| Last Index Date: | 6/30/18 11:45 PM |
| Internal Index Multiplier: | 320 |
| Established / Contract | 100 kVA / 100 kW |

Klemsan®

ELECTRICITY BILL REPORT

Total Cost: 303.548,88 TL

| | First Index | Last Index | Multiplier | Consumption | Unit Price | Amount |
|-------------------|---------------|---------------|------------|-------------|------------|---------------|
| Active (kWh) | 4.304.727,000 | 5.293.841,000 | 1 | 989.114,000 | 0,201100 | 198.910,82 TL |
| T1 (kWh) | 0,000 | 0,000 | 1 | 0,000 | 0,000000 | 0,00 TL |
| T2 (kWh) | 0,000 | 0,000 | 1 | 0,000 | 0,000000 | 0,00 TL |
| T3 (kWh) | 0,000 | 0,000 | 1 | 0,000 | 0,000000 | 0,00 TL |
| Inductive (kVAh) | 179.437,312 | 221.889,453 | 1 | 42.452,141 | 0,000000 | 0,00 TL |
| Capacitive (kVAh) | 75.989,461 | 93.693,891 | 1 | 17.704,430 | 0,000000 | 0,00 TL |
| Active 2 (kWh) | 0,000 | 0,000 | 1 | 0,000 | 0,000000 | 0,00 TL |

Compensation Ratio:
Inductive Ratio (%): 4,29% (Limit: 20%)
Capacitive Ratio (%): 1,79% (Limit: 15%)

Average Consumption Info:
Consumption Amount: 8.107,492 kWh/Day
Consumption Cost: 2.488,11 TL/Day

Information:

Invoice Creation Time:
2018-07-26 12:17:05

| | | | |
|-------------------|-------------|----------|--------------|
| Distribution | 989.114,000 | 0,054954 | 54.355,77 TL |
| Retail | 989.114,000 | 0,000000 | 0,00 TL |
| Transmission Line | 989.114,000 | 0,000000 | 0,00 TL |

| | | |
|--------------------|------|-------------|
| Energy Fund(%) | 1,0% | 1.989,11 TL |
| TRT Share(%) | 0,0% | 0,00 TL |
| Consumption Tax(%) | 1,0% | 1.989,11 TL |

| | |
|----------------------|---------|
| Device Communication | 0,00 TL |
| Fixed Cost | 0,00 TL |

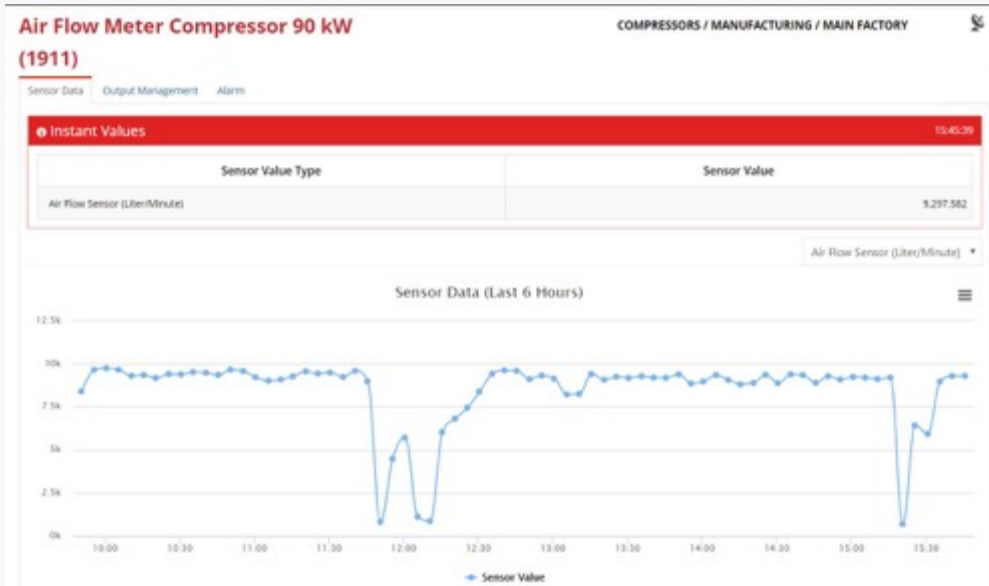
| | |
|------------------|---------------|
| Total Basis Cost | 257.244,81 TL |
| Tax Cost 18,0% | 46.304,07 TL |
| Total Cost | 303.548,88 TL |

Sensor and I/O Module



You can manage the sensor and remote manageable input / output units with this module and set an alarm for them. You can create values by applying four mathematical operations on the sensor data. You can also set alarms using these customized values.

