

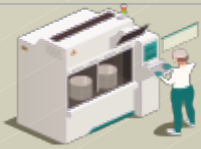


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ErgoTech MIStudio

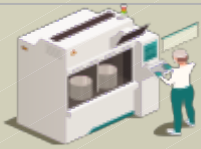
ErgoTech's solutions for monitoring, fault tracking, data visualization and analysis.



MIStudio

- Drag-and-drop Cloud and IOT for industry and manufacturing
 - Embedded Linux, Windows, PAAS, analytics and AI
- Browser-based visualization
 - Native HTML5 no plugin required
- IOT data collection
 - PLCs, controllers, power, other industrial devices
- SECS/GEM
 - Specialized Semiconductor Applications

IOT to Cloud in One Tool

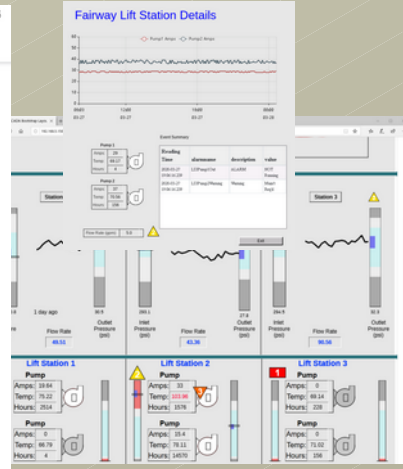
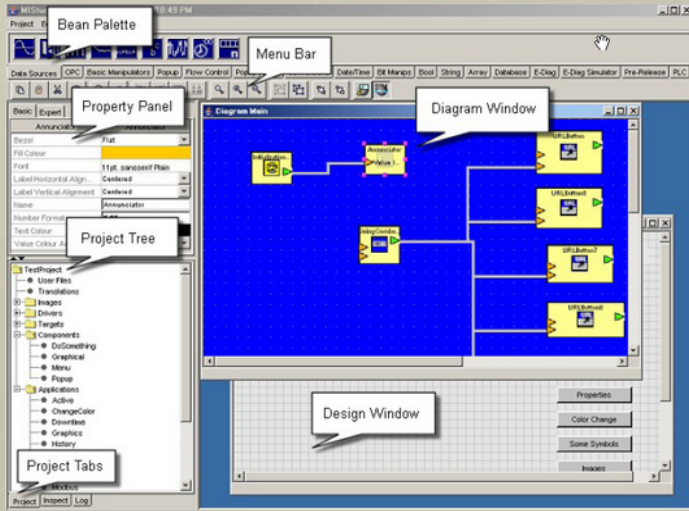


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Introducing MIStudio

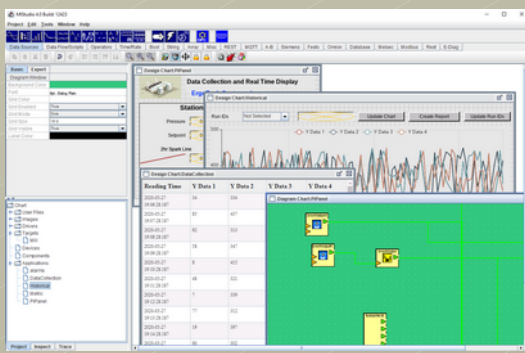
ErgoTech's drag-and-drop application builder for IOT, Servers and Cloud



