FEBRUARY 2023

Real-Time Data

Data Harmonization on Course for the FDT Unified Environment

Deeper communications and collaborations define one standard for device management

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FDT Group Managing Director

With a new year comes new beginnings for FDT Group and the FDT specification. Over the last year, the organization set the foundation for a bright future to maximize its value to the automation industry. It has created user awareness of the benefits of FDT host and device (DTM) products based on the specification, especially the latest release, FDT3, which defines the FDT Unified Environment (FDT UE) for modern intelligent device management for IT/OT data-driven operations. To that end, several large end users are understanding the benefits of having products and systems based on FDT UE. They are beginning to request their control system and device manufacturers to provide products based on the FDT3 standard, keeping FDT as the premier device management standard.

Additionally, deeper communications and collaborations with other industry groups such as OPC Foundation, FCG, NAMUR, and OPAF are occurring in parallel in effort to provide a harmonized device management standard that meets the needs of the user and vendor communities. Collaborating with these groups helps us better understand the requirements that their members want. FDT UE is truly an open and agnostic standard that provides the comprehensive integration solution for any other standard that wants to connect and communicate making users lives easier while improving the overall operation of their automation assets.

The power of the FDT spec, which defines the device and communication DTM (Device Type Manager), and FDT Server — both which leverage OPC UA and Web Services makes asset management easier. Now, device data can be mapped and distributed throughout the automation system manufacturing enterprise via authenticated IT, OT and mobile clients as needed by the user. This enables true asset management of the process and manufacturing assets, not just the devices.

Applications like RedRaven from Flowserve (FDT Member) take advantage of the data centric FDT Server environment with OPC UA services. RedRaven provides users with a unique service-oriented device maintenance portal allowing remote access to all process and device diagnostics with NE107 status health alerts. The solution is a game-changer enabling predictive and proactive system changes required to keep the process operating at peak performance and running efficiency. This all means that manufacturers can improve their manufacturing operations and ultimately their profitability by specifying systems and devices based on the FDT3 specification.

Recently, PACTware 6.1 based on FDT3 was released to the market. The popular point-to-point configuration environment now supports new FDT3 web-based DTMs and expand integration to FDI Device Packages while supporting the millions of device DTMs in service today. Additionally, it creates a path for the FDT Server environment providing workforce mobility solutions, as well as data harmonization for enterprise-wide applications.

We are excited to begin seeing FDT3 DTM prototypes from companies including VEGA, KROHNE, Thorsis, and Flowserve. Additionally, there are several new vendors taking the steps to upgrade their DTMs to support FDT3 due to market demands.

FDT is looking forward to being present at upcoming tradeshow events including Hannover and SPS this year. If you are making plans to be present at those events, please note that the FDT Group will be present in the OPC Foundation booth at both these events with the FDT3 demo running equipment from all vendors and more mentioned above. We look forward to visiting with you!

Last year set the foundation for FDT Group and the future of automation system and devices delivering financial benefits to automation users through, improved device configuration, operation, and ultimately maintenance.

If you aren't familiar with the new FDT3 standard and would like to request information, please contact inquiry@fdtgroup.org.

PACTware 6.1 – Now FDT3 Enabled Supporting Universal Device Management

Interview with Holger Sack, Chairman of PACTware Consortium

Steve Biegacki
FDT Group Managing Director

Holger Sack
Chairman of PACTware Consortium

SB

Thank you for joining me for this interview, Holger. Could you describe the details of your position within the PACTware Consortium?

HS

Sure, I am the Chairman of the Board of the PACTware Consortium. I have been with PACTware since 2010. VEGA has been a member of the PACTware Consortium since the very first beginning as well as other many other companies.

SB

Could you tell us what PACTware is, and what are its primary application use cases in the industry?

HS

The PACTware Consortium is a group of companies acting in the process automation as well as in the factory automation world.

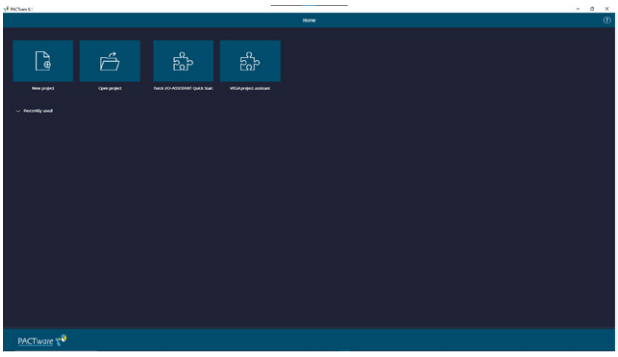
Let me say that we have members that are manufacturers of field devices as well as system infrastructure components. But we also have in the group members such as software developing companies that provide some services regarding software development and integration, etc.

Currently, the organization is now 21 companies strong. It must be said that we are acting on a voluntary basis, so we do not have employees and we fund activities and development by ourselves and via member fees.

The intention of the PACTware Consortium is to provide all members and their users a free software tool to perform tasks such as point to point configuration, setup and diagnostic of field devices, a hands-on tool that we like to call our screwdriver tool for all users.

SB

PACTware is widely adopted and used throughout the industrial automation market space for tasks like device configuration, parameterization, and management. Now we have a new release: PACTware 6.1. What is new with the 6.1?



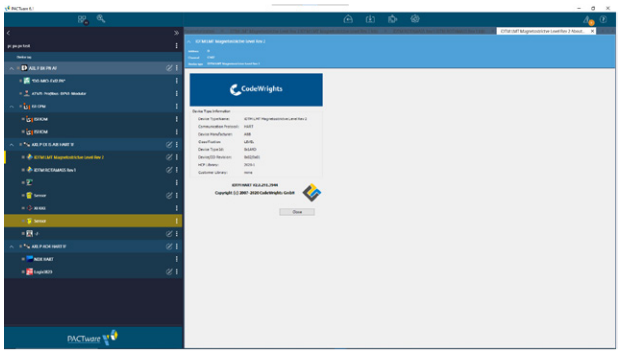
PACTware 6.1 Home Screen

HS

Well, PACTware 6.1 has new functionalities, but we can mention two major ones.

The first one is of course FDT 3.0 integration. The FDT specification is mature technology and has been a fundamental part of the design concept for our software from the very beginning, that's nearly 20 years.

And the second significant improvement is the capability to work also with FDI packages. For this purpose, we have implemented a technology called iDTM from the company CodeWrights GmbH, making that technology available for all PACTware users and once again, maintaining the application's flexibility.



iDTM from CodeWrights integrated into PACTware 6.1 for FDI packages

With these new integration features, PACTware now offers the only free tool supporting all DTM generations and FDI packages.