Sensor Monitoring



Control of Input/Output Units

EASION 12 Input 12 Output (23456) ANKARA OFFICE

Sensor Data | Output Management | Alarm

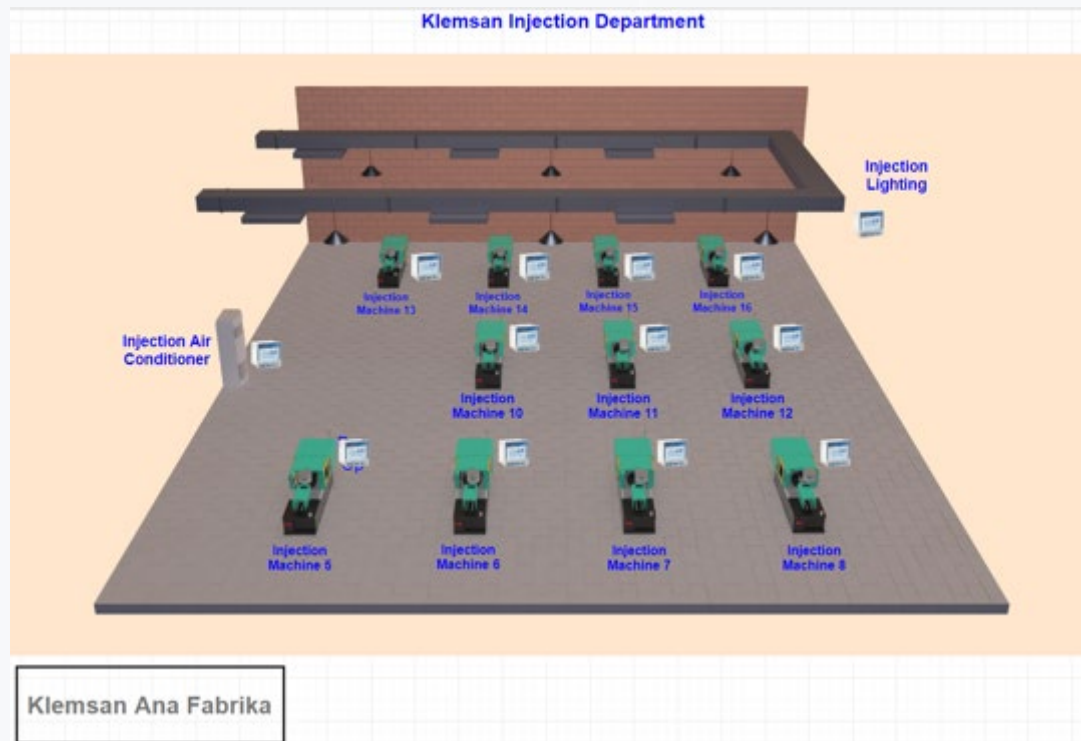
Instant Values 15:48:58

| Sensor Value Type | Sensor Value |
|-------------------|--|
| Digital Input 1 | <input type="checkbox"/> OFF |
| Digital Input 2 | <input checked="" type="checkbox"/> ON |
| Digital Input 3 | <input checked="" type="checkbox"/> ON |
| Digital Input 4 | <input type="checkbox"/> OFF |
| Digital Input 5 | <input checked="" type="checkbox"/> ON |
| Digital Input 6 | <input type="checkbox"/> OFF |
| Digital Input 7 | <input type="checkbox"/> OFF |
| Digital Input 8 | <input type="checkbox"/> OFF |
| Digital Input 9 | <input type="checkbox"/> OFF |
| Digital Input 10 | <input type="checkbox"/> OFF |
| Digital Input 11 | <input type="checkbox"/> OFF |

WEB SCADA Module (1)



SCADA system can be moved to the web environment, you can easily manage your devices over the web with SCADA logic. You can set an alarm for your devices and enrich your SCADA environment with various graphics. You can monitor the change in data instantaneously similar to SCADA system.



WEB SCADA Module (2)



When we apply OPC UA*, we have two benefits in factory automation side.

- If factory does not have SCADA system, but has other protocols (IEC-104, 101), we have to setup KepWare EX (protocol converter software for OPC UA) and then we start to obtain data from different protocols.
- If the factory has a SCADA system with OPC UA support, we get the data from SCADA system with OPC standard easily. It is important that SCADA system should support OPC UA.

(*) - **OPC Unified Architecture (OPC UA)** is a machine to machine communication protocol for industrial automation developed by the OPC Foundation. Distinguishing characteristics are:

- Focus on communicating with industrial equipment and systems for data collection and control
- Open - freely available
- Cross-platform - not tied to one operating system or programming language
- Service-oriented architecture (SOA)
- Inherent complexity - the specification consists of 1250 pages in 14 documents
- Robust security

Mobile Application



You can access your IoT devices via your smart phones or tablets instantly.