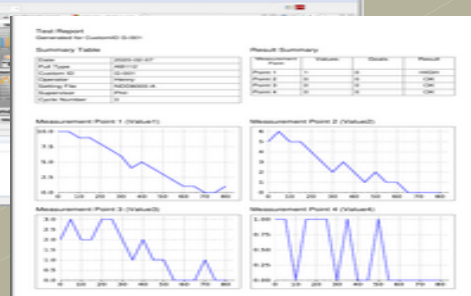
High Performance HMIs

And mimics

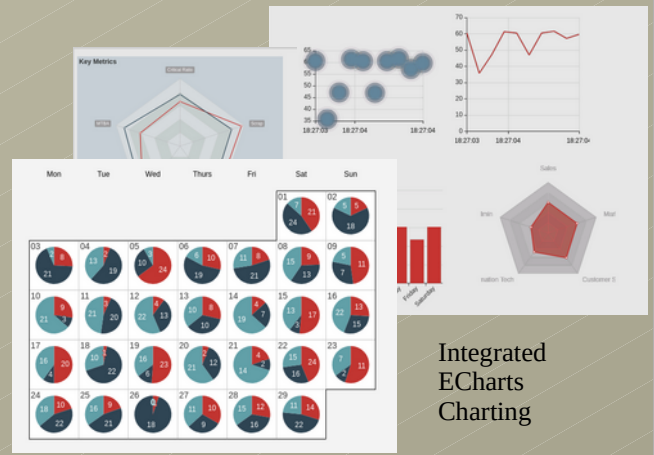
Responsive Design/
Mobile Friendly



Database Integration



Integrated Jasper Reports



Integrated
ECharts
Charting

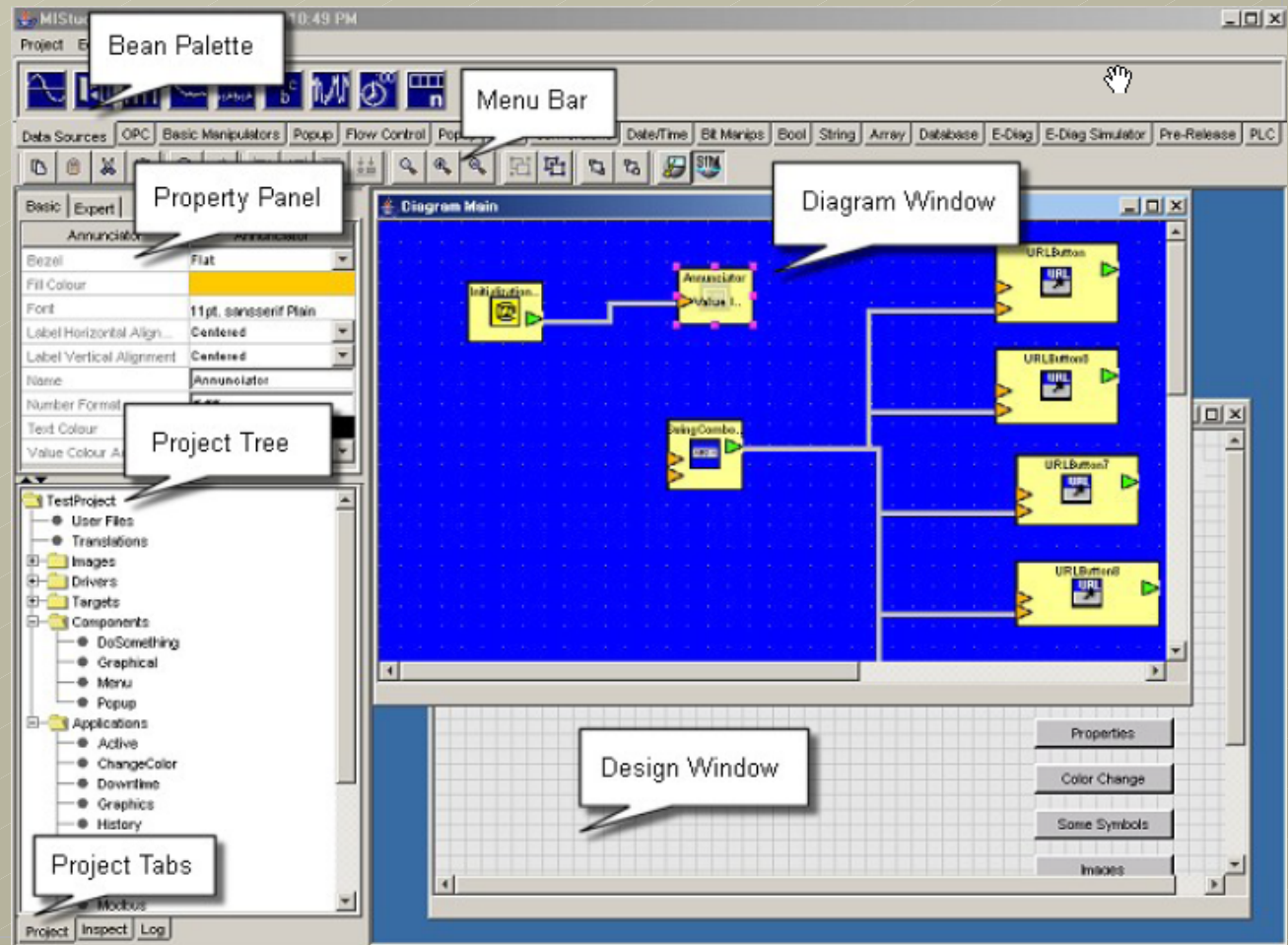


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MIStudio - Integrated Development Environment

A graphical tool used to design and deploy embedded data collection, monitoring and business intelligence applications.





MISudio – Product Overview

- Integrated Design Environment, IDE, Software Toolkit
 - Create Real-Time, Web-enabled applications
 - Targeted at Engineers
- Responsive, mobile aware, HTML5 web views
- Component Library
 - 300 + Visual and Logic Components
 - Historical collection and reporting
 - Real-time and historical screens and reports with PDF/XLS export.
 - PLC drivers for all major PLCs
- Runtime Execution Engine - MIX Application Server
 - IOT – Embedded Linux, Windows, etc.
 - Servers – Windows, Linux, etc.
 - One-button Cloud/Docker deployment



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MIStudio IDE - Design (Graphic) Window

This is where you design the graphical user interface for the application.
This will become the web-view.

The screenshot displays the MIStudio IDE Design (Graphic) Window, which is used for designing the graphical user interface for the application. The interface is divided into several panels:

- Basic Expert Panel:** Contains settings for the Diagram Window, such as Background Color, Font, Grid Enabled, Grid Mode, Grid Size, Grid Visible, and Label Color.
- Data Collection and Real Time Display Panel:** Shows a real-time data collection table and a corresponding line chart. The table includes columns for Reading Time, Y Data 1, Y Data 2, Y Data 3, and Y Data 4. The chart displays multiple data series (Y Data 1, Y Data 2, Y Data 3, Y Data 4) over time.
- Design Chart:Historical Panel:** Shows a historical data collection table and a corresponding line chart. The table includes columns for Reading Time, Y Data 1, Y Data 2, Y Data 3, and Y Data 4. The chart displays multiple data series (Y Data 1, Y Data 2, Y Data 3, Y Data 4) over time.
- Design EveryGraphic:Charts Panel:** Shows a collection of various charts, including bar charts, line charts, and area charts, used for data visualization.
- Diagram Chart:PiPanel Panel:** Shows a graphical representation of the system components, including pumps, tanks, and valves, connected by pipes.
- ICADA/Devnet/RT/Status/IC3 Panel:** Shows a detailed view of the system components, including pumps, tanks, and valves, with real-time data and status indicators.