Since its first beginnings, PACTware was intended to be manufacturer independent, as well as fieldbus type independent, with the goal to provide a universal tool for all our users. Today, the solution is successfully deployed world-wide to simplify point-to-point configuration. With our tool, users have access to use a wide range of devices from companies they are familiar with.

SB

Yes, I would agree that it is a great universal point-to-point configuration tool, no matter the protocol, device model or data model.

Okay, moving on then. You mentioned that FDI is a new part of the plug and play environment. What is the existing relationship between FDT 3.0 and FDI?

HS

There is no actual relationship. We just thought in the development of this new version, which features and characteristics would bring additional benefits and make the software more flexible, more universal, etc.

These two features have been integrated, of course, in parallel. The FDT 3.0 standard was created and since this is one of our main key features, we decided to use its universal interface technology for both DTMs and FDI packages.

Of course, FDT has been available for 20 years, so our main technology is FDT technology. Now FDI comes up and that was the reason to say, okay, FDI technology or the integration of FDI packages brings additional benefits for everybody.

SB

Would it be valid to say that FDT, as an underlying technology within PACTware enables one environment where end users can easily manage all these different device types?

HS

Yes, correct. This was the huge step we took years ago, when FDT technology was established, that a basic requirement of our tool was to be independent from manufacturers technologies or fieldbus technology and therefore be able to create a universal tool for our users.

SB

Excellent. Now let's move on to the subject of backward compatibility, because the great thing about PACTware from the initial version to the new 6.1 version is support for the current install base of DTMs in use today. Can you tell us a little bit about how this works with PACTware 6.1, and will the user see any changes?

HS

It is one of our main objectives, and a major benefit to our users, to offer a tool that maintains backward compatibility. So, we have worked from the very first day on that functionality, although this task becomes sometimes very difficult and even not possible anymore, due to new technologies that we are using in the background, that are required to keep our tool state-of-the-art.

Therefore, we have a **compatibility matrix** placed on our website with information about the tool's compatibility between operating systems, as well as for which versions can work in parallel, and what projects are able to run in the new versions of PACTware.

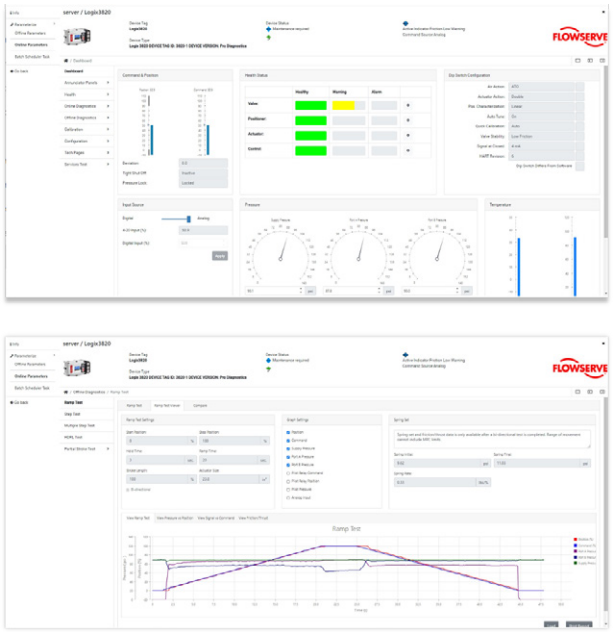
So, if there is a step needed in the migration from one version to another, it is mainly technology driven, for the compatibility of certain things and we cannot avoid that. Everything that we can implement technology wise, we have done, because we feel that is a major benefit for the users.

SB

Can you confirm that PACTware 6.1 is backward compatible with all previous generation versions of DTMs?

HS

Yes, because PACTware supports FDT 1.2, 2.0 and FDT 3.0 all DTMs are supported by PACTware 6.1.



Examples of a FDT 3.0 DTM Prototype from Flowserve

SB

What are the steps required in the migration to PACTware 6.1 from older versions? Are there specific steps that users need to take during the migration?

HS

We can say that 6.x can run in parallel with the former 5.0 version to give users the flexibility and security to try the new version first without the uninstallation of the old version.

Therefore, all main versions can run in parallel if the users want to have this safety net in the background.

Additionally, end users must check the hardware requirements needed to run PACTware.

SB

Does 6.1 run on a particular operating system?

HS

I can tell you that PACTware 6.1 runs on Windows 10 and 11. This has been tested.

However, it should also run on older operating systems, but we cannot guarantee this because they have not been tested.

This is one point where, if we offer some functionalities, they must be tested. It must be proven by use from all members. Every member takes part during the beta and the release version test phases, otherwise, they must support the Consortium with test fees.

Windows 7 and Windows 8 have reached end of life. Therefore, there is no support for them any longer. So, if users are still using those older OS's, they are facing a safety risk. So, we recommend every user to migrate to a modern supported OS version.

SB

Is the migration of current projects to version 6.1 a seamless import process?

HS

Users of version 5.x can load their projects in version 6.1 without problems. However, users of version 4.x must migrate their projects to version 5.x first, and then they will be able to open them in version 6.1.

We know some of our users, but not the majority, have big projects with a lot of devices connected in the project. But most of our users are working with PACTware, as a point-to-point tool, just for single device setup. For these simple applications, it would be easier to recreate the projects from the beginning with version 6.1 instead of installing 5.x, upgrade them and then use 6.1.

SB

With 6.1, there is no reason to run parallel operations, correct?

HS

In most cases, parallel operation is used only in case the users want to test if their projects are running well in the new version. Maybe they want to try all the new functionalities for safety reasons.

If you have installed the newest version, and if you have created your project there, or if you can upload the projects into the new version and you're happy with all the functionalities, then you continue with one version, the latest. There is no actual need to run two or more than two versions in parallel.

SB

Do you know what version of PACTware is mostly used today?