Energy Efficiency (ISO 50001) Module



You can control all points with the energy measurement plan and help the environmental management system with the carbon emission and TEP calculation. You can also view the status of energy consumption with the energy performance indicators.

The screenshot shows a web application interface for 'Carbon Release - TEP Calculations'. The top navigation bar includes a logo and the user name 'Gökhan AKYOL'. The main content area has a breadcrumb trail: 'Main Page > Energy Efficiency > Calculation'. A red header bar labeled 'Calculations' is prominent. Below it, there are input fields for 'Calculation Term' (set to 'February 28 Days'), 'Description' (set to 'February 28 Days'), 'Start Date' (01 February 2019), and 'End Date' (01 March 2019). A 'Delete Term' button is next to the term field. Two expandable sections, 'Device Calculations' and 'Unmeasurable Source Calculations', are shown with plus signs. At the bottom, a summary row displays 'Total CO2 Release' as 39.903 Ton/CO2, 'Total Tree Count' as 107 Piece, and 'Total TEP' as 7.5790 TEP. Action buttons for 'Calculate', 'Save', and 'Report' are located at the bottom of the form.

Multi-Conditional Status Module



It is known as advanced alarm management system. Various logical operators are applied to analog, digital and derived values to take actions such as cutting-off energy, opening relay or closing the valve. If alarms occur, users are notified.

Multi Conditional Status

General Info

☒ Is Active?

Description*
Compressor Nearing Stop / Compressor Stopped

Conditional ID
a

Multi Conditional Status Formula*
{j}{k}

☒ Alarm creation status

Threshold Time
1 Minute(s)

Conditional Operator
{

Alarm Level*
Critical

Analog Conditions

| Conditional ID | Device | Label | Control Area | Minimum | Maximum | |
|----------------|--------|-------|--------------|---------|---------|--|
| a | | | Out of Range | 0.0000 | 0.0000 | |

Digital Conditions

| Conditional ID | Device | Label | Input Bit Number | Normal Value | |
|----------------|------------------------------|--------------------|------------------|--------------|--|
| j | Air Compressor Control Panel | Compressor Warning | 6 Bit | Off(0) | |
| k | Air Compressor Control Panel | Compressor Warning | 7 Bit | Off(0) | |
| l | | | Bit 1 | On(1) | |

Data Transfer Module



With Data Transfer Module, measured values and parameters in Excel or similar formata are transferred to the system and monitored. The data in Excel can be either hourly values, index values or device parameters.

A screenshot of a web application interface for the 'Data Import / Export Module'. The interface has a dark sidebar on the left with icons for navigation. The main content area has a header 'Data Import / Export Module' and a breadcrumb trail 'Main Page > Definition > Data Import/Export'. Below this is a green bar with the title 'Data Import/Export' and three tabs: 'Hourly Data Import', 'Index Data Import', and 'Device Data Import'. The 'Device Data Import' tab is active. The main area contains a text prompt 'Click to Download Hourly Device Excel Data Pattern'. Below this, there is a 'Device Tree' label, a 'Click to select' button, a text input field, a 'Select file' button, and an 'Override values' checkbox. At the bottom center is a green 'Save' button with a checkmark icon.

FEATURES OF KIO

All features are included in Basic Module unless any specific module is explicitly mentioned



Real-Time Monitoring:

Device parameters can be monitored on organizational or graphical basis. Reactive energy monitoring can be done.



Alarm Management: You can see alarm status, filter alarms and even check alarms occurred in the past. Logs of both system and device alarms are kept. You can also classify alarm levels as warning, critical or dangerous.



Easy-to-use Dashboards: You can customize dashboard screens according to your needs, so you can directly access the most critical data when you log in to the system.



Standard Reports : You can create customized report formats or use predefined automatic reports. (Instant Data, Index and Energy Data, Periodic Energy Consumption, Demand Data, Invoice)



Web Based System: Users can gain access the system regardless of the platform, simply through a standard web browser.



Advanced Database: Advanced database features enable detailed device monitoring, parameter logging, analyzing and reporting.



Time Zone Support: Different time zones can be defined for the devices located at different regions.



Brand Independent Integration: Klemsan or other branded products can be added to the system and energy consumption of all products in the system can be monitored.



Security: HTTPS support, user passwords, functions and profile based user authorization ensure a high level of system safety.

FEATURES OF KIO



Load Share: Number of devices that communicate is infinite with load share a single server supports more than 2000 devices.