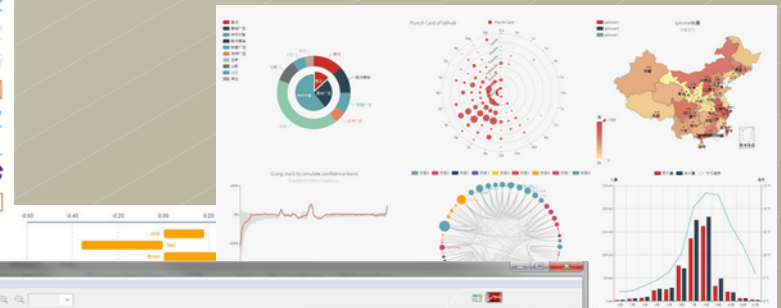
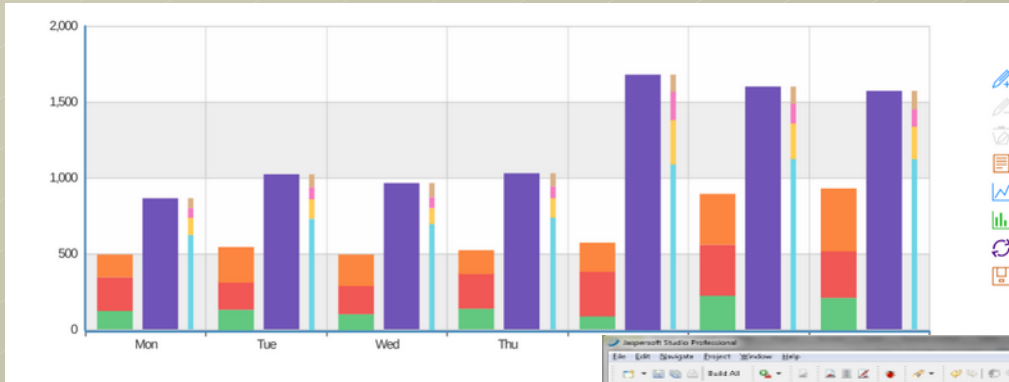
Reading Time	Y Data 1	Y Data 2	Y Data 3	Y Data 4
2020-05-27 19:06:28.187	34	334		
2020-05-27 19:07:28.187	85	437		
2020-05-27 19:08:28.187	92	313		
2020-05-27 19:09:28.187	58	347		
2020-05-27 19:10:28.187	8	415		
2020-05-27 19:11:28.187	48	321		
2020-05-27 19:12:28.187	7	339		
2020-05-27 19:13:28.187	77	312		
2020-05-27 19:14:28.187	19	397		
2020-05-27 19:15:28.187	90	302		



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MIStudio IDE – Dashboard and BI



The screenshot shows the MIStudio IDE interface with several components:

- Key Metrics:** A radar chart with five axes labeled MTR, Critical Ratio, SDR, Utilization, and MTR.
- Area Chart:** A multi-colored area chart showing trends over time.
- Bubble Chart:** A chart with data points of varying sizes and colors.
- Control Panel:** A sidebar with options for Data Adapter, Sample DB, Domain MS, Chart Theme, Title, Subtitle, Legend, Plot, Domain Axis, and Range Axis.
- Property Panel:** A 'TitleSettings: Table' panel with options for Title, Advanced, Show Title, Position, Horizontal Alignment, Vertical Alignment, Background Point, and Background Point.
- Geographic Maps:** Three maps showing Australia, 黑龙江省 (Heilongjiang), and 广州市 (Guangzhou).

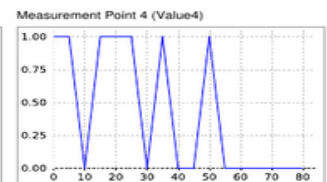
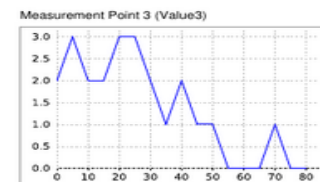
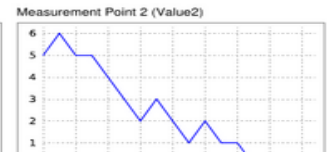
Test Report
Generated for CustomID G-001

Summary Table

Date	2020-02-07
Pull Type	AB112
Custom ID	G-001
Operator	Henry
Setting File	NDD8000-A
Supervisor	Phil
Cycle Number	3

Result Summary

Measurement Point	Values	Goals	Result
Point 1	1	0	HIGH
Point 2	0	0	OK
Point 3	0	0	OK
Point 4	0	0	OK

