NETx AUTOMATION

NETx MaRS 2.0

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The Metering and Reporting System NETx MaRS 2.0 is a modern, user-friendly software that is able to display, analyze, and process smart metering data which is stored within a database system.

NETx MaRS 2.0 can be used as a central, company-wide data collection for smart metering data. This metering data for energy, water, air, gas, or steam is continuously collected together with other meta-information.

Due to the measurement of consumption values of different domains, it is possible to decrease the operating costs sustainably. Furthermore, a comprehensive database is provided that can be used for further computer-aided processing within cost and billing information systems.

NETx MaRS 2.0

The Metering and Reporting System NETx MaRS 2.0 is a modern, user-friendly software that analyzes and displays metering data that is collected from smart metering devices. This data is stored in a central database where it is available for further analyzing and processing tasks. Due to the flexibility of NETx MaRS, it can be used as a central, company-wide data collection for smart metering data. The gathered information can be metering data of any arbitrary resource like energy, water, air, or gas that is collected continuously together with other meta-information originating from any smart meter.

In addition to simply collecting metering data, NETx MaRS can also be used to further process the gathered information. Within NETx MaRS, it is possible to define a hierarchically organized cost center structure that reflects the existing structure within the company or building. Based on this structure, comprehensive consumption and cost calculations can be performed. These calculations can be done for a single meter, for a dedicated resource, for a cost center, or for any combination of them. The results can then be used to generate user-defined documents like diagrams, graphs, tables that contain billing information, or even user-defined reports that can be created using the built-in report generator.

Furthermore, it is possible to export the results to third-party applications for further processing using open interfaces. These consumption and cost calculations that are performed by NETx MaRS are important inputs for analyzing the behavior of the energy consumers within a building. Therefore, NETx MaRS helps to reduce operating costs sustainably and encourages the economic and ecological use of resources.

MaRS Server

The NETx MaRS server is used as central component where the measured values of the different smart meters are managed. These values can be retrieved from one or more OPC servers. For further processing, the received values are stored in an SQL database.

Indicators

In NETx MaRS so called indicators can be defined. Indicators are properties that influence the consumption of a resource (e.g. room temperature). Indicators are used as comparative values.

Actions

In addition to the visualization of consumptions values and the resulting costs, time-triggered actions can be executed. Reports and charts can periodically be sent via e mail, printed out, or exported to other systems.

MaRS Clients

One or more NETx MaRS clients can access the meter values that are stored within the NETx MaRS server.
A NETx MaRS Client is able to analyze and show the consumption values and calculated costs and to manage the NETx MaRS projects.

Virtual meters

In addition to physical meters so called virtual meters can be added.
Virtual meters are not assigned to real devices. The metering values are specified using a value table.

Reports

The presentation of the data is done via tables, charts, and/or diagrams that can be saved as documents. Whenever metering data changes, the data within the document is updated according to the current meter values.

User management

NETx MaRS includes the possibility for user management. Multiple users with different access rights can be created.

Arbitrary resources

NETx MaRS is not limited to the measurement of dedicated resources. Any smart meter (e.g. electricity, water, heating, gas, ...) can be integrated into the NETx MaRS environment.

Data export

The collected consumption values as well as the calculated costs can be exported for further processing. A connection to third-party systems (e.g. billing information software) is possible.

Metering and Reporting System - Optimized resource management system

NETx MaRS 2.0

Data acquisition and cost calculation

NETx MaRS is used to collect consumption values from any smart meter. Based on defined resources and their tariffs, the costs of the consumption values are calculated.

Independent from technology

Using the NETx BMS server, smart meters from different technologies (KNX, BACnet, Modbus, ..) can be integrated. Additional systems can be included using dedicated OPC DA 2.0 servers.

Application

The main goal of a building automation system is to provide increased comfort while keeping an efficient use of all available resources in mind. Thus, building automation systems do not only reduce the overall operational costs for maintenance but also decrease energy consumption and mainly contribute to environmental protection. In order to be able to increase the energy efficiency of modern buildings, monitoring the energy consumption of the different energy consumers as well as analyzing their overall energy behaviour are key requirements. The most important input data for this analyzing purpose are the energy consumption values of these energy consumers that are measured by smart metering devices.

