



GRINDING | ULTRA PRECISION

# Smart Process Optimization for High-Impact Applications\_

A comprehensive suite of digital solutions



# Smart machines = smart factories

A solution developed by industrial users for industrial users



Using data to  
improve efficiency  
and productivity

IT  
-  
OT



1

## Digital Platform

- Data output for high level digital solutions such as CMMS, SCADA and/or MES

2

## Field App Platform

- Selected data are centralized and used in digital value-added field operation applications.

3

## Diziscop Gateway

- A gateway locally records the machine data at a high frequency rate.
- Non-intrusive, high-frequency data acquisition and analysis gateways, capable of interfacing with all standard automation systems.



CONNECTIVITY

Vibration  
sensors



IOT Box



Robots



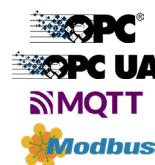
PLC



CNC



Protocols



IP CCTV



## SHOP FLOOR DATA ANALYSIS

### VALUE PROPOSITION

- Utilize an advanced maintenance tool
- Increase operational efficiency
- Improve production system reliability



### HOW IT WORKS

- Design & monitor machines cycle times
- Online or offline cycle time analysis
- Characterize process issues or limitations
- Help to precisely identify the cycle actions Critical Path



### MAIN FEATURES

- Create/configure non-intrusive monitoring
- Declare equipment & variables of all type
- Collect data at the CNC / PLC level
- Analyze data evolution
- Combine variables for in-depth analysis
- Trigger cameras on process signals
- Generate alarms & faults



# CONDITION-BASED MAINTENANCE

## VALUE PROPOSITION

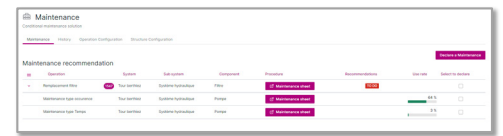
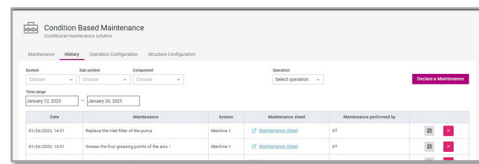
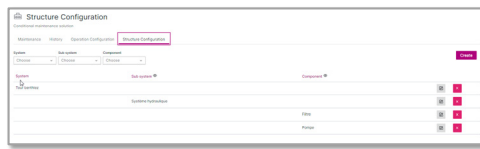
- Improve machine availability and maximize asset ROI
- Maintain assets while reducing impact on production
- Extend the equipment and components lifetime
- Reduce maintenance costs and stocks

## HOW IT WORKS

- Supplements preventive maintenance
- Describe the machine according to its actual structure
- Declares conditional maintenance follow-up operations according to running criteria
- Control maintenance according to real machine needs, avoiding costly repairs

## MAIN FEATURES

- Automatic follow-up of criteria values
- Cross visualization of in progress or planned maintenance operations
- Access to previous maintenance history
- Add new conditional maintenance operations to track



# MACHINE STATUS MONITORING

## VALUE PROPOSITION

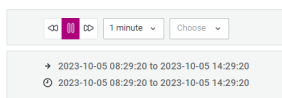
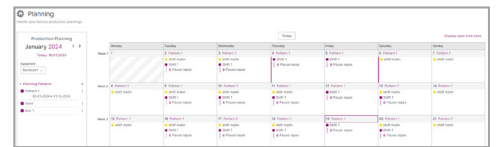
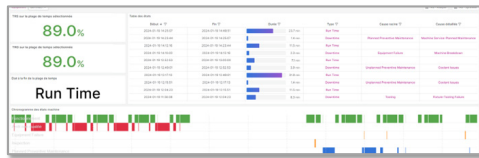
- Improve productivity
- Define targeted action plans
- Automatic detection of production downtime
- Align team priorities with data-driven insights

## HOW IT WORKS

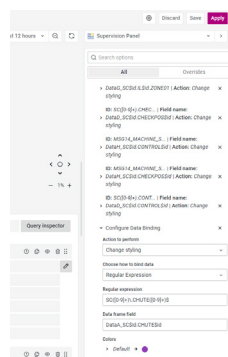
- Productivity overview of machine/line
- Forecasts machine tool availability
- Qualifies downtime causes
- Key indicators follow-up OEE, OOE, TEEP, Status Chronograms, Downtime Pareto, MTBF, MTTR