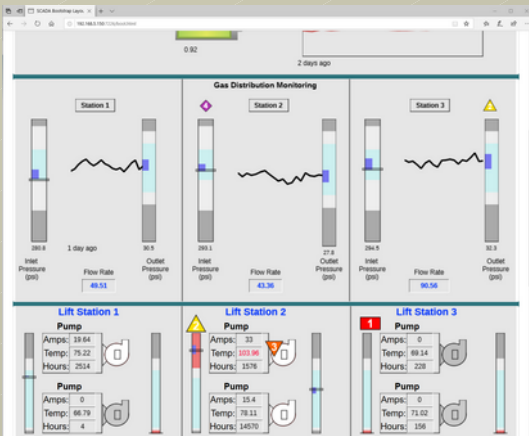


Integrated, Unlimited Dynamic Charting

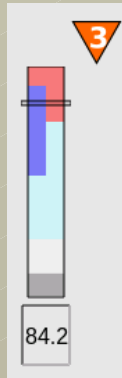
Integrated Reporting



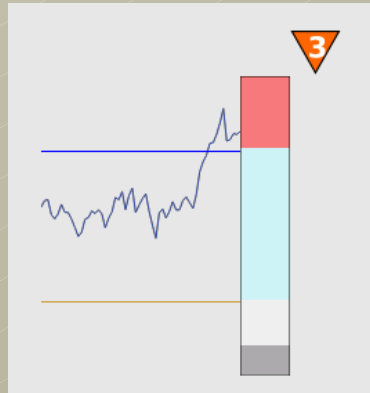
High Performance HMIs



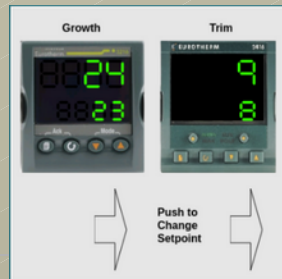
High Performance HMIs (HPHMI) provide context for the values



Indicators change shape and color to stand out.



Sparklines and range bars show history.



Traditional “mimic” HMIs can also be created but provide less information.

Color-only based indicators can be ambiguous



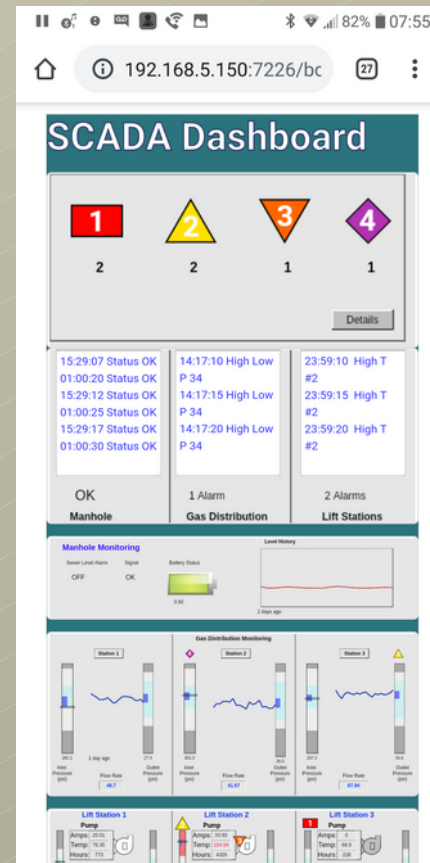
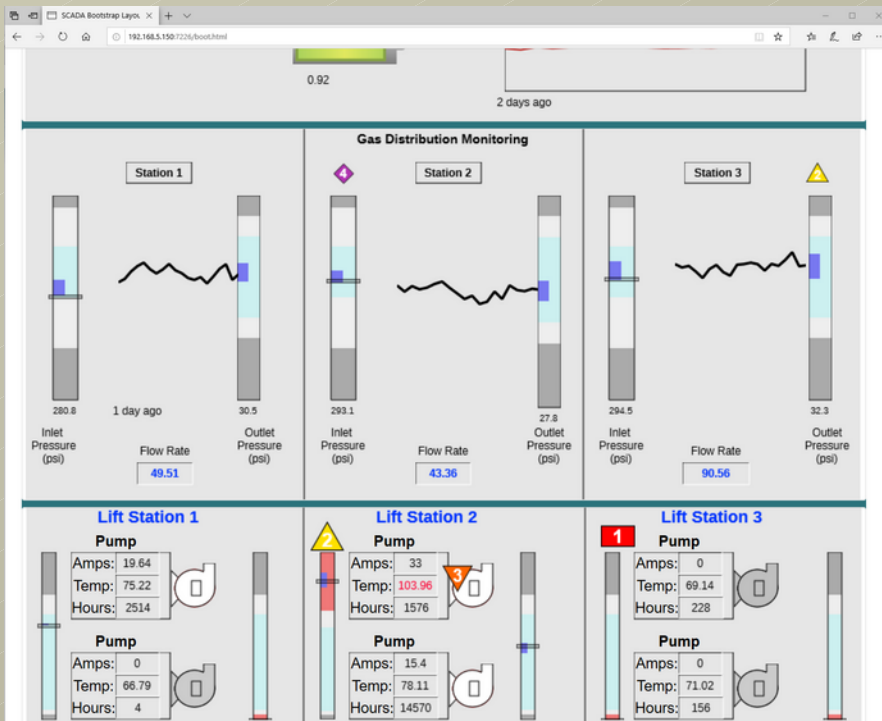


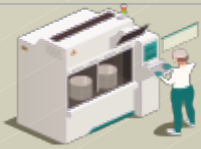
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Responsive Design

Web display automatically reorganizes to be mobile-friendly



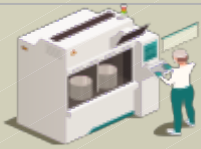


Responsive Design - Bootstrap

The image displays the Bootstrap Editor software interface, which is used for creating responsive dashboards. The interface is divided into several sections:

- Bootstrap Layout:** A panel on the left where users can configure the layout. It includes a "GENERATE" button and a list of components with their counts:
 - PIPanel: 6
 - alarms: 6
 - Metric: 4
 - DataCollection: 8
 - Historical: 12
- Preview:** A central window showing a preview of the dashboard layout, including a header, a navigation menu, a main content area with a chart and a table, and a footer.
- Data Collection and Real Time Display:** A detailed view of a data collection dashboard. It features a "Station" section with "Pressure" and "Setpoint" indicators, a "2hr Spark Line" chart, and a "Data Collection" table. The table has columns for "Reading Time", "Y Data 1", "Y Data 2", "Y Data 3", and "Y Data 4".
- Diagram Chart:PIPanel:** A diagram showing the layout of the dashboard components, including a "PIPanel" and a "DataCollection" component.