HS

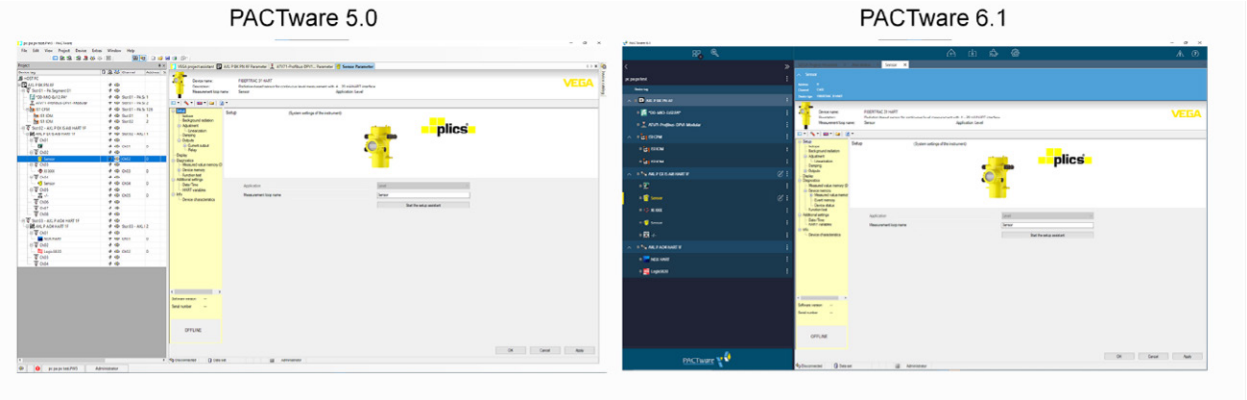
No, sorry. Would be nice to know. We get this question often. But we estimate that we have reached several hundred thousand. We have 20 companies as members for 20 years. For all the Consortium member companies, PACTware is the main tool for setup and analysis of devices.

SB

Got it! Regarding the interface, will users be able to see and manage everything the way they did with their current or previous version of PACTware?

HS

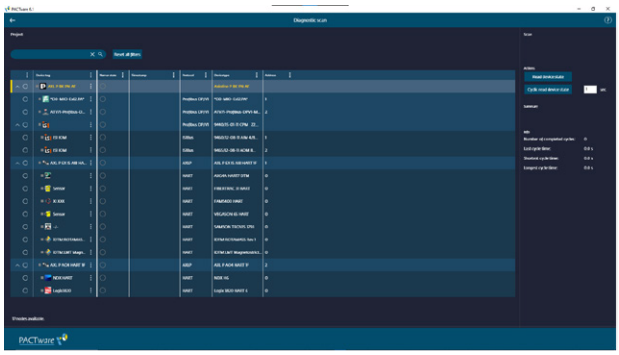
This is where we made a major change when we moved from PACTware 5.0 to PACTware 6.0. We created a completely new 'adjustment concept' in the background and of course a completely new user interface for our users.



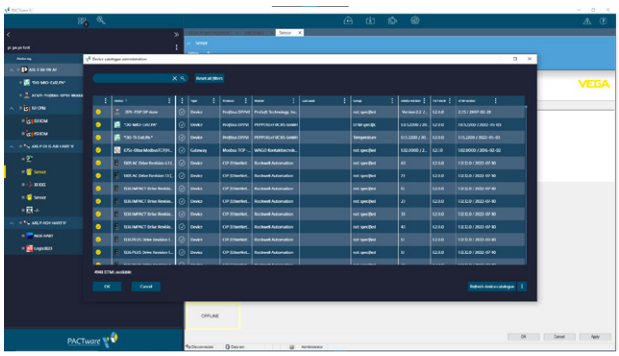
Side by side comparison of the user interface for PACTware 5.0 versus PACTware 6.1

After 20 years of development, the user interface was more complex than necessary, due to the incorporation of new functions that could be accessed in different ways. This was the traditional practice.

Today, the practice has changed a bit, so we decided to simplify the interface for our users, with only one way to reach one function. To help the users define their preferred settings, the intuitive user interface guides them automatically through the process.



Diagnostic Scan Function



Device catalogue administration function

Additionally, we have improved the interface for touch enabled Windows devices, since there are a lot of mobile devices on the market running that operating system. So, touch adjustments, touch menus, and touch concepts have been implemented in the new interface. This is a huge step for our users. So far, we have not heard about any big problem. It is kind of a challenge.

We are very optimistic with the new design, which took while and was created by user interface specialists, with knowledge on usability and user experience concepts.

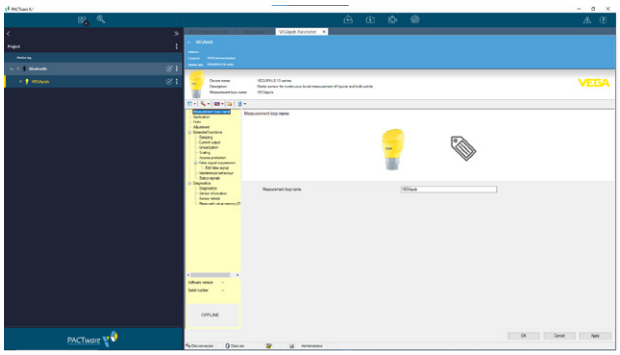
SB

Okay. How does PACTware pave the IIoT pathway for industrial device management and IT/OT operations?

HS

Well, PACTware has supported device DTMs, communication DTMs, and Ethernet communication DTMs from our member companies and others for a long time.

With our new devices from VEGA, we have integrated wireless Bluetooth technology communications. So, this is our path or step into the direction of IIoT.



VEGA integration of Bluetooth technology communication to support IIoT initiatives.

I think PACTware is a perfect tool if you talk about the NOA concept from NAMUR, the second channel path through the installation hierarchy or the automation pyramid, to have an independent path to the devices, without interfering with the main communication structure of the system. So, this works very well already.

There is new technology coming that we will implement as soon as it becomes available and stable enough to have specifications.

SB

Is there a way for users to take advantage of FDT 3.0 DTMs in the PACTware 6.1 environment?

HS

Yes. This technology is implemented already, so if there is a DTM with a HTML user interface, this will run automatically without any additional setup or configuration.

SB

Okay, does that mean that, since 3.0 DTMs are HTML enabled, that users will have mobility, or flexibility of access with PACTware?

HS

No, FDT Server technology is not implemented in PACTware. Our users run PACTware on local machines and host DTMs on the local machine. So, the core is running on local machines, not on server technology.

PACTware requires direct access to the device and therefore the user must first download the DTM or FDI package and integrate it into PACTware. Then, the user can have communication direct to the device or to the structure they are connecting to.

SB

Okay, are there any add-ins? You talked earlier about software solution providers being part of the PACTware Consortium. Are there add-in functionalities to enable access to the HTML interface with those DTMs in PACTware?

HS

It's not planned yet since PACTware is designed as a point-to-point tool.

We do not have plans to implement those features as the next step, but we will continue having those discussion because, as I said at the beginning, we want to be independent for our users, from manufacturers, from technologies.

SB

What plans are in store for future PACTware releases?

HS

We are working on adding what we call 'Download Manager' to the next version.

This functionality allows the system to automatically recognize the connected devices. Even if the user has not downloaded or installed any DTM or FDI drivers, PACTware itself will guide the user to the website of the supplier of those devices and will offer the operator the option to download the correct drivers or to upgrade them if a newer option is available.