Single Line Scheme (Mimic Diagram): Single line scheme can be designed through web-based system. Features similar to SCADA system can be defined (available only with WEB SCADA Module)



Cost Analysis: Budget calculation according to various energy sources can be done in order to supply supportive data for financial department. Target and actual costs can be compared. (available only with Advanced Reporting Module)



Multi-conditional Status: Logical operations on analog, digital and derived values in the system are performed and various controls are provided. (available only with Multi-conditional Status Module)



Map Screen: Enables over-the-map monitoring of devices located at different facilities or regions by simply pinning devices on the map. (available only with Advanced Monitoring Module)



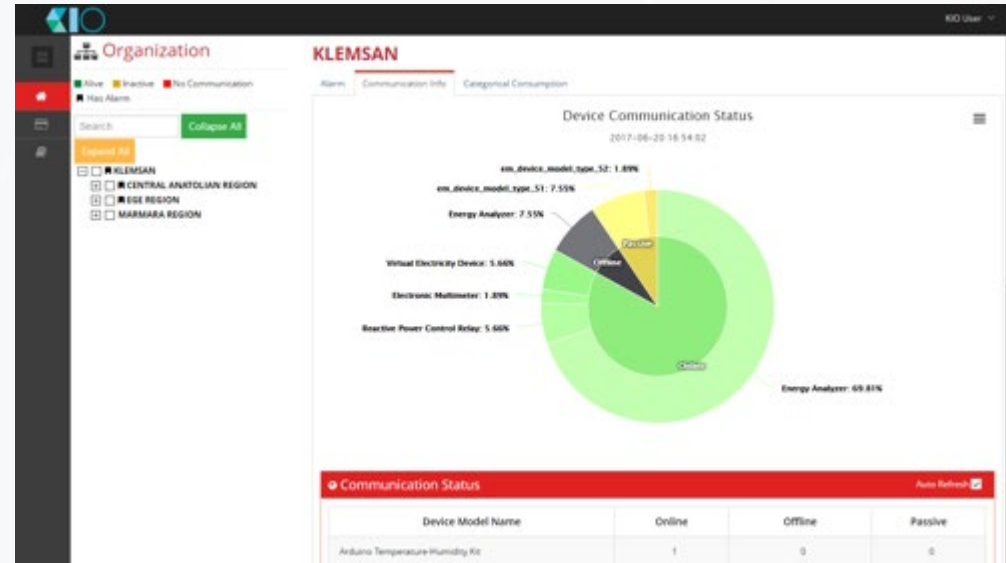
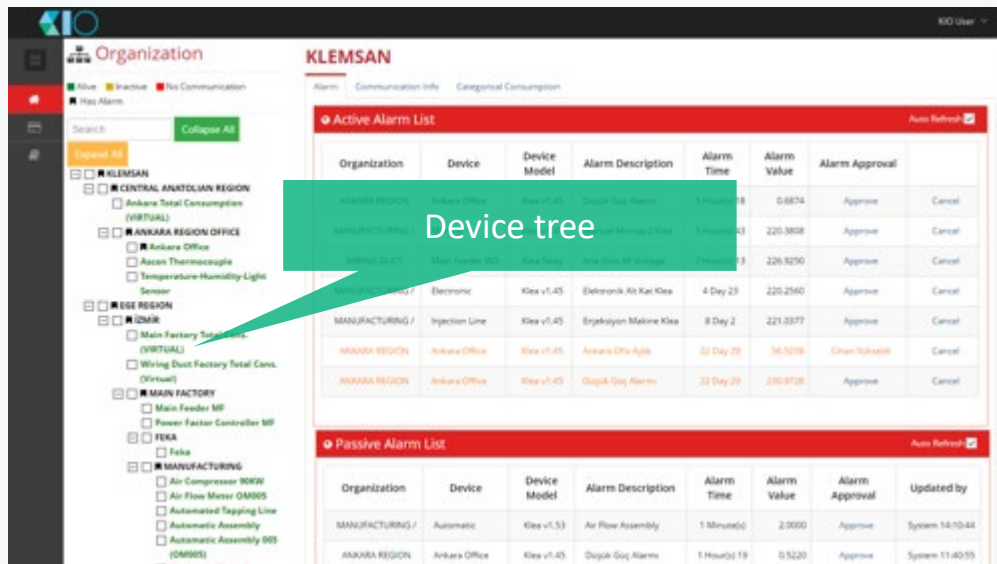
SaaS or On-Premises Solution: SaaS (Software as a Service) is optionally provided for anyone who does not want to invest in server or infrastructure.

FEATURES OF KIO

Real-Time Monitoring:



Organizational Monitoring: You can perform energy analysis in organizational level, generate charts and graphs, zoom in devices for more detailed data analysis.