Reading Time	Y Data 1	Y Data 2	Y Data 3	Y Data 4
2020-05-27 19:06:28.187	34	334		
2020-05-27 19:07:28.187	85	437		
2020-05-27 19:08:28.187	92	313		
2020-05-27 19:09:28.187	58	347		
2020-05-27 19:10:28.187	8	415		
2020-05-27 19:11:28.187	48	321		
2020-05-27 19:12:28.187	7	339		
2020-05-27 19:13:28.187	77	312		
2020-05-27 19:14:28.187	19	397		
2020-05-27 19:15:28.187	90	302		

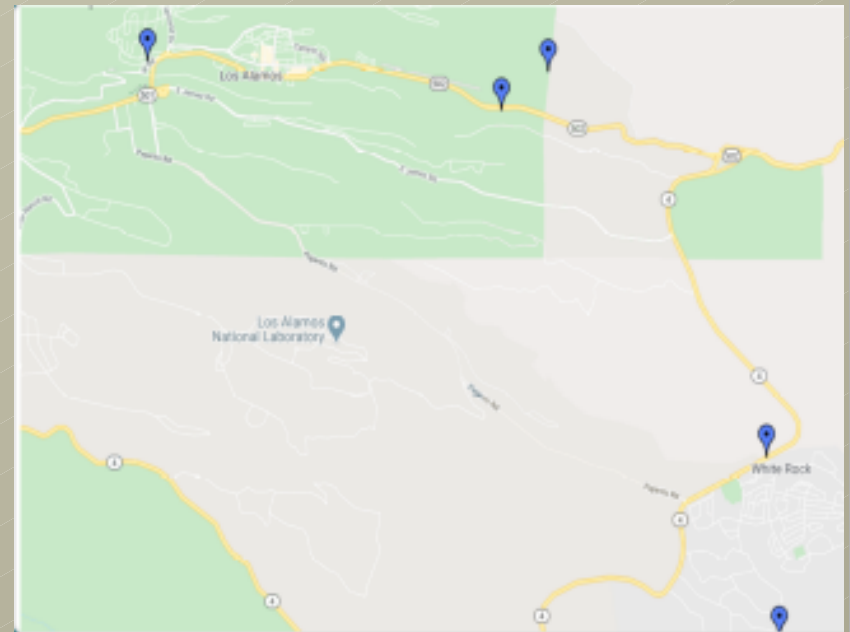
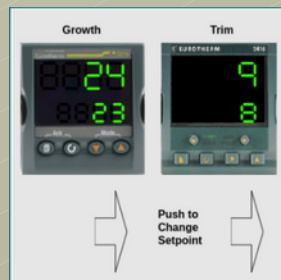


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Clickable Overlays

- Add buttons over images to navigate
- Drilldown
 - Change screen
 - Popups





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MISstudio IDE - Diagram (Logic) Window

Each Web View has a Diagram Window where components are wired together to create the desired logic execution and display

The screenshot displays the MISstudio 4.0 for Android Build: 905 IDE interface. The main window shows a logic diagram titled "Diagram EveryGraphic:Charts" with various components like "TimeSeriesChart", "YAxisChart", and "Input" connected by lines. The left sidebar shows a project tree with folders like "User Files", "Translations", "Images", "Drivers", "Targets", "Crafted Graphics", "Devices", "Components", "TestComponent", "Applications", "Alarms", "BasicGraphics", and "Charts". The top menu bar includes "Project", "Edit", "Tools", "Window", and "Help". The bottom right corner shows a preview of a chart with data points and a legend.

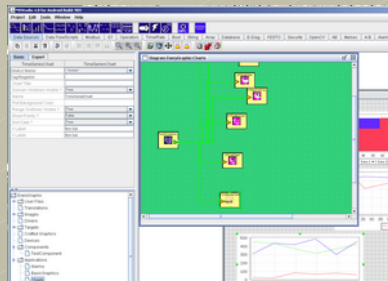


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MIStudio IDE - Diagram (Logic) Window

Real-time and historical
(database) data



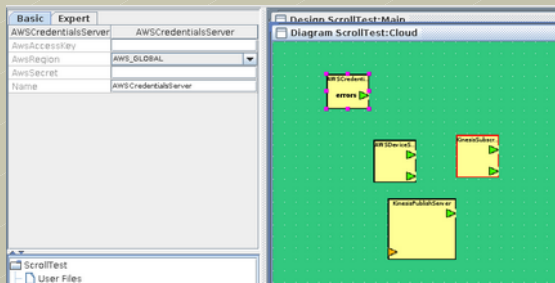
- Connect to Display on Web
 - Chart Values, Text
 - Panels, Popups, etc.
- Execute Logic
 - If/then, Greater Than/Less than
 - Timed (eg has it been > 5 seconds)
 - Mathematics & formulas
 - Etc.
- Databases
- SPC, Alarming, Spark Charts, etc.
- Scripting
 - Unlimited possibilities



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MISstudio IDE - Diagram (Logic) Window



Secure Cloud Connectivity

- MQTT
- REST
- OPCUA
- Kafka
- Cloud Streams
 - Amazon Kinesis
 - Azure IOT

Used as MISstudio components or to “wrap” deployed application.