SB

Is Download Manager a kind of a repository for device drivers?

HS

No, PACTware will take the users directly to the supplier's website that holds those device drivers. So, it's not a repository or hub.

This functionality will only work for devices made by members of the PACTware Consortium at first. You know, there are also license issues to be considered.

But we want to start with that technology first, collect experiences for us and for our users. And maybe afterwards we can extend the technology to include other device driver repository platforms later, including the FDT*hub.*

SB

In what PACTware version are you thinking of adding Download Manager?

HS

We are already working on the next version, possibly called PACTware 6.2. And this will be one function for the next version.

SB

Are there any other features that users of PACTware might be excited about with 6.2 alongside Download Manager?

HS

At this moment, no, that will be the major new feature.

Meanwhile, everybody is excited about the advancement possibilities available with the new 6.1 version. I would recommend our users not to skip 6.1 because this version has major benefits.

SB

So, the recommendation is to upgrade to PACTware 6.1 and then once you're there, then it will be much easier to accept the new features and benefits as they are launched in the future.

Okay, thank you Holger so much. I think you have provided good insight here.

HS

You are welcome. It was my pleasure.

PACTware 6.1 is available for download from its' member community at: pactware.com/de/service/download.

PACTware

FDT UE

PREDICTIVE MONITORING WITH DATA HARMONIZATION

Accelerate Your Reliability-Centered Maintenance Strategy

Capitalizing on existing data-centric technologies enables better predictive maintenance practices and uncovers manufacturing efficiencies — delivering immediate value and long-term savings.

No matter what type of industrial process, hybrid or discrete automation application you are running, improving your maintenance and workflow practices will dramatically impact your bottom line, reduce unplanned and planned downtime, and improve operation and production performance.

Using advanced device diagnostics is the foundation of your digital journey and will accelerate a reliability-centered maintenance strategy based on a predictive and proactive approach.

For over 20 years, FDT technology has been enabling distributed control systems and smart field devices for all major vendors. The FDT technology standard, an IEC international (IEC 62453), an ISA (ANSI/ISA 103) and a Chinese (GB-T 29618-2017), enables point to point engineering environments and large open automation platforms to easily integrate and access intelligent device information streamlining lifecycle management independent of the field communication protocol or control system/device supplier.

Today, the FDT standard based on version FDT3 offers modern device management with IT/OT data-driven operations enabling smart maintenance practices. An easy way to add immediate value to your install base, is to ensure your system and intelligent devices are using the latest FDT3 standard. By doing so, you can tap into data that ensures these assets are operating at peak efficiency, enabling reliability centered maintenance strategies throughout the entire enterprise.

Companies that adopt the Industrial Internet of Things (IIoT) and novel technologies associated with predictive analytics and maintenance will be among the first to realize value.

FDT3 Optimizes Predictive Maintenance

It's time to move from a culture of reactive to predictive and proactive maintenance, from 'fix it when it breaks' or scheduled maintenance activities to predictive maintenance based on diagnostics or alerts, with an optimized preventative schedule using historic and statistical data.

Using advanced analytics, operators gain insights from smart devices to predict equipment issues and optimize maintenance activities. The latest FDT3 Unified Environment (FDT UE) standard offers a data-centric FDT/DTM Server (OPC UA- and mobility-ready) platform for modern industrial device management enterprise-wide. Using new FDT3 Device Type Managers (DTMs) equipped with a WebUI and advanced business logic, operators are met with enhanced decision-making capabilities at their fingertips with access via thin clients — authenticated engineering application or mobile device with browser-access. Monitoring capabilities include collected diagnostics with standardized NE107 guidelines that define alert and notification symbols for fast and clear problem recognition and resolution. This makes the available information much more accessible to individuals without technical training and easier to use.

The FDT UE supports diverse deployment options, including cloud, edge, on-premise, and desktop environments for greenfield and brownfield plants and facilities.

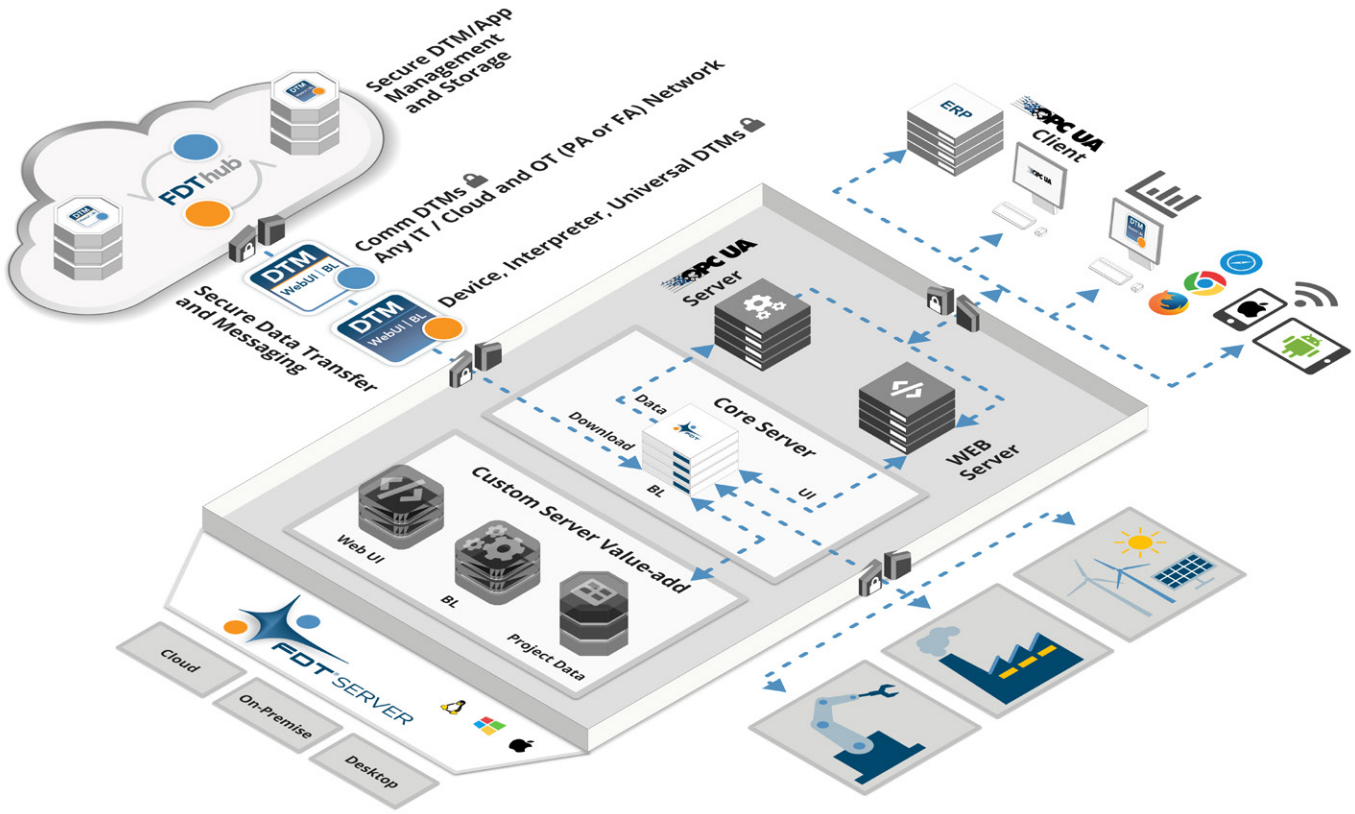
Transitioning a maintenance strategy from fixing what's broken to a strategy driven by the condition of the device enables the operation to avoid unnecessary shutdowns and circumvent added costs. With this transition, which will likely require a shift in the maintenance culture, users will appreciate the standard as it streamlines training and enables new maintenance workflows that save time and cost — the solution provides a single device management tool environment for connecting, maintaining, and monitoring any asset.