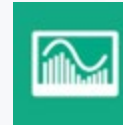
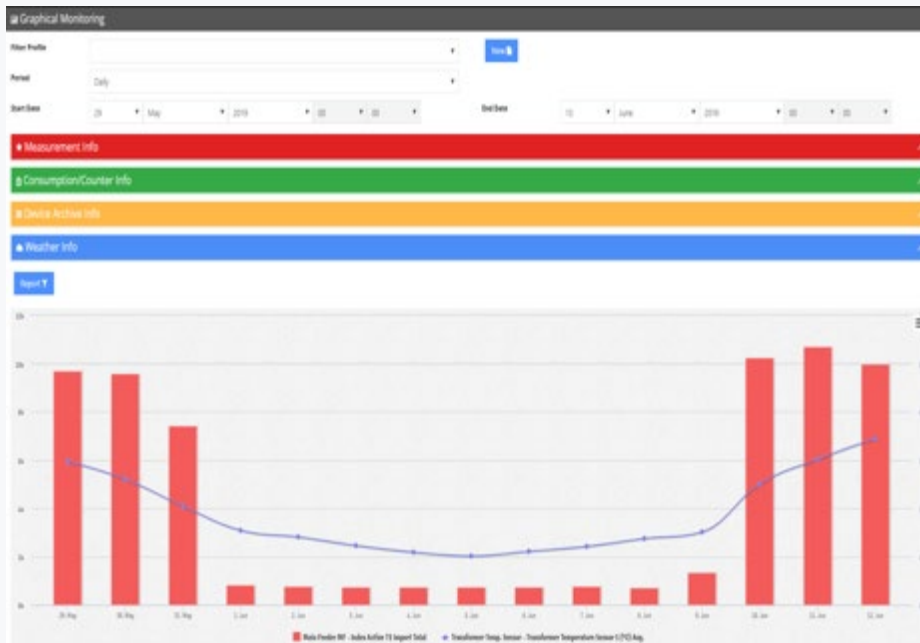


FEATURES OF KIO

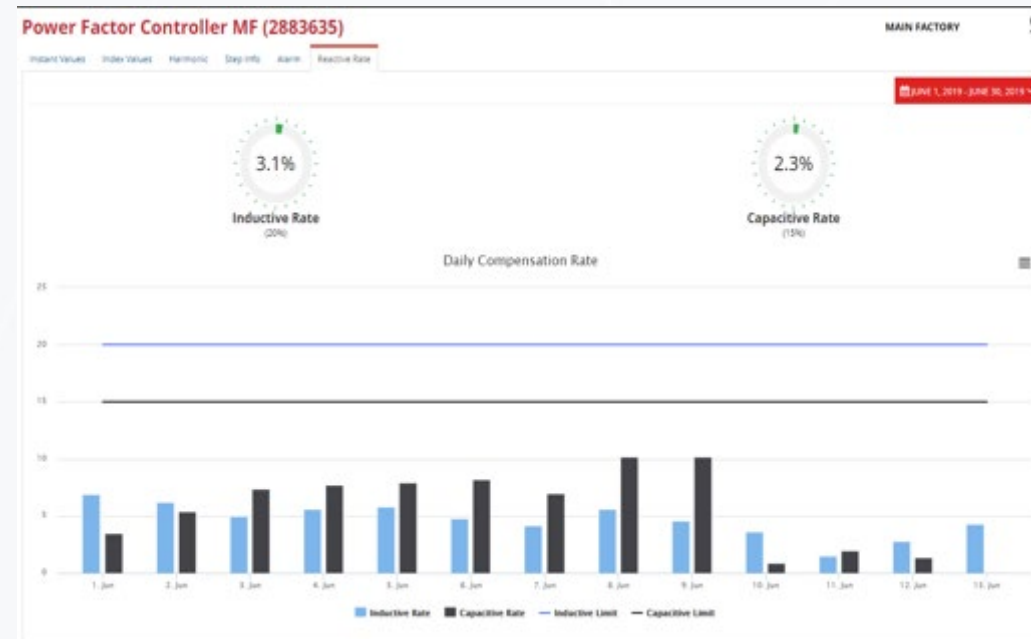
Real-Time Monitoring:



Graphical Monitoring:



Reactive Energy Monitoring:



FEATURES OF KIO



Alarm Management: You can see alarm status, filter alarms and even check alarms occurred in the past. Logs of both system and device alarms are kept. You can also classify alarm levels as warning, critical or dangerous.

