Tool wear and breakage monitoring system

WattPilote Evolution

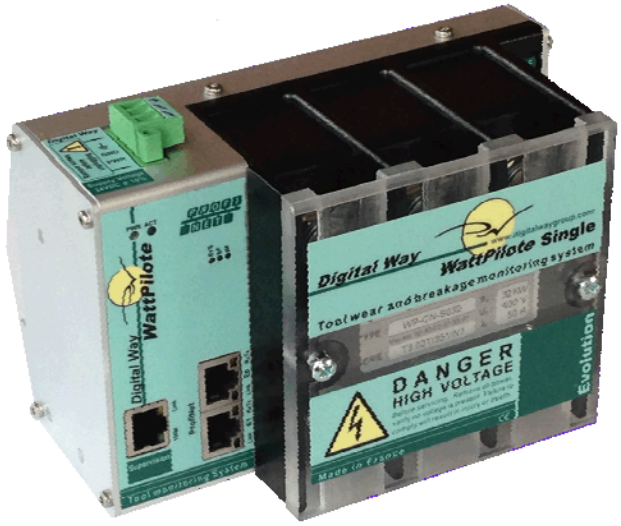
www.digitalwaygroup.com

Single-spindle machining centers and special machines

WattPilote Single has been designed especially for one-spindle machines using a significant number of tools: machining centers, special machines with tool changers.

Avoid scrap and extend tool life

The objectives of real-time machining monitoring are to avoid scrap parts, to increase tool life, and to reduce machine downtime.



Reduce machine downtime

WattPilote allows special machines or machining centers with pallet changers to work while untended. When tool wear or breakage is detected, the machine stops, changes the tool, and then starts machining again, either on the same part or on the following part.

Monitor critical machining operations

Often critical operations performed with small and fragile tools must be monitored. Due to the measurement accuracy achieved by Digital Way's unique control algorithms, WattPilote can monitor all tools, even the smallest: controlling a 0.07 second machining cycle using a 1mm drill on a 20kW spindle is possible.

WattPilote system — What For?

Indispensable to ensuring your production quality, the WattPilote is the best solution to reduce your manufacturing costs, avoid producing scrap and to protect your machines.

On any machining center — How ?

The flexible communication module integrated in WattPilote supports a wide range of Fieldbus options and allows installation on any machine

Unique sensing technology — Why ?

WattPilote has the ability to monitor the condition of a wide range of cutting tools – from a multi-insert milling cutter to small-diameter drills and reamers.

Install outside the machining environment

Only one box, containing the power measurement sensors, signal processing, and Fieldbus interface, is mounted inside the electrical cabinet. The system is compact, easy to install, and resistant to environmental influences (cutting oil, swarf, temperature, mechanical vibrations, and electromagnetic noise).

Diagnostic and supervision functions available on numeric controls

Visu-CN-C software is an effective diagnostic and supervision tool.
It is a user-friendly software package that can be loaded directly onto PC-compatible numeric controls. The operator can display machining cycles, tool wear condition, and fault curves. He can modify the control tolerances, and acknowledge faults and tool changes.

Spindle preventive maintenance

WattPilote is designed for real-time machining monitoring. However, it can also periodically monitor preventative maintenance machine cycles to record the spindle signature and detect mechanical faults: ball-bearing wear, lubrication issues …

Para más información, visite nuestra página web:
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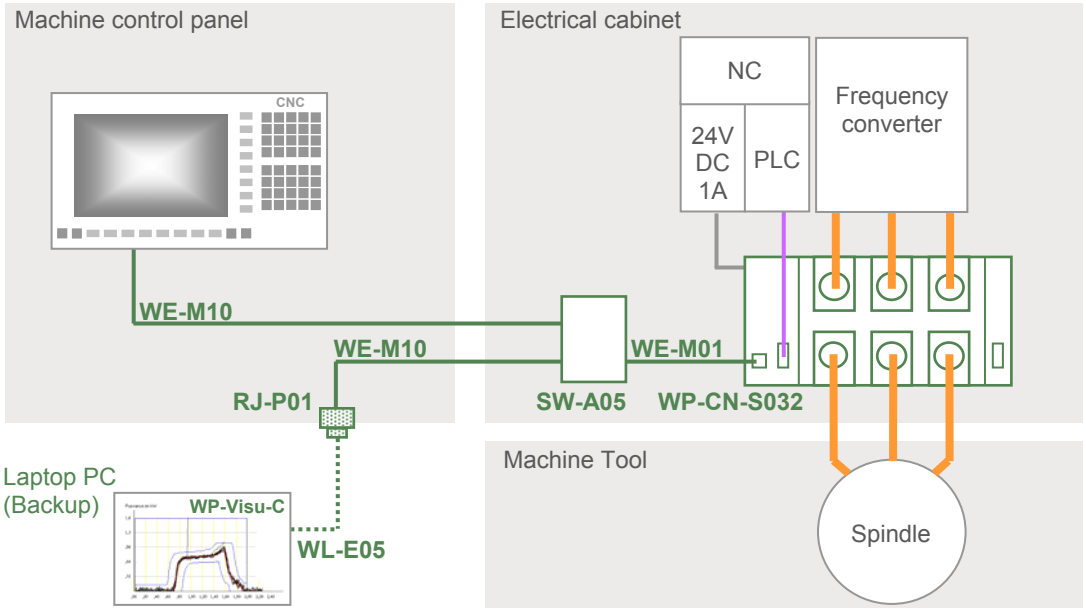
Single

Evolution Model range



Single-spindle machine tool with numeric control

Drilling
- Wear
- Drill breakage
- Missing tool

Boring
- Wear
- Double boring
- Reamer breakage
- Insert breakage

Tapping
- Wear
- Double tapping
- Tap breakage

Deep hole drilling
- Wear
- Drill breakage
- Missing tool

Milling
- Wear
- Double milling
- Insert breakage

General characteristics — Evolution

Max number of different machining cycles	120
Minimum machining cycle time	0.07 sec.
Maximum machining cycle time	50 minutes
Reaction speed	0.005 sec.
Saved machining cycle curves	last 30
Saved faults	last 30
Saved wear rate	last 65,000
Power, derivative, energy control	Simultaneous
Measurement accuracy	0.01 %

Technical characteristics — Single

Power supply	24 VDC ± 10%, 0.5 A
PLC Protocol - Fieldbus	ProfiNet IO-RT
	Profibus-DP I/O Slave
	DeviceNet Slave
	Ethernet/IP
	EtherCat
	Smart (Digital I/O)
Supervision interface	Ethernet, 10/100 Base TX
Fast Inputs	24 VDC type II, 15 mA
Fast Outputs	Work contact static relay 24VDC
Ambient temperature	0 ... 50°C
Assembly	Symmetrical rail DIN EN50 023
Dimensions	L 170 mm, W 105 mm, H 96 mm
Protection rating	IP 20
Weight	1kg 260

WattPilote Single Evolution reference — Part Nr.

WP–C X – X 000

ProfiNet IO-RT :	N	000	: Power rating in kW
ProfiBus DP Slave :	B	S	: Three-phase spindle motor
DeviceNet Slave :	D	H	: High-frequency three-phase spindle motor
Ethernet TCP/IP :	E	A	: Three-phase axis motor
Smart Interface :	S	D	: Direct current motor

Example - WP-CN-S032 : WattPilote Single Evolution – 32KW three-phase spindle – ProfiNet interface