FDT UE allows the workforce to move from reactive to a predictive maintenance and proactive work culture, where users can analyze machine conditions to determine when equipment needs attention — enabling the shift from data availability to insight availability, and conversion of insights into actionability.

Unified Environment Empowers the Intelligent Enterprise

With FDT3, companies have the freedom to use data collaboratively to support new and existing manufacturing infrastructure through a smart, connected ecosystem of integrated machines and devices. Users can now bridge their legacy install base and scale their application to achieve modern industrial device management and IT/OT data access supporting smart manufacturing initiatives.

The FDT standard incorporates several specific DTM types (device and communication DTMs). These DTMs empower a standardized way of communicating, automatically making device data and health information available via the FDT Server. This architecture flattens the automation pyramid so that any application requiring data from devices can retrieve it directly from authenticated FDT, OPC UA or mobile clients.



FDT Server architecture supporting smart manufacturing and maintenance practices.

FDT empowers the intelligent enterprise by standardizing IT/OT integration and providing a secure gateway to network/device data and health information. With its utilization of an optional Publish-Subscribe environment, FDT allows for real-time data exchange. The FDT Web Server mobilizes field device operations allowing operators access to data anytime and anywhere. It optimizes monitoring and accessibility to actionable data, with real-time alerts, and diagnostics enabling new service-oriented business models for device management and maintenance initiatives.

DTMs can integrate any protocol, device/type/data model (common and device-specific parameters) and information model — a big advantage when talking about creating a unified environment that can support and sustain a reliability and maintenance-centered application across IT and OT teams in the enterprise.

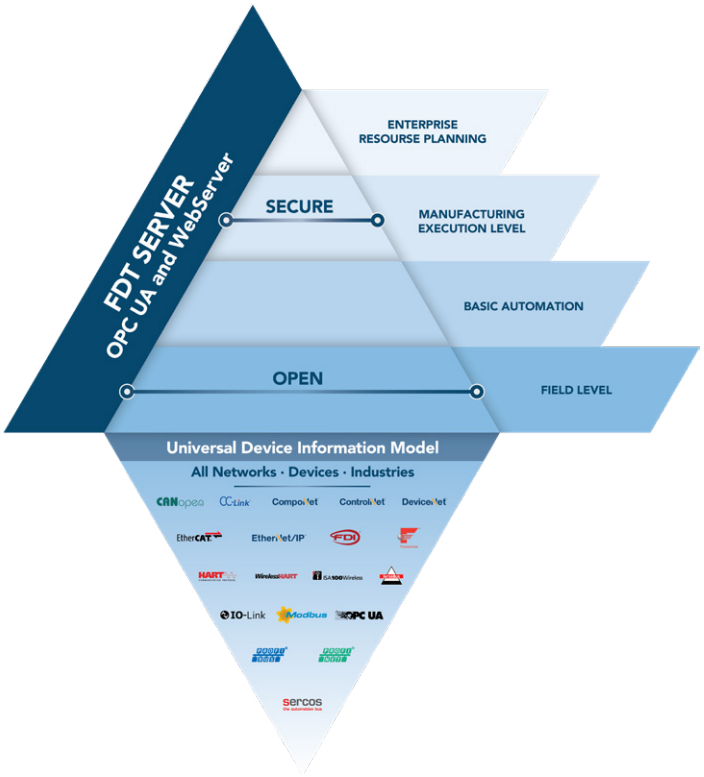
Investment in data-centric technologies and standards such as FDT improve maintenance practices and workflows for end users, impact production capabilities, and improve manufacturing efficiencies and sustainability by preventing unplanned shutdowns, reducing downtime, and lowering maintenance costs — all providing significant financial benefits.

Universal Lifecycle Management Tool

Designed for brownfield or greenfield applications, FDT optimizes the lifecycle cost of plants and factories while enhancing maintenance activities, increasing the safety of personnel and assets, and improving product quality. By being supplier and protocol agnostic, FDT is viewed as a universal lifecycle management tool allowing any device to connect and communicate in near-real-time, helping personnel make better and timelier decisions that affect the business.

FDT enables asset management by providing a single tool for device configuration, commissioning, monitoring, diagnostics, parameterization, and replacement. FDT provides a single way to integrate any device, creating one way to handle a device in different situations, including in the vendor tool, in the system environment, and in the service tool, and to consistently store the data of all devices.

For a system operator, service technicians can execute device service operations using a mobile device to access the device via the FDT Server. This way, all changes to the device can be tracked in a central audit trail.



FDT Server comes equipped with a Universal Device Information Model for IT/OT data transport

With FDT working behind the scenes, operators can take advantage of a unified environment for industrial device management for all connected devices and processes and optimize monitoring capabilities with access to actionable data from a DCS, PLC, asset management application or mobile device via any major browser – key for modern control and asset management initiatives.

Use Cases Empower Next Generation Solutions

In its report, IEEE introduces the idea of implementing digital twin for predictive maintenance. Introducing digital twin technology into a production system can improve predictive maintenance strategies — and the FDT Universal Environment enables multi-purpose digital twins. The strength of FDT has always been analytics — and now those analytics are even richer, with better device diagnostics and better performance.