This is where NETx MaRS comes into play. NETx MaRS is a software tool that is focused on fulfilling the needs for analyzing, monitoring, and further processing smart metering data.

NETx MaRS Application Domians

Metering and Reporting System - Optimized resource management system

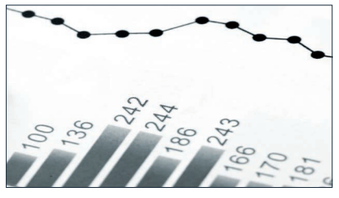
Performing consumption and cost calculations based on a defined cost center structure.

Interfaces to third-party applications for further processing of the calculated results.

Generation of presentation documents of the performed calculations such as diagrams, graphs, tables, billing reports

Visualization and monitoring of consumption values and costs of any arbitrary resource (e.g. electricity, water, heat, gas, oil, air, ...).

Plausibility check of measured data.



Storing the collected values into the central database.

Analysis of the consumption values and costs and comparison with indicators (influencing value).

NETx MaRS

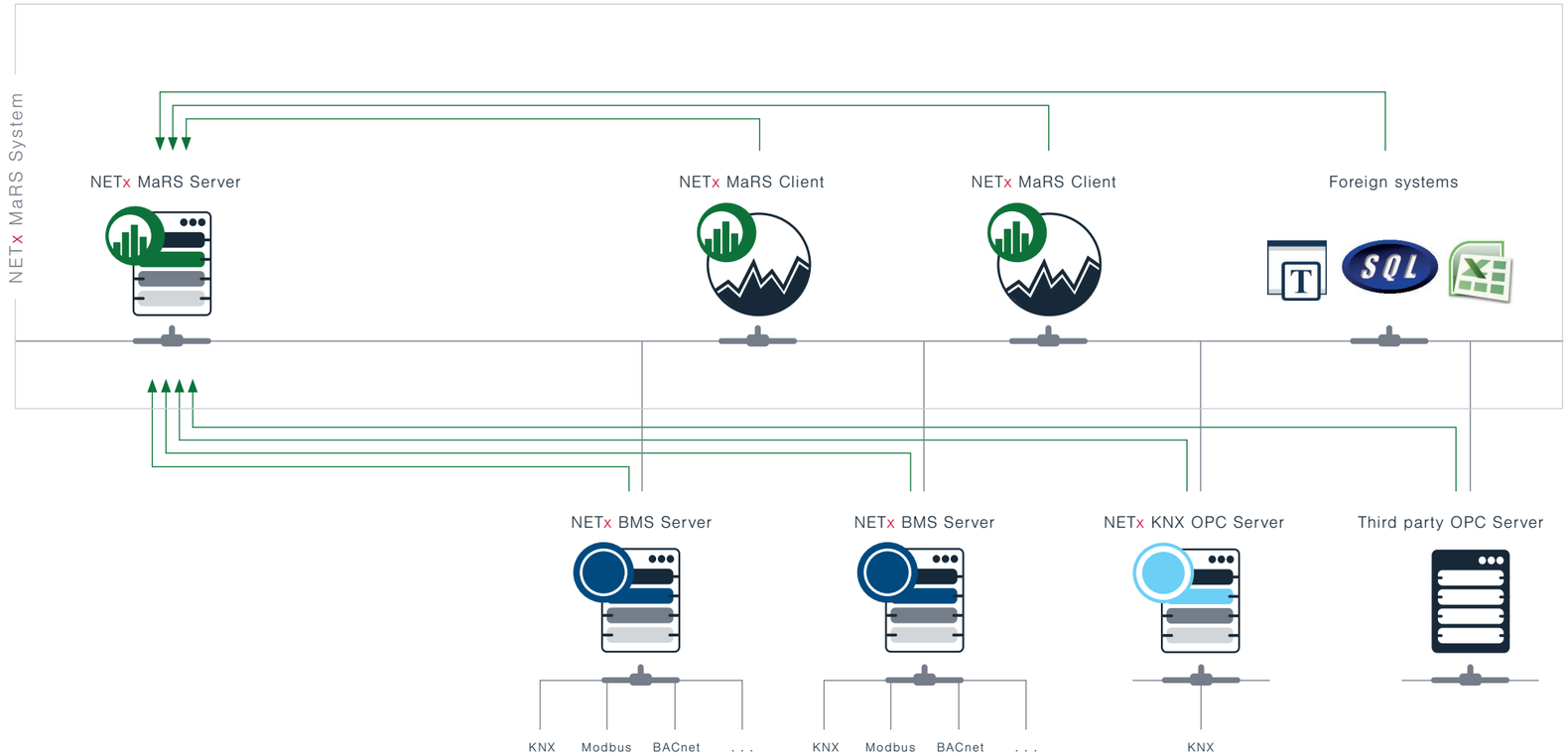
consists of **two** components

1 NETx MaRS Client(s)

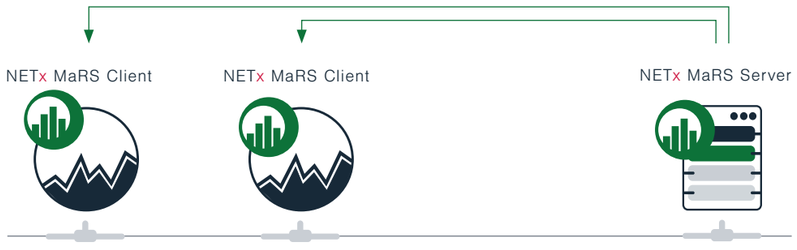
- Application for end user
- Retrieves the measured consumption values from NETx MaRS Server