Alarms Active Alarms Approved Alarms Passive Alarms

Device * Selected Devices

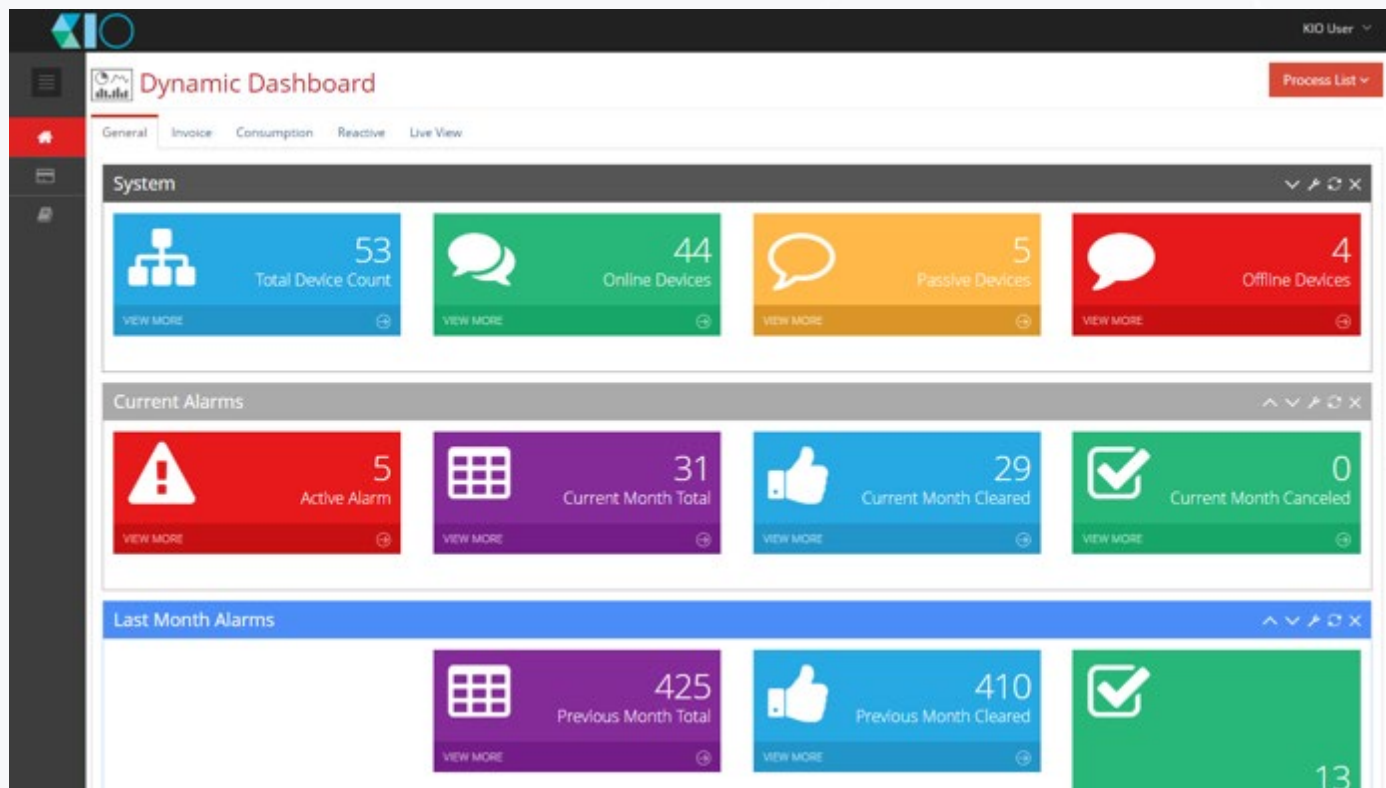
Alarm Level * All Filter

Alarm Type Distribution (%) 71.4% Warning 28.6% Critical

| Device | Organization | Alarm Description | Alarm Value | Create Date | Alarm Time | |
|---------------------------------------|---|---|-------------|---------------------|------------------------------|---------|
| Power Factor Controller MF | MAIN FACTORY / İZMİR / EGE REGION | deneme | 229.5598 | 2017-05-30 15:10:12 | 18 Hour(s) 26 Minute(s) | Approve |
| Main Feeder WD | WIRING DUCT FACTORY / İZMİR / EGE REGION | Ana Giriş Kf Voltage AVG. Out Of Limits(220-225) | 231.8905 | 2017-05-29 16:30:52 | 1 Day 17 Hour(s) 6 Minute(s) | Approve |
| Manual Assembly Department (2nd Seg.) | MANUFACTURING / MAIN FACTORY / İZMİR / EGE REGION | Manuel Montaj-2 Klea v1.45 INS VOLTAGE Out of Range 210-225V | 225.3524 | 2017-05-29 16:30:36 | 1 Day 17 Hour(s) 6 Minute(s) | Approve |
| Injection Line | MANUFACTURING / MAIN FACTORY / İZMİR / EGE REGION | Enjeksiyon Makine Klea v1.45 INS VOLTAGE Out of Range 210-225V | 225.4982 | 2017-05-29 16:30:34 | 1 Day 17 Hour(s) 6 Minute(s) | Approve |
| Electronic Ground Floor | MANUFACTURING / MAIN FACTORY / İZMİR / EGE REGION | Elektronik Alt Kat Klea v1.45 INS VOLTAGE Out of Range 210-225V | 225.1089 | 2017-05-29 16:30:32 | 1 Day 17 Hour(s) 6 Minute(s) | Approve |
| Ankara Office | ANKARA REGION OFFICE / CENTRAL ANATOLIAN REGION | Ankara Ofis Aylık Reaktif Kapasitif | 56.5258 | 2017-05-29 16:30:11 | 1 Day 17 Hour(s) 6 Minute(s) | Approve |

FEATURES OF KIO

Easy-to-use Dashboards: You can customize dashboard screens according to your needs, so you can directly access the most critical data when you log in to the system.