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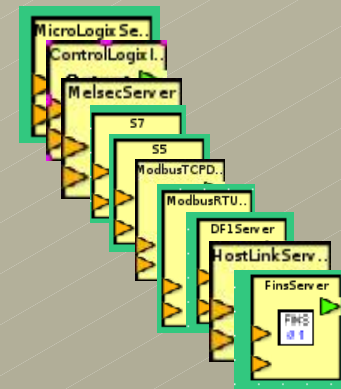
Component Library - Graphical and Logic Beans

- Modular Software Block Example : - Modbus RTU Device Server

Basic	Expert
Modbus RTU Device Server	ModbusRTUDeviceServer
Baud Rate	9600
Flow Control	None
Name	ModbusRTUDeviceServer
Parity	None
Port Number	/dev/ttyUSB0
Response Timeout	250
Simulating ?	False
Stop Bits	1

The screenshot also shows a 'Diagram Chart:Da' window with a green background and a grid. A yellow bean component is placed on the grid, labeled with 'ModbusRTU..', 'Error C..', 'Status ..', 'Output', and 'Port N..'. The toolbar includes icons for TCP, RTU, RTU/TCP, Int, D Int, Float, String, {ABC}, 0X, 1X, Introps, and RTU. Other tabs include Azure, AWS, AI, Data Flow/Scripts, Operators, Time/Rate, Bool, String, and Arra.

Support for all major PLC protocols.





Database Connectors

- SQL Database Storage and Retrieval (Read/Write)

The screenshot displays the ErgoTech software interface. The top menu bar includes 'Project', 'Edit', 'Tools', 'Window', and 'Help'. Below the menu is a toolbar with various icons for database connectors (SQL, HSQL, MySQL) and other tools. The main window is divided into two panes. The left pane shows the 'Basic' tab of a configuration window for a 'SQLServerConnectionManager'. The right pane shows a 'Diagram Chart:Hi' with two database connector icons on a green background.

Basic	
DatabaseConnectionManager	SQLServerConnectionManager
Database Driver Class Name	net.sourceforge.jtds.jdbc.Driver
Database Password	*****
Database URL	jdbc:jtds:sqlserver://sqlserver2012test.c4a
Database User Name	admin
Name	SQLServerConnectionManager
Script	Not Set



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Logic Components – Alarm Management

Alarm recording, reporting with priorities and notifications

The screenshot displays the ErgoTech Systems software interface, which is used for configuring logic components for alarm management. The interface includes a menu bar (Project, Edit, Tools, Window, Help), a toolbar with various icons, and a main workspace divided into several panels.

Basic Expert Panel: This panel shows the configuration for the 'AlarmAnalogManipulator' component. The configuration includes:

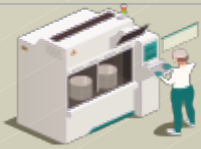
- Alarm Manager Name: /Main/AlarmManager
- Alarm On Invalid Number: False
- Bottom of Band: 20.0
- Clear On Return?: False
- Description: ALARM
- Formatter: 0.##
- Name: AlarmAnalogManipulator
- Priority: Low
- Remove Cleared Alarms?: False
- Script: Not Set
- Top of Band: 40.0

Design ScrollTest:Main Panel: This panel shows a data table with the following columns: Alarm Date, Description, and Value.

Alarm Date	Description	Value
2020-02-24 20:36:49.049	ALARM	high
2020-02-24 20:37:06.424	ALARM	20

Diagram ScrollTest:Main Panel: This panel shows a logic diagram with the following components and connections:

- AlarmAnalogManipulator:** A central component with 'Alarm Status Out...', 'Clear Output', 'Set Output', 'Clear Input', and 'Input' ports.
- AlarmManager:** A component that receives input from the 'AlarmAnalogManipulator' and outputs to the 'AlarmTableV...' component.
- AlarmTableV...:** A component that receives input from the 'AlarmManager' and outputs to the 'Emailer' component.
- Emailer:** A component that receives input from the 'AlarmTableV...' component.
- IncrementSer...:** A component that receives input from the 'AlarmAnalogManipulator' and outputs to the 'AlarmManager'.
- AlarmBoolea...:** A component that receives input from the 'AlarmAnalogManipulator' and outputs to the 'AlarmManager'.
- Button:** A component that receives input from the 'AlarmAnalogManipulator' and outputs to the 'AlarmManager'.
- SQLiteConne...:** A component that receives input from the 'AlarmManager' and outputs to the 'Emailer'.



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Reporting – Jasper Reports Integration

Test Report
Generated for CustomID G-001

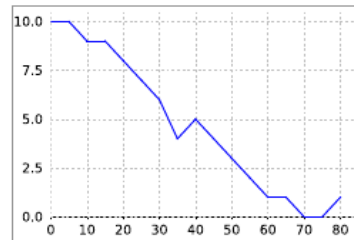
Summary Table

Date	2020-02-07
Pull Type	AB112
Custom ID	G-001
Operator	Henry
Setting File	NDD8000-A
Supervisor	Phil
Cycle Number	3

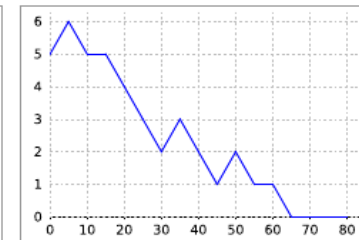
Result Summary

Measurement Point	Values	Goals	Result
Point 1	1	0	HIGH
Point 2	0	0	OK
Point 3	0	0	OK
Point 4	0	0	OK

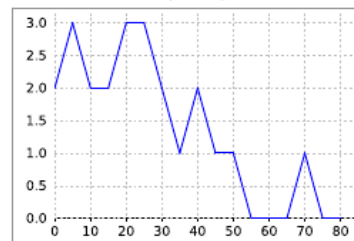
Measurement Point 1 (Value1)