## MAIN FEATURES

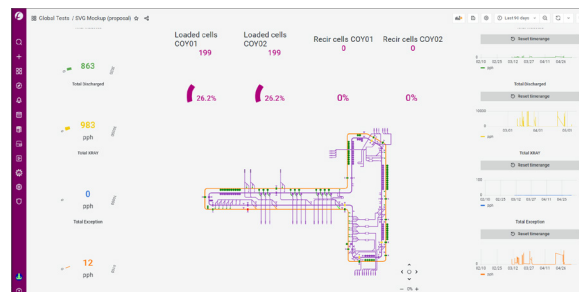
- Define automatic and manual shutdown causes
- Classification of causes in a tree structure
- Setup automatic detection rules
- Enter dynamic production calendar
- Restitution in monitoring and analysis dashboards



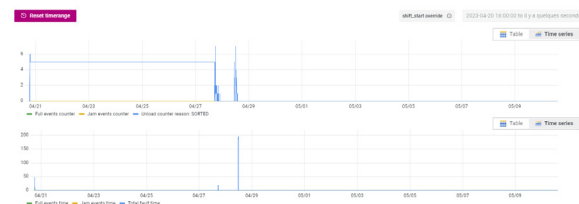
Panel Replay



Panel SVG : graphical configuration



Panel SVG : Animating a line or machine



Panel SVG : contextual curves

## SVG & REPLAY BUSINESS PANEL



## Cockpit monitoring

- Display of a fully configurable dynamic view of a production line
- Multi-layered SVG file management
- Animation of each element with an easy configuration identical to other Grafana components
- No code/Low code approach
- Displaying contextual curves
- Replay function





## DRY RUN CYCLE ANALYSIS

### VALUE PROPOSITION

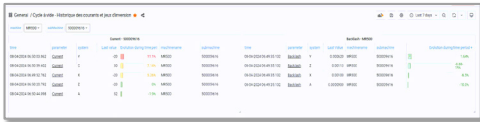
- Monitor machine health (wear)
- Reduce maintenance costs and downtime
- Prepare, anticipate and plan maintenance operations
- Optimize spare parts stock

### HOW IT WORKS

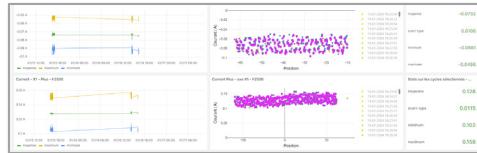
- Run a specialized non-intrusive part program
- Regularly check axis currents and backlash
- Each axis moves independently and without tooling

### MAIN FEATURES

- Identifies the monitoring phases
- Samples and contextualizes data to analyze
- Perform additional calculations on the variables (virtuals)
- Use standard dashboards: plant, machine, current, backlash



Machine



Currents



Backlash



## ENERGY CONSUMPTION USE CASE BREAKDOWN

### VALUE PROPOSITION

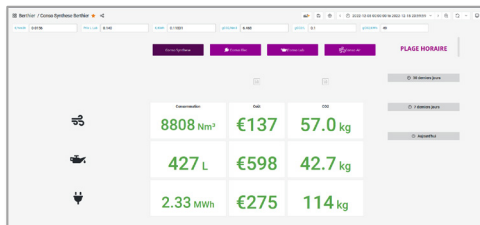
- Reduce carbon footprint (Line, Machine, Part)
- Monitor energy and utility consumption
- Meet regulatory and market requirements

### HOW IT WORKS

- Identify and contextualize where, when and how to precisely reduce energy and utilities
- Correlate high frequency machine data with meter records
- Target machine components:
  - optimize energy consumption
  - correct energy consumption drifts

### MAIN FEATURES

- Collect and analyze machine data by status and production phase
- Restitution in monitoring and analysis dashboards



State machine	Production quantity	Cost	CO2
Non en service	171 Nm³	€2.67	1.11 kg
En Production	115 Nm³	€1.80	746 g
En service	87.3 Nm³	€1.36	565 g
NA	50.7 Nm³	€0.791	328 g



## TRACEABILITY

### VALUE PROPOSITION

- Retrace production history
- Monitor influential parameters (quality, consumption, rate)
- Understand complex or rare outages
- Record regulatory or contractual data

### HOW IT WORKS

- Create and configure non-intrusive observation projects
- Identify parameter values for database storage
- Visualize monitoring dashboards
- Retrace setting history of a machine or a process

### MAIN FEATURES

- Historical values dashboards (current, dimension, temperature, etc.)
- In-process key phases (top end of part, welding, etc.)
- Influencing parameters monitoring dashboards (recipes, acceleration, set-points, etc.)



fives

Industry can do it

### CONTACT US:

Fives Landis Corp.  
16778 Halfway Blvd. - Hagerstown, MD 21740- USA  
Tel: +1 301 797 3400

Email: grinding-ultraprecision@fivesgroup.com

www.fivesgroup.com