- Performs different energy management tasks
- Use of multiple NETx MaRS Clients possible
- Analysis and visualization of data
- Generation of documents
- Management of NETx MaRS projects

2 NETx MaRS Server

- Reading meter values using a connection to one or more OPC servers
- Storing of the retrieved values within the central NETx MaRS database
- Providing the data to one or more NETx MaRS Clients



NETx MaRS Clients



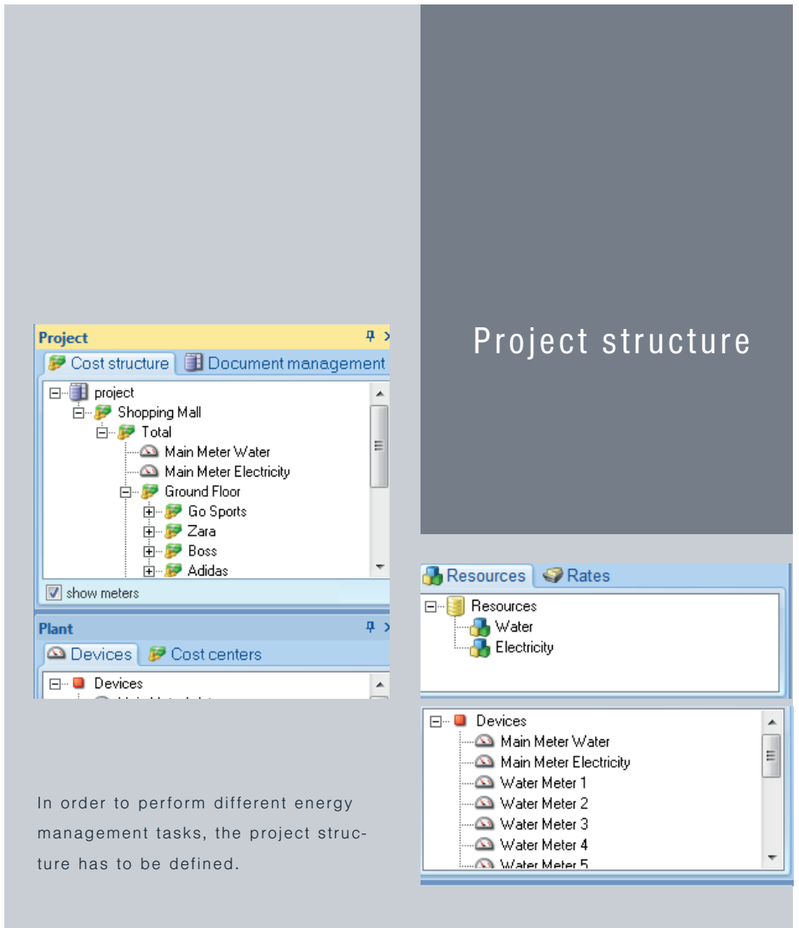
A NETx MaRS Client is an application program that performs different energy management tasks (e.g. visualization of the consumption values, calculation of the costs for each cost center, comparison and analysis of consumption values and costs, ...). A NETx MaRS Client acts as an application that is dedicated to the end user. In order to perform energy management tasks, a NETx MaRS Client requests the metering data from the NETx MaRS server. Using the retrieved data, all calculations and actions are performed. In addition, it is possible to define a hierarchically organized cost center structure that reflects the existing structure of the company or building.