In this use case, the **MOL Group's Danube Refinery** in Százhalombatta, Hungary, wanted to improve their operation and overhaul its maintenance systems with a new, unified asset management system strategy. The refinery's on-line systems use FDT technology embedded in their device configuration and maintenance systems; PRM from Yokogawa and FDM from Honeywell; enabling fast, simple and safe device configuration and diagnostics as an important part of their on-line maintenance system strategy. They used the information to identify the location of an asset problem, for device repair, and remotely accessing device information and changing the device configuration. Using the wealth of the available information, their goal was to improve maintenance processes, and human competencies and skills.

Lower Operating Costs, Improve Asset Management

A compelling gain of a predictive maintenance strategy is that many facilities can start taking advantage of FDT with little investment and very low risk. Most of the devices installed in facilities over the past 20 years are FDT DTM enabled — ready to contribute to lower operating cost and improved asset management.

Suppliers new to FDT or upgrading an existing product line will benefit from advancements that empower next generation FDT solutions. This includes an open, secure, fully standardized, and data-centric integration ecosystem connecting legacy investments with cloud, on-premise, edge, and enterprise access.

By being device, protocol, system and platform independent, FDT provides the unified environment to all connected intelligent measurement devices that have a direct influence on the profitability and availability of the operation. As in the case of MOL, plant performance can be significantly improved if users are willing to access and use the intelligent device information for more than just configuration.

Next Steps

Device intelligence is a game-changer and key to achieving a reliability centered maintenance strategy. Now is the time to take inventory of your equipment and ask for FDT device DTMs to reap the benefits of data driven operations supporting your application today and into the future. Vendors should ensure their system and devices are updated to the latest FDT3 version so users can scale their IIoT applications at their own pace.

Learn more about FDT3, modern industrial device management, and about selecting and specifying devices and applications that include FDT technology to access and use information from intelligent field devices to help prevent unplanned shutdowns, reduce downtime, and lower maintenance costs.

USE CASE

REFINERY USES ASSET MANAGEMENT TOOLS TO IMPROVE PLANT PERFORMANCE

The Danube Refinery in Hungary, set-out to improve their operation and decided to overhaul its maintenance systems with a new, unified asset management system strategy.

The MOL Group's Danube Refinery in Százhalombatta, Hungary, set-out to improve their operation and decided to overhaul its maintenance systems with a new, unified asset management system strategy. The combination of the information in their installed smart devices and their maintenance on-line system has changed the MOL maintenance strategy and the way it uses the diagnostic data available in the field device. The on-line systems use FDT Technology embedded in their device configuration and maintenance systems; PRM from Yokogawa and FDM from Honeywell; enabling fast, simple and safe device configuration and diagnostics as an important part of their on-line maintenance system strategy.

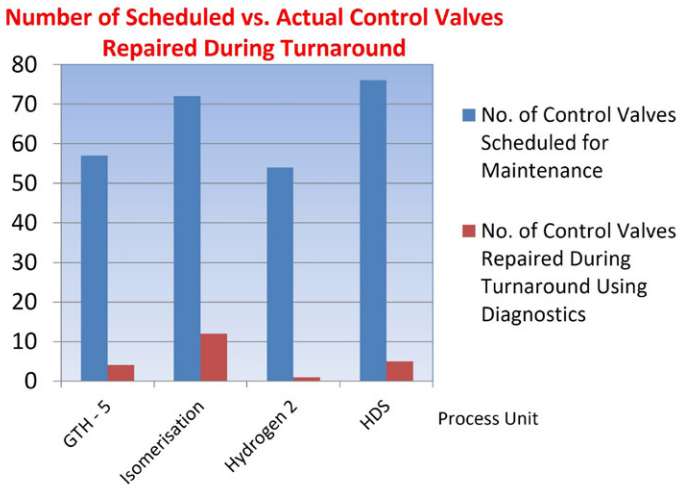
By using these systems, they support the field instrumentation maintenance activity providing information used to: identify the location of an asset problem, for device repair, and remotely accessing device information and changing the device configuration. Using the wealth of the available information, their goal was to improve maintenance processes, and human competencies and skills.

According to Gabor Bereznai, MOL instrumentation and electrical department head, "I would like to emphasize that the FDT Technology is one portion of the total solution which includes several systems. I think many companies, including the big ones, often underestimate the need to improve both the process and the human side of the activity. That's why many times they are not able to fully utilize the benefits of available and installed technology." Gabor comments on the importance of provided people with the information they can use to maximize their performance.

The three MOL Refineries currently have about 30,000 smart devices with approximately 90% installed at the Danube location. Devices at the Danube Refinery are connected to an on-line system using both HART and FOUNDATION fieldbus field communication technology — many of these having DTMs that provide simple and fast information access which is traceable — documenting device status and changes. In the 15 key production units, there are 3,855 instruments connected to the CMS (Computerized Maintenance Management System). The maintenance staff, including engineers and technicians benefit from having quick access to information that provides early warning of potential problems.

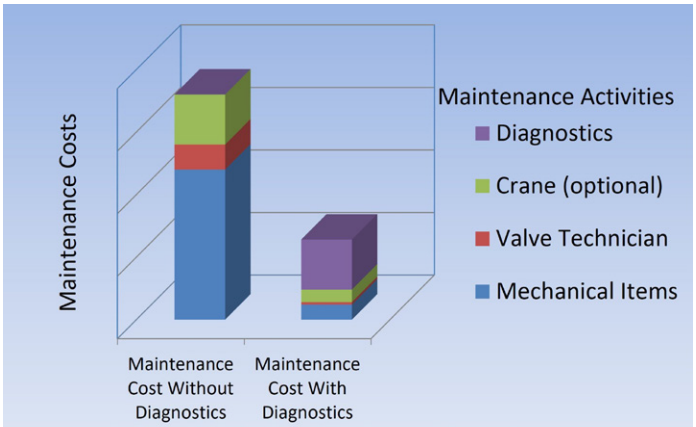
Using a combination of the device DTM (similar to a device driver that is included with a new printer) and the PRM or FDM device management tool (examples of a Frame Application), they are able to: diagnose problems with smart devices, perform loop checks, modify the configuration and get a visual overview (range, alarms, etc.) of the device. This information is available from a safe and secure location which reduces the number of trips into the production area and provides faster response to potential problems.

The FDT/FRAME Applications (FDT Desktops) and DTMs support the preventive maintenance strategy with self-diagnostic and condition monitoring. Examples: by reading the cell temperature of a pressure transmitter, they check the impulse-line heaters. This is critical in order to avoid slow-downs or a shut-down of production. Also, reading the set-point and the current travel of control valves by accessing information in the valve positioners, they are able to know the status of the valve's condition. Reading other parameters such as drive-signal (or drive current), supply pressure and cycle-count, they are able to have information that helps troubleshoot and prevent problems. This information is unique and essential to make on-time decisions in order to avoid slow-downs or shut-downs. As shown on the left, about 32,000 installed devices are intelligent providing the capability of access to their device information which includes; process measurements, device status, device diagnostics, troubleshooting guides and much more.



