Di VE

**Digital
Virtualization
Experience**

hmi

DiVE HMI is a suite of tools and platforms enabling the quick and smart access to existing/new manufacturing applications through personal smart devices (smartwatches, tablets, smartphones) and more traditional terminals like touch screens and large size monitors.

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It includes the following configurable modules **ANDON, DiVE Viewer** and **DiVE Smartwatch**.

The **DiVE Smartwatch** module has been conceived as a wearable human interface for extreme "mobilizing" of new/legacy manufacturing applications through the use of the new generation of wearable devices, the smartwatches.

DiVE Viewer is a lean configurable tool for supporting line operations (operation guidance, job confirmation, support requests, etc.) via touch screen terminals. Can be easily integrated with DiVE Smartwatch.

ANDON manages large networks of hanging monitors informing plant staff about production performance, lines status, quality or process issues, etc.

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ENGINEERING

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main features

- Device responsiveness
- WiFi - NFC - BLE technologies
- Easy Devices/Users logical coupling/decoupling
- Screen contents configurability
- Wide range of managed devices and content types

DiVE Smartwatch

- DiVE Smartwatch SW can manage text, video, audio and sensorial information.

- May be used with watch-like devices fitted into protective industrial case preserving the operator from injuries and the product from involuntary damages.

- DiVE Smartwatch SW can manage additional peripherals (e.g. bar-code readers) connected to the watch-like terminal and fitted in the same industrial glove.

- Can be identified and associated to / dissociated from a workplace and/or or a user via NFC and BLE technologies.

FUNCTIONS

- Receive real-time instructions and information to be used by the user at his workplace.

- Guides the user through safety and operation checklists.

- Enables the line staff to Confirm tasks/Cycles, Products, completion and send requests and calls.

- Receive alarm messages from plant systems.

ANDON

An easily configurable large monitors management system delivering video (text, images, video clips, graphics, …) and audio information coming from Plant-related systems. This product include connection services and an easy to use configurator.

A network of large video panel can be controlled by the ANDON Server delivering to each of them the information needed in that place and at that time.

DiVE Viewer

This tool may be used wherever the plant staff at a specific workplace need to be guided, via touch screen devices, in performing a variable tasks and needs to confirm the achievement or failure of a specific task or inspection.

DiVE Viewer also includes drivers and services for managing Beacons/NFC devices when they are needed to associate operators or wearable devices at a specific workplace and detect their leaving it.

Hand-free user experience

Allow to receive messages and send acknowledgments while keeping hands free.

Employee productivity enhancement

The Operator has immediate access to the instructions needed to carry out the tasks.

Full visibility and control on the plant floor

Managers can quickly access real-time information and provide faster and more reliable responses to line the lin staff.

Help preventing plant/production disruptions

The Operator can receive instant notifications of any important issues.

Cheap and quick professional solution

A professional solution that doesn't require expensive and bulky infrastructure and can be easily connected to already existing systems.

The gateway to Industry 4.0

A step ahead toward the connected enterprise.

Reduction of no-value-added tasks

Help the Operator to perform the activities, while optimizing efforts and avoiding waste of time.

Role/Product personalized information

Specific data and critical information, tailored to the Operator's profile and current task.

Innovative work experience

Helps improving staff integration.

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virtual plant

An easily manageable and Industry 4.0 compliant bidirectional communication tool enabling a generic manufacturing system to exchange data and commands with the plant.

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Virtual Plant virtualizes the interface with the shop floor, providing a standard communication layer for manifacturing oriented applications. Virtual Plant has been designed to easily manage large data Volumes, Velocity and Variety making the most of new powerful hardware platforms.

Virtual Plant Core has been designed with a product independent approach and is based on state-of-the-art Open Source platforms. Through its powerful external interfaces management tools it can be easily connected to MES/MOM/SCADA commercial and custom solutions based on different technologies.
It may be used as a manufacturing solution integration and communication enabler allowing also non-DiVE applications and products to safely exchange data and events with each other and with shop floor assets.