NETx MaRS Server

The NETx MaRS Server is central server application that is responsible for retrieving the metering data from the smart metering devices. In order to achieve this, it opens a connection to one or more OPC servers. These OPC servers have the aim to collect the metering data from the smart metering devices located within the building automation system. The OPC servers act as generic interfaces between the smart metering devices and the NETx MaRS Server. Therefore, as long as an OPC server that supports the appropriate communication protocols is available, any smart meter can be integrated within the NETx MaRS system. Thanks to this architecture, the NETx MaRS Server does not need to bother about the details of the used smart meters. The collected metering data is stored within the NETx MaRS Server database where it is provided to the NETx MaRS Clients for further processing.

In order to be able to configure and maintain the NETx MaRS Server, the NETx MaRS Server Studio is provided. The NETx MaRS Server Studio is a graphical user interface that provides a management interface to the NETx MaRS Server. Using this interface, the following three managements tasks can be performed: First, it is possible to add the OPC Servers that shall be connected with the NETx MaRS Server. Using a built-in OPC browser, the available OPC servers can be searched and selected. Second, it is possible to browse the OPC items that are provided by the selected OPC servers. Using the list view, the user can select the OPC items that correspond to the datapoints of the smart meters which are of interest for the given NETx MaRS project. Finally, using the NETx MaRS Server Studio can also be used to set global configuration parameters that influence the behaviour of the NETx MaRS Server.

Project structure



In order to perform different energy management tasks, the project structure has to be defined.

The **project structure** consists of the following elements:

Resources The resource type is not limited - any arbitrary resource (e.g. electricity, gas, water, heat, ...) can be managed.