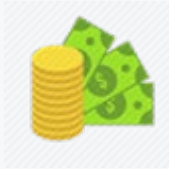
FEATURES OF KIO



Standard Reports: You can create customized report formats or use predefined automatic reports. (Instant Data, Index and Energy Data, Periodic Energy Consumption, Demand Data, Invoice)

| Description | Organization | Device Model | Date Time | Act.En.T1Imp.(kWh) |
|----------------|--------------|--------------|------------|--------------------|
| Main Feeder MF | MAIN FACTORY | Klea v1.53 | 2019-06-01 | 844.6280 |
| Main Feeder MF | MAIN FACTORY | Klea v1.53 | 2019-06-02 | 771.0738 |
| Main Feeder MF | MAIN FACTORY | Klea v1.53 | 2019-06-03 | 759.9084 |
| Main Feeder MF | MAIN FACTORY | Klea v1.53 | 2019-06-04 | 757.8997 |
| Main Feeder MF | MAIN FACTORY | Klea v1.53 | 2019-06-05 | 752.4323 |
| Main Feeder MF | MAIN FACTORY | Klea v1.53 | 2019-06-06 | 749.0762 |
| Main Feeder MF | MAIN FACTORY | Klea v1.53 | 2019-06-07 | 763.2966 |
| Main Feeder MF | MAIN FACTORY | Klea v1.53 | 2019-06-08 | 728.6181 |
| Main Feeder MF | MAIN FACTORY | Klea v1.53 | 2019-06-09 | 1,346.2490 |
| Main Feeder MF | MAIN FACTORY | Klea v1.53 | 2019-06-10 | 10,249.5488 |
| Main Feeder MF | MAIN FACTORY | Klea v1.53 | 2019-06-11 | 10,706.9814 |
| Main Feeder MF | MAIN FACTORY | Klea v1.53 | 2019-06-12 | 9,971.5945 |

FEATURES OF KIO



Cost Analysis: Budget calculation according to various energy sources can be done in order to supply supportive data for financial department. Target and actual costs can be compared. (available only with Advanced Reporting Module)

Budget Management

Organization

Main Feeder MF

Consumption Target

Nisan Tüketim Hedefi

Report

Print List Of

Print All Record

20

records per page

| | Description | Target Consumption | Target Consumption Price | Consumption | Consumption Price | Month End Consumption Trend | Month End Consumption Price Trend | Deflection |
|--|----------------|--------------------|--------------------------|-----------------|-------------------|-----------------------------|-----------------------------------|------------|
| | Main Feeder MF | 125,000,000 kWh | 10,432.00 TL | 193,680,910 kWh | 16,157.16 TL | 193,680,910 kWh | 16,157.16 TL | 54.88 |

Device

Main Feeder MF

ELECTRIC CONSUMPTION TABLE

SerialNumber: 3080217

Facility Nr: 544145544

| | |
|--------------------------------|----------------|
| Monthly Consumption Target | 125.000,00 kWh |
| Daily Consumption Target | 4.166,67 kWh |
| Monthly Consumption Target | 10.432,00 TL |
| Daily Consumption Target Price | 347,73 TL |

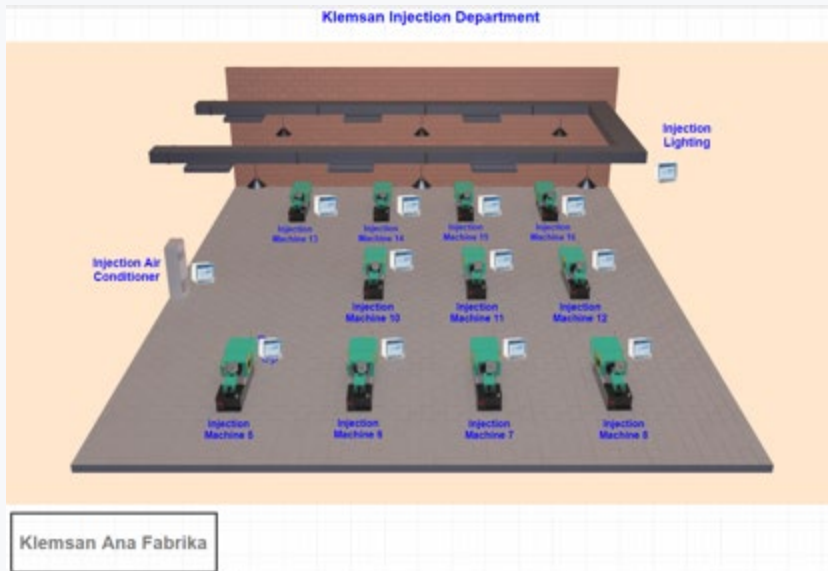
| | | | |
|------------|----------------|----------------|----------------|
| Unit Price | | Private Supply | Türkiye(Tedas) |
| | Active Energy: | 0.000000 | 0.000000 |
| | Distribution: | 0,083456 | 0,083456 |
| | Reactive | 0,264700 | 0,264700 |