DiVE Virtual Plant has a fully scalable design and may run on plant level servers taking advantage of fast shop floor networks for managing heavy data flows but also at Cloud level collecting data coming from a large quantity of geographically distributed sources.

main features

■ Data abstraction

■ Quick and Easy access to data

■ Data persistence

■ Data filtering

■ Event notification

■ IoT compliance

Capabilities

- Hiding the plant assets heterogeneity and complexity through a wide set of lines, assets, machines and sensors virtual models

- Moving the complexity of events generation rules off the applications thanks to an internal smart rule configurator

- Managing a large set of networking standards both wired and wireless

- Managing legacy and new generation networks, protocols and a large set of data types

Functions & services

- Plant, asset and external application configurability

- Shop floor Data read/write services

- Easy A2A communication

- Events generation and notification

Non intrusive, quick professional solution

It doesn't require expensive and bulky infrastructure and can easily run on existing systems.

Legacy systems compliant

Able to integrate legacy systems and non-standard devices using API.

Streamlined design

Minimum impact on existing architecture.

Device abstraction

Transform data from their native structure and syntax into standard structure, views and services.

Easy integration and device abstraction

Applications can access required information through a single and standardized interface, regardless of the device to be connected.

DiVE
Digital Virtualization Experience

analytics

The DiVE Suite module dedicated
to Predictive Maintenance

DiVE Analytics is the DiVE Suite module
dedicated to Predictive Maintenance. It
helps avoiding unexpected faults
predicting when they will probably occur.

For this purpose, the DiVE suite provides different
applications at different levels, to guarantee the full
operativity of all the production assets and to give
as much information as possible to plan maintenance
activities in an efficient way.

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main features

- Identifying key predictors and determining
  the likelihood of fault events on the time axis.

- Helps reducing maintenance costs
  and spare parts stocks.

- Enabling the evaluation of different maintenance
  strategies in terms of risks and benefits.

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Capabilities

- Flexible scope, from single equipment to complex production cells.

- Based on Machine learning models.

- Process agnostic, adaptative to different environments.

- Two different analytics layers:
  - condition monitoring;
  - predictive maintenance with machine learning.

Functions

- Plotting "predictors" deviation forecast curves.

- Providing predictions accuracy level indexes.

- Data profiling tools.

- Providing "RULE" residual useful life estimation.

- Producing scenarios comparison and impact analysis.

Maximize the availability of plant/facilities

Making the most of the useful life of the component.

Reduce maintenance cost

Act before failures occur

Thus preventing production losses and major assets damages.

Increase OEE
Overall Equipment Effectiveness.

Reduce unplanned downtime

Increase ROA
Return On Assets.

Scheduling efficiency

Maintenance activities can be scheduled efficiently.

Digital Virtualization Experience

maps

DiVE MAPs is a new generation, Industry 4.0 compliant, real-time monitoring tool providing OEE, Production performances indexes and Early Warning (assets fault risk) conditions detection.

Provides a real-time view of the plant status.

Delivers OEE calculation and a large set of reports and screens.

Thanks to Condition Monitoring functions helps avoiding down-time events alerting the maintenance staff in case of suspect/hazardous trends.

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main features

- Flexible views from single assets to the whole plant
- Embedded user friendly screen layouts editor
- Totally integrated with DiVE Anaytics
- Responsive Web Application

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Capabilities

- Easy-to-use embedded configuration and layout editor.

- Zooming screens with drill down view capability from the full plant to single assets.

- New generation responsive HMI (PC, Tablet, Smartphones).

- Powerful connection tools (via DiVE Virtual Plant), to robots, assets controllers and sensors for real time data/events monitoring and persistent storage.

- Connection to DiVE Analytics for supplying diagnostic data to Cloud-based advanced analysis.

- Easy connection to external Asset Maintenance and Maintenance Workforce management systems.

Functions

- Production data monitoring.

- Asset health/status monitoring.

- OEE calculation.

- Assets efficiency KPI's trend analysis.

- Early Warnings conditions detection and notification.

Improve assets reliability Plant staff can rely on always-on plant asset

Prevention of unexpected breakdowns in the system, due to machine obsolescence, by keeping system status under control.

Full visibility and control of the plant floor

Allows to focus on every single machine as well.

Real-time monitoring

of lines, stations and equipment with instant alarm/event notifications.

Increase OEE

Overall Equipment Effectiveness.

Reduce unplanned downtime

Detection of Bottleneck equipment

Helps identifying equipment that worsen plant efficiency indexes.

Accurate & exaustive analysis

Enables multi-level accurate views and analysis down to single machine job and cycle.