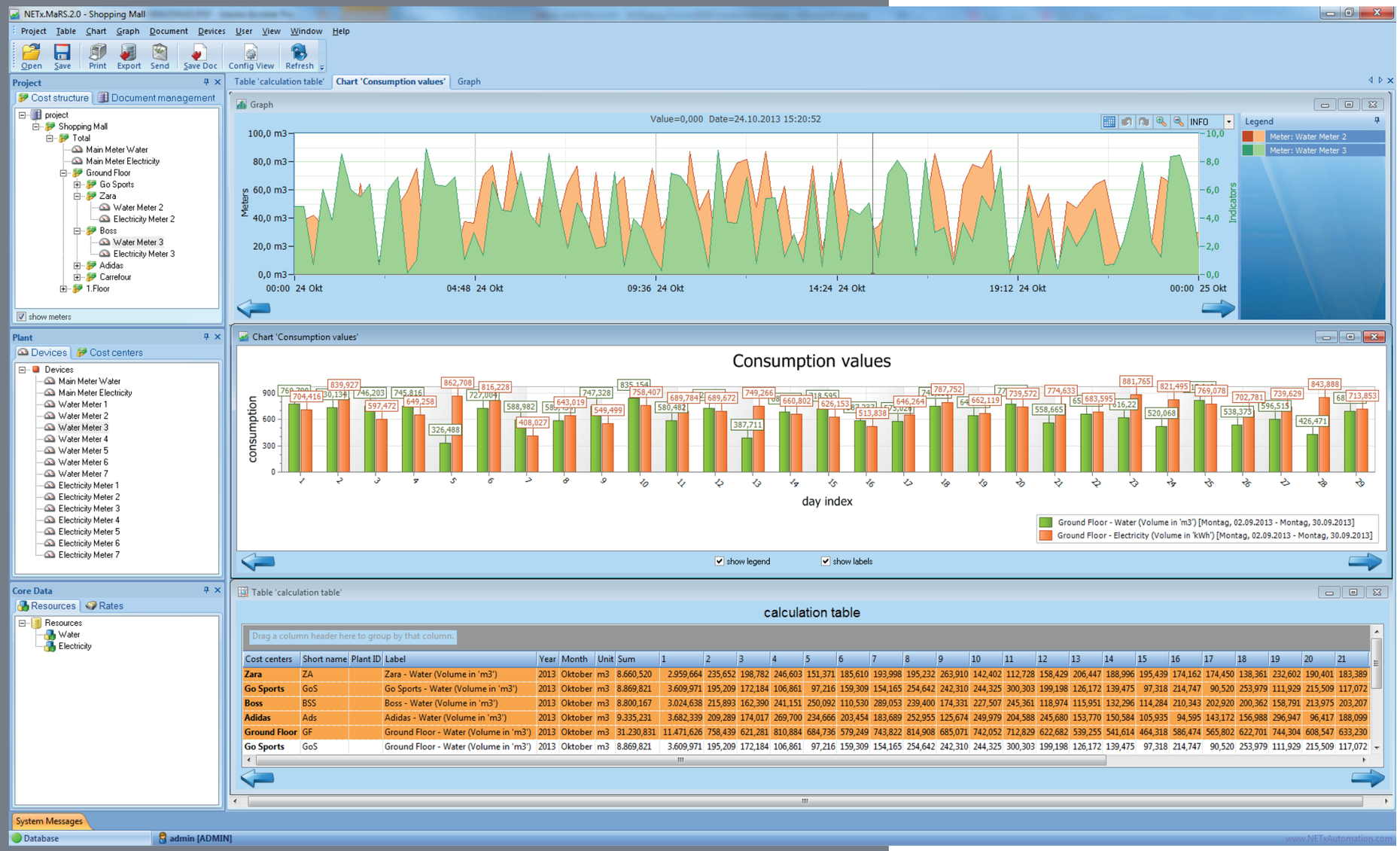
Tariffs Tariffs specify the cost rates of the different resources (i.e. price per unit, base rate). It is possible to define multiple cost rates (e.g. for each month).

Devices In NETx MaRS, three different device types are distinguished:

- **Physical meter**: A physical meter is assigned to a physical datapoint that is responsible for providing the consumption values. In addition to these measurements, already existing consumption values can be imported.
- **Virtual meter**: These meters do not have a datapoint. Their consumption values are provided by imported tables only.
- **Indicator**: An indicator is a measured variable, which influences the consumption of a resource. Indicators are used for comparison issues.

Cost centers A cost center is an organizational unit where consumption values or costs can be assigned.

After having defined the different resources, tariffs, devices, and cost centers, the project structure can be specified. The cost centers can be arranged hierarchically and the different meters can be assigned to the cost centers. The assignment can also be done in terms of percentage.
Based on the defined cost center structure and on the assigned smart meters, the consumption and cost calculations are performed within the NETx MaRS Clients. These calculations can be done for each device or each cost center. For cost centers, the hierarchical structure is considered - the values of the underlying cost centers are added accordingly.