| Date | Active Day | Capacitive | Inductive | Consumption | Consumption Cost |
|------------|------------|------------|-----------|-------------|------------------|
| 01/04/2019 | 1 | 48,596 | 315,070 | 8.072,58 | 673,71 |
| 02/04/2019 | 2 | 174,287 | 195,297 | 8.930,22 | 745,28 |
| 03/04/2019 | 3 | 166,570 | 222,857 | 8.991,41 | 750,39 |
| 04/04/2019 | 4 | 243,882 | 174,685 | 8.371,42 | 698,65 |
| 05/04/2019 | 5 | 79,306 | 304,178 | 8.137,26 | 679,10 |
| 06/04/2019 | 6 | 77,770 | 225,219 | 5.712,78 | 476,77 |
| 07/04/2019 | 7 | 60,696 | 90,458 | 1.355,36 | 113,11 |
| 08/04/2019 | 8 | 126,397 | 251,440 | 7.744,61 | 646,33 |
| 09/04/2019 | 9 | 217,238 | 196,569 | 8.866,69 | 739,98 |
| 10/04/2019 | 10 | 186,966 | 356,299 | 9.058,71 | 756,00 |
| 11/04/2019 | 11 | 56,250 | 301,552 | 9.230,02 | 770,30 |
| 12/04/2019 | 12 | 271,186 | 237,444 | 9.582,03 | 799,68 |
| 13/04/2019 | 13 | 144,340 | 184,620 | 6.054,12 | 505,25 |
| 14/04/2019 | 14 | 76,089 | 44,967 | 1.271,82 | 106,14 |
| 15/04/2019 | 15 | 237,664 | 182,142 | 7.447,62 | 621,55 |
| 16/04/2019 | 16 | 151,155 | 243,651 | 7.980,75 | 666,04 |
| 17/04/2019 | 17 | 79,740 | 329,911 | 7.634,19 | 637,12 |
| 18/04/2019 | 18 | 56,251 | 281,383 | 7.915,32 | 660,58 |
| 19/04/2019 | 19 | 112,553 | 268,869 | 8.444,83 | 704,77 |
| 20/04/2019 | 20 | 144,478 | 137,552 | 5.994,16 | 500,25 |
| 21/04/2019 | 21 | 19,395 | 87,425 | 719,45 | 60,04 |

FEATURES OF KIO



Single Line Scheme (Mimic Diagram): Single line scheme can be designed through web-based system. Features similar to SCADA system can be defined (available only with WEB SCADA Module)



- Element creation can be done like in SCADA (from Mimic Element page)
- Similar to SCADA, both digital and analog commands can be send to the site / shop floor via the mimic diagram.
- Single Line Schemes can be drawn as in SCADA.
- It can be drawn from an automation process and factory mimic diagram like in local SCADA solutions.

FEATURES OF KIO



SaaS or On-Premises Solution: SaaS (Software as a Service) is optionally provided for anyone who does not want to invest in server or infrastructure. Monitoring your devices through our KIO SaaS server is possible.

The traditional model, known as on-premises solution, consists of downloading or installing KIO platform on your own server. This provides you with full control and protection over your data.

On the other hand, KIO SaaS server will provide advantages in terms of cost, time, ease of use, and maintenance. SaaS option is especially recommended for monitoring reactive rates.

FEATURES OF KIO



Brand Independent Integration: Klemsan or other branded products can be added to the system and energy consumption of all products in the system can be monitored.

Below 3rd party devices can be perfectly integrated with KIO:

- Temperature Sensor,
- Electricity, Water and Heat Meter,
- Humidity Sensor,
- Vibration Sensor,
- Surge Arrester,
- Energy Management Products (Energy Analyzers, Reactive Relays, Multimeters,
- Compressor,
- Generator,
- Flow Meter,
- PLC,
- Camera.





THANK YOU