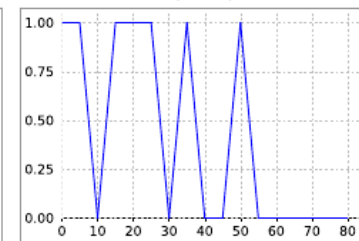
Measurement Point 2 (Value2)

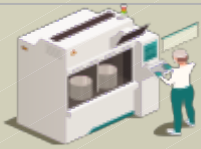


Measurement Point 3 (Value3)



Measurement Point 4 (Value4)





Logic Components - Report Generation

- Reports Components (PDF, CSV, HTML, Excel)

MIStudio Test Build 4-July-2005 03:24 AM

Project Edit Tools Window Help

Math Conversions Date/Time Bit Manips Bool String Array Database

Basic Expert

SimpleReport	SimpleReport4
Background Color	
Data Font	10pt. Monospaced.plain F
Date Format	d MMM yyyy HH:mm:ss
Intercolumn Gap	14
Label Font	12pt. Dialog.bold
Maximum Report Age	24h
Name	SimpleReport4
Number Format	0.0000
Orientation	Landscape
Outline Color	
OutputFormat	PDF
Page Footer	Tablet Press , Inc.
Page Header	Real time Parameters
Paper Size	Determined by Locale
Report Footer	End Of Report
Report Header	Real-Time Parameters Repor
Report Name	SpecialReport
Row Height	15

Diagram History

```
graph LR; Button[Button] --> HistoricalDatabaseSe[Historical Database Se.]; HistoricalDatabaseSe --> SimpleReport4Output[SimpleReport4 Output];
```

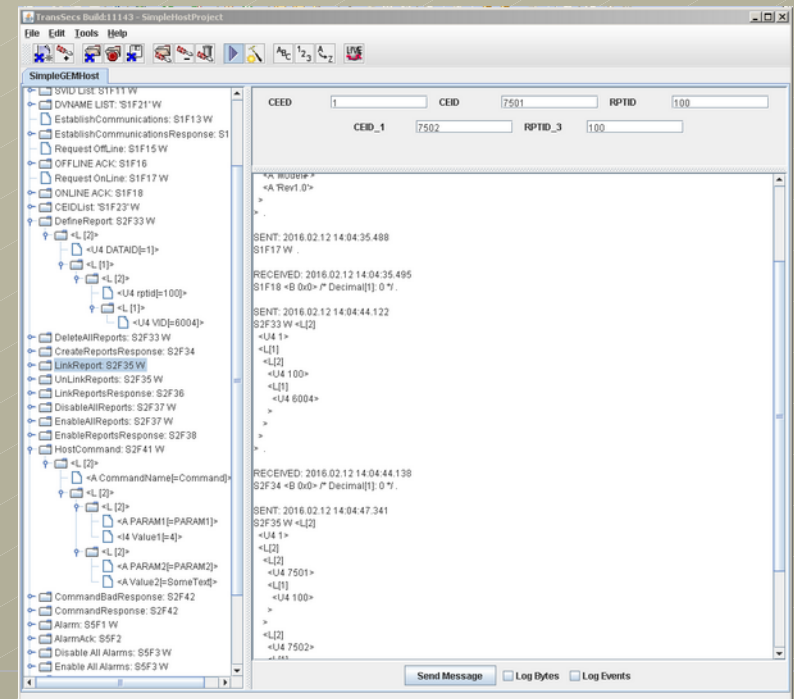


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SECS/GEM - TransSECS

- SECS/GEM IDE
- Online Characterization and Testing
- Rapid host application creation
- Integrates with MISTUDIO





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Many available systems

IOT

- Small, smart systems close to devices
- Scalable
- Flexible
- Secure

Internet of Things, IOT or IIOT

Raspberry Pi



Industrial ARM/Pi



Embedded PC

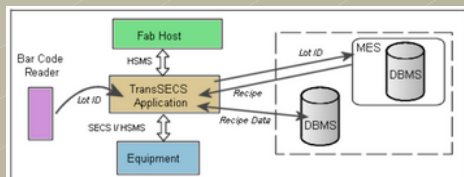


Siemens IOT2040



Small Windows System and Embedded Linux

ErgoTech IOT c.1998



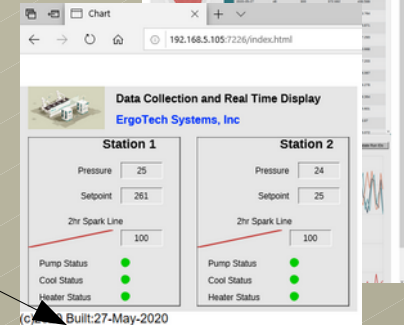
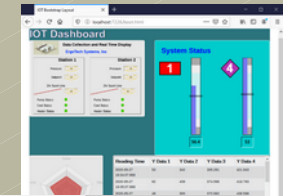
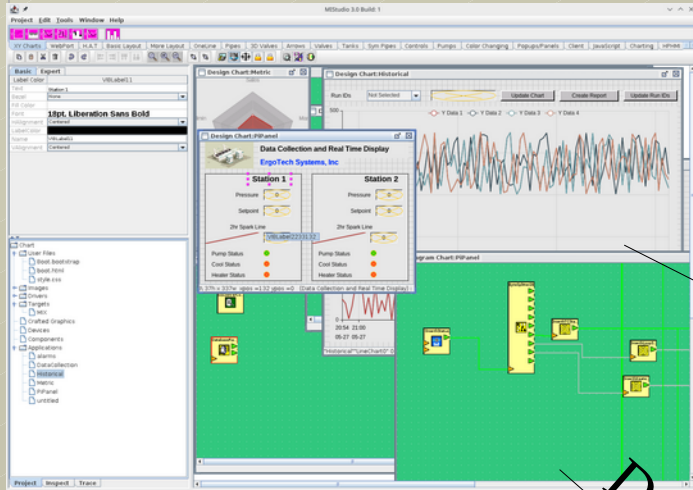
233MHz Pentium with 64MB memory embedded Linux