The results of these calculations can be shown as so called NETx MaRS documents. Depending of the desired view, such a document can be a chart, a graph, or a table. For each document, it can be decided whether the consumption values or the calculated costs shall be presented. In addition, it is possible to specify the time scale that shall be used for presentation. To be able to compare different cost and consumption values, it is possible to include multiple smart meters or cost centers within a single document. Each document can be stored as template for later use.

By selecting an already stored document, the corresponding configuration of the document is loaded and the actual consumption or cost values are shown. In addition, it is possible to define actions for each document (e.g. periodically sending documents via e mail).

Reporting

Order number

Software	Metering datapoints	Product-ID
MaRS 2.0 STARTER	5	S19.02.0.03.01
MaRS 2.0 HOME	25	S19.02.0.03.02
MaRS 2.0 BASIC	100	S19.02.0.03.03
MaRS 2.0 PROFESSIONAL	250	S19.02.0.03.04
MaRS 2.0 ENTERPRISE	individual	S19.02.0.03.05

USB-Dongle	Free USB-Port required	H00.00.0.00.04

An additional server is required - NETx KNX OPC Server 3.5 or NETx BMS Server 2.0

All versions are available with **Softlock** (license code) and **Hardlock** (USB-Dongle).
It is recommended to use **Hardlock version**, since no additional licensing is necessary if the hardware or the operating system is changed.

System requirements

Hardware:

PC - Intel oder AMD - 1.6 GHz (Multicore recommended)
RAM: 2048 MB
Hard disk: 4 GB (8 GB recommended)
Ethernet interface: 100 MBit/s
Screen resolution: 1280 x 1024

Supported operating systems:

Windows XP Professional - 32 bit / SP 3
Windows 7 - 32 bit | 64 bit
Windows Server 2008 R2 - 64 bit
Windows 8 - 64 bit
Windows Server 2012 - 64 bit

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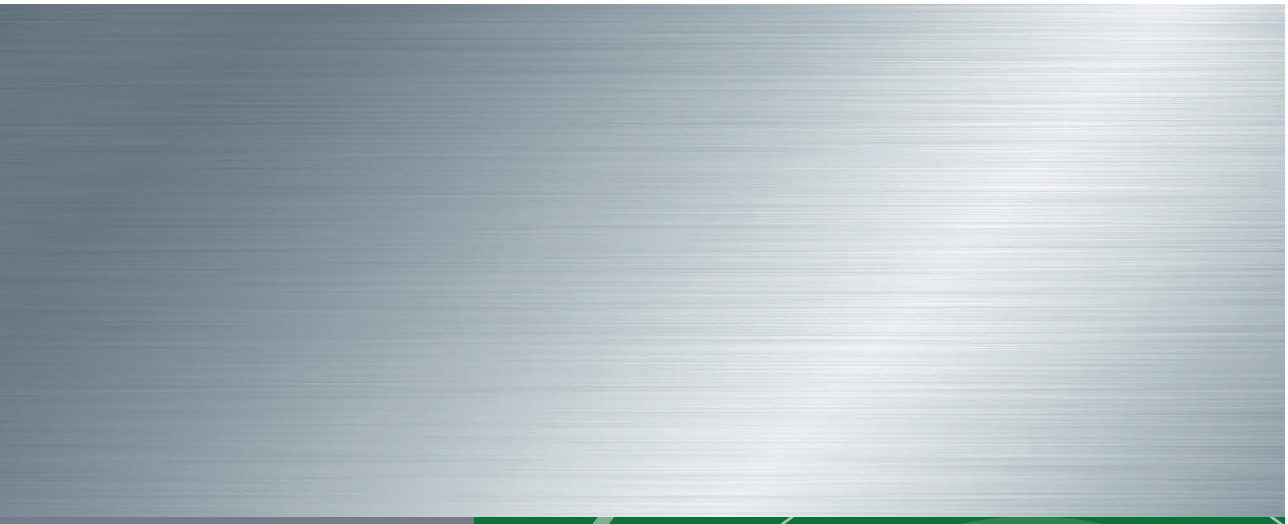
Version 2013-10-EN



NETx AUTOMATION

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