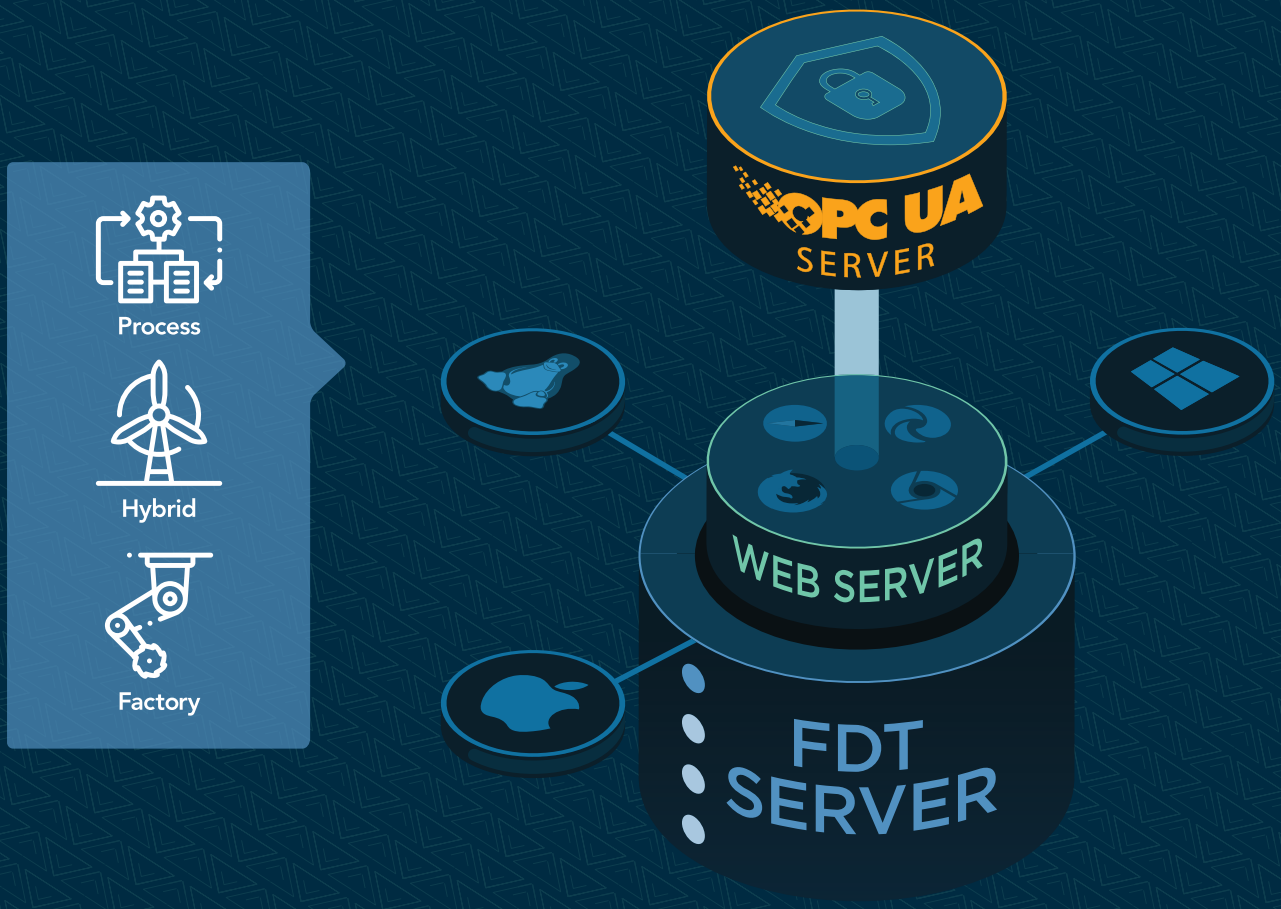
"We gather information before a turnaround using device diagnostics, which in the case of control valves, saves us $20,000 – $70,000 per turnaround — making us more predictive and proactive and less reactive." says Bereznai. "The DTM provides fast detailed device checks with a visualized faceplate and a simple to understand device overview." As shown in the chart on the right, there is a significant reduction in the number of control valves that have to be removed, repaired and replaced during a unit turnaround. Before each scheduled turnaround, each valve's

diagnostics are checked to determine which control valves actually need to be repaired during the turnaround; saving both time and money.



In today's economic situation of reduced maintenance budgets and manpower, it is reasonable to look for non-traditional ways to remain competitive. A change to improved or proactive asset management is not easy. Using the intelligence in the installed measurement assets could provide big returns on the investment. The old proverb, it takes a village to raise a child, also applies to automation — it takes the entire plant operation to improve plant reliability and performance. Integrating intelligent device information, providing the tools to access the information and training the human resources — maintenance technicians, engineers, unit operators and management — to more fully understand and use this valuable information is part of their future plans. The image above demonstrates the significant benefit in the reduction of control valve maintenance costs without and with the use of intelligent device diagnostics.

FDT technology provides the core element of effective asset management system. By being supplier, protocol and system independent, it provides a window into the intelligent measurement devices that have a direct influence on the profitability and availability of the operation. As in the case of MOL, plant performance can be significantly improved if users are willing to access and use the intelligent device information for more than just configuration.



FDT UE Makes IT/OT Data Integration a Reality—Today!