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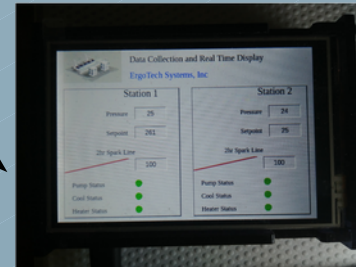
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IOT Deployment – Embedded MIX Server



Design Window
HTML5 Graphics

Diagram Window
Application Logic



Web Server

Embedded MIX
Application Server

Raspberry Pi

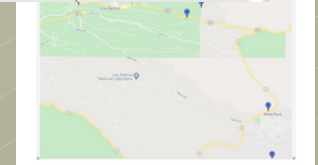
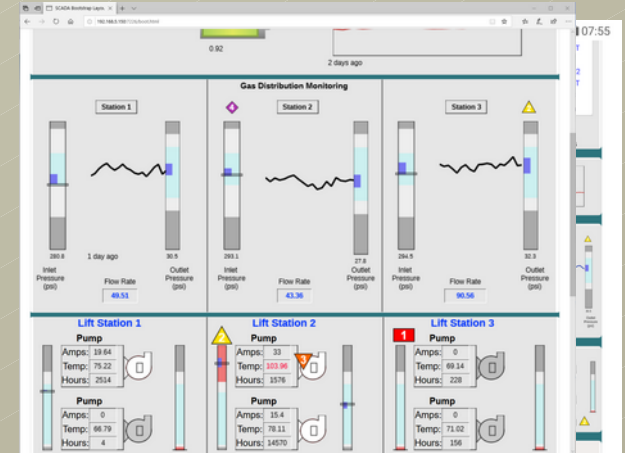
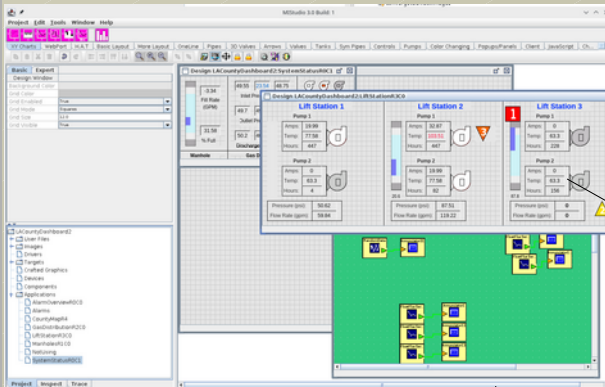
Deploy to smart,
IOT system.



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Deployment - Server



Design Window
HTML5 Graphics
Diagram Window
Application Logic

Deploy to any Windows or Linux System



Web Server

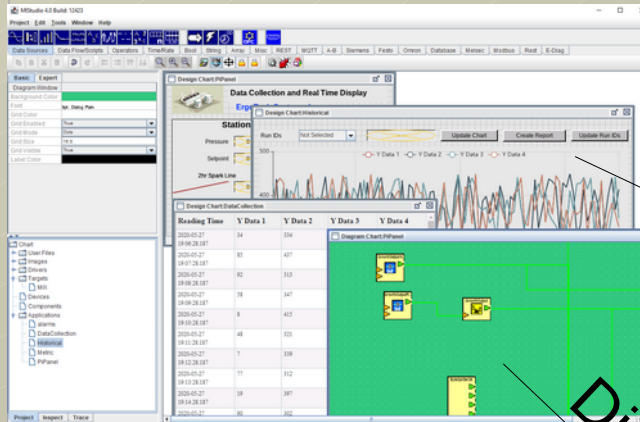
Windows or Linux MIX Application Server



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Deployment - Cloud



Design Window
HTML5 Graphics

Diagram Window
Application Logic

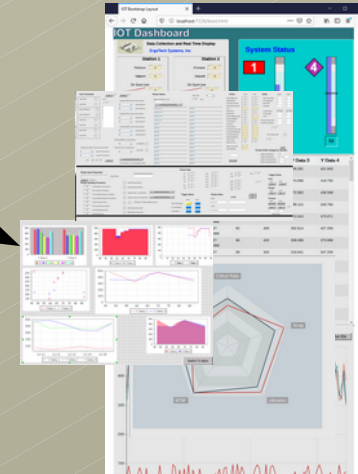


Diagram deploys to AWS, or other Cloud as Docker/Spring

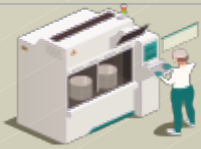




Cloud Deployment

Amazon Web Services or other Cloud Provider (PAAS)

- Secure
 - Security is provided by PAAS
 - Software updates from PAAS
- Site is available worldwide (to authorized users)
- Cost Effective
 - Low monthly rates depend on usage
 - Expand resources as application grows
- Simple
 - Docker Containers
 - One-button AWS deployment from MIStudio



ErgoTech's Solution

- IOT Data Collection
 - Raspberry Pi many other IOT platforms
- Cloud & Server-based Supervisory Deployment
 - Visualization
 - Faults and Alarms
 - Analysis
 - Business Intelligence
 - AI & Machine Learning