- Open Interoperable IIoT Architectures
- Secure, Scalable, and Adaptable Platforms
- Comprehensive Control and Configuration
- Standardized Universal Device Integration

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FDT® UE

case study

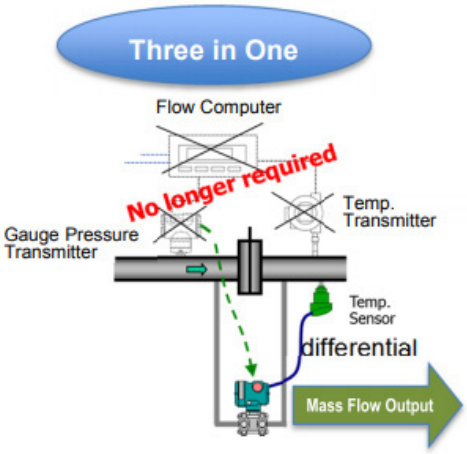
YOKOGAWA

Yokogawa Adds New Functions to Oprex™ Field Instruments

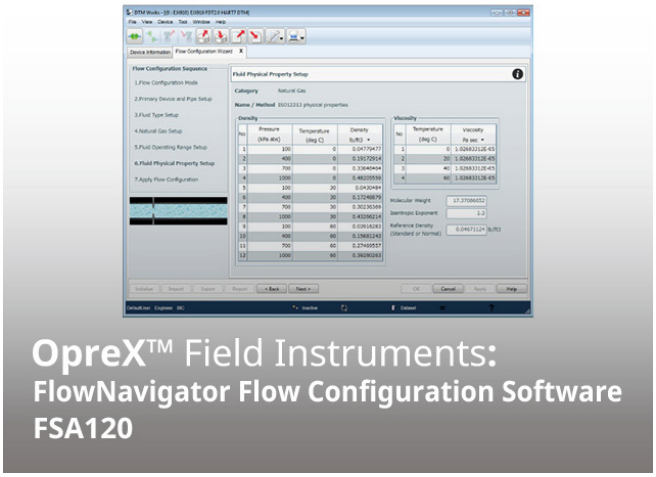
EJX Multivariable Transmitter, FDT 2.0-based-DTM, and FlowNavigator Flow Configuration Software FSA120 improve procurement, setup, operations, and maintenance, reducing the troubleshooting time required in the event of equipment failure.

EJX Multivariable Transmitter successfully integrates the DPharp multi-sensing capability with an onboard flow computer and can be configured for multi-variable (DP, SP, T) or dynamically compensated mass flow outputs. Dynamic flow compensation allows the EJX Multivariable transmitter to eliminate inherent errors in the DP flow calculations at actual operating condition and to model the flow profile more precisely. Extensive range of primary elements and process fluids are supported. The EJX Multivariable Transmitter is compatible with a wide range of primary devices, including orifice plates, nozzles, venturi tubes, multiport averaging pitot and cone meters, and can be used with various types of fluid, including general fluids DIPPR, steam tables IAPWS-IF97 and natural gas standard AGA8/ISO12213.

EJX Multivariable Transmitter

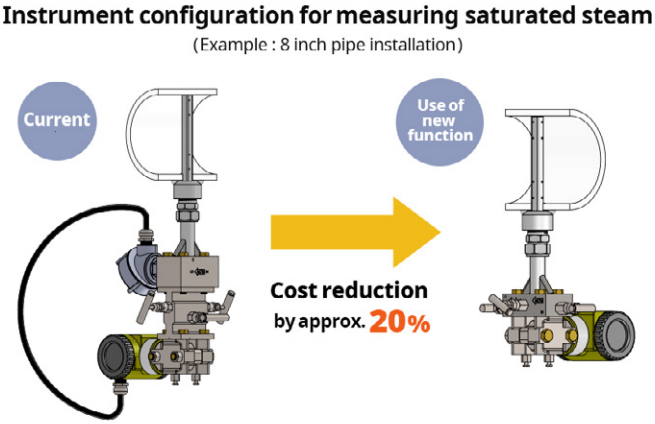


Application information, such as the primary device and fluid data required for mass flow calculation, is using an FDT 2.0-based mass flow parameter configuration tool — FlowNavigator Flow Configuration Software FSA120 that runs on a PC and is downloaded to the transmitter by means of field communication. In operation, the flowmeter computes standard volumetric or mass flow from measured differential pressure (DP) and flowing density using actual measured pressure and temperature, unlike standard differential pressure transmitters which assume pressure and temperature — and therefore flowing density — to be constant.



FlowNavigator Flow Configuration Software FSA120

New functions have been added to the YOKOGAWA Multivariable Transmitter EJX910A and EJX930A.



Saturated Steam Mode added for EJX Multivariable Transmitter

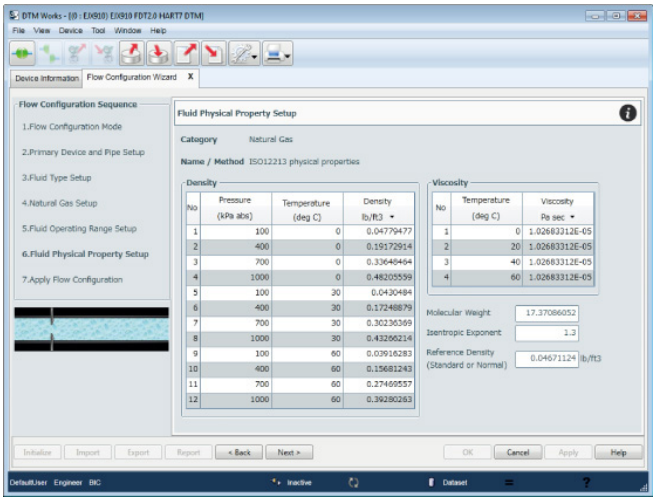
To reduce engineering man-hours and procurement costs, operation without using an external thermometer under saturated steam is made possible. The EJX Multivariable Transmitter can now calculate steam temperature from static pressure values using the steam table (international state formula IAPWS-IF97). When saturated steam mode (ET Fixed = Saturated Steam) is set, steam temperature values can be calculated. In measurement function B (mass flow measurement), saturated steam flow rate can be measured without connecting an external thermometer.

Storage of User Flow Parameters in FlowNavigator Flow Configuration Software FSA120

Application information, such as the primary devices and fluid data required for mass flow calculation, is using an FDT 2.0-based mass flow parameter configuration tool, FlowNavigator. Users can now enter application information using FSA120 FlowNavigator R2.03 GUI (Graphic User Interface) allowing "User Flow Parameters" to be stored in the transmitter. This reduces man-hours required for equipment setup and management, enabling rapid start-up of operation. Previously, storage of "User Flow Parameters" in the transmitter was not possible.

"User Flow Parameters" entered using the FlowNavigator's GUI include the primary device and fluid data required for mass flow calculation.

- Primary device and pipe setup
- Fluid type setup
- Fluid operating range setup
- Fluid physical property setup



Fluid physical property setup

Display of Device History

Detailed equipment history information, including alarms and process data detected by the transmitter, can be displayed, and harvested via the EJX Multivariable Transmitter FDT 2.0-based-device DTM in the unlikely event of equipment failure. This provides improved maintenance operations by reducing the troubleshooting time required in the event of equipment failure.

----------Maximum/Minimum----------		
Static Pressure Max	, 3564.7	kPa
Static Pressure Min	, 0.0	kPa
CapTemp Max	, 120.7	degC
CapTemp Min	, 19.0	degC
AmpTemp Max	, 85.0	degC
AmpTemp Min	, 18.9	degC

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