Tool wear and breakage monitoring system **WattPilote Evolution**

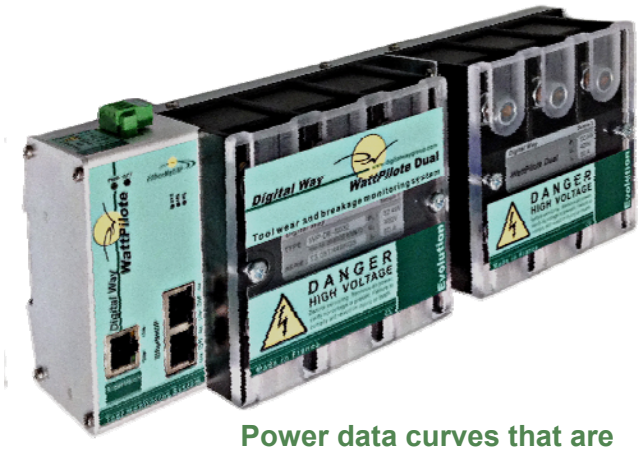
www.digitalwaygroup.com

Machining centers and special machines with 2, 3, and 4 spindles

WattPilote Dual, Triple and Quad are tool wear and breakage monitoring systems especially designed for 2, 3, or 4-spindle machines: machining centers and special machines.

For dependent or independent spindle machines

Power absorbed by each spindle is measured and controlled independently: the 2, 3, or 4 spindles of the machine can be mechanically interconnected or completely independent. Each spindle can use a similar or a different type of spindle motor.



Power data curves that are easy to understand

WattPilote memorizes the last 65,000 machining reports (date, time, control mode, and fault), the last 30 machining curves, and the last 30 fault curves for each spindle.

Monitor critical machining operations

Machining centers and special machines with 2, 3, or 4 spindles are increasingly used to improve production rates. To monitor the most critical operations on these types of machines, WattPilote Dual, Triple or Quad has two, three or four independent power channels for measurement and control: tool wear and breakage monitoring is as simple, reliable, and accurate as it is on single-spindle machines.

WattPilote Dual

WattPilote Dual ensures production quality, reduces manufacturing cost and avoids producing scrap on any 2-spindle machining center or special machine.

WattPilote Triple

WattPilote Triple is the most efficient solution to monitor wear and tool breakage on 3-spindle machining centers and special machines.

WattPilote Quad

WattPilote Quad is ideal to monitor tools on any machining centers and special machines with 4-spindles, designed for the production of parts in large volume.

Compact, installation within the electrical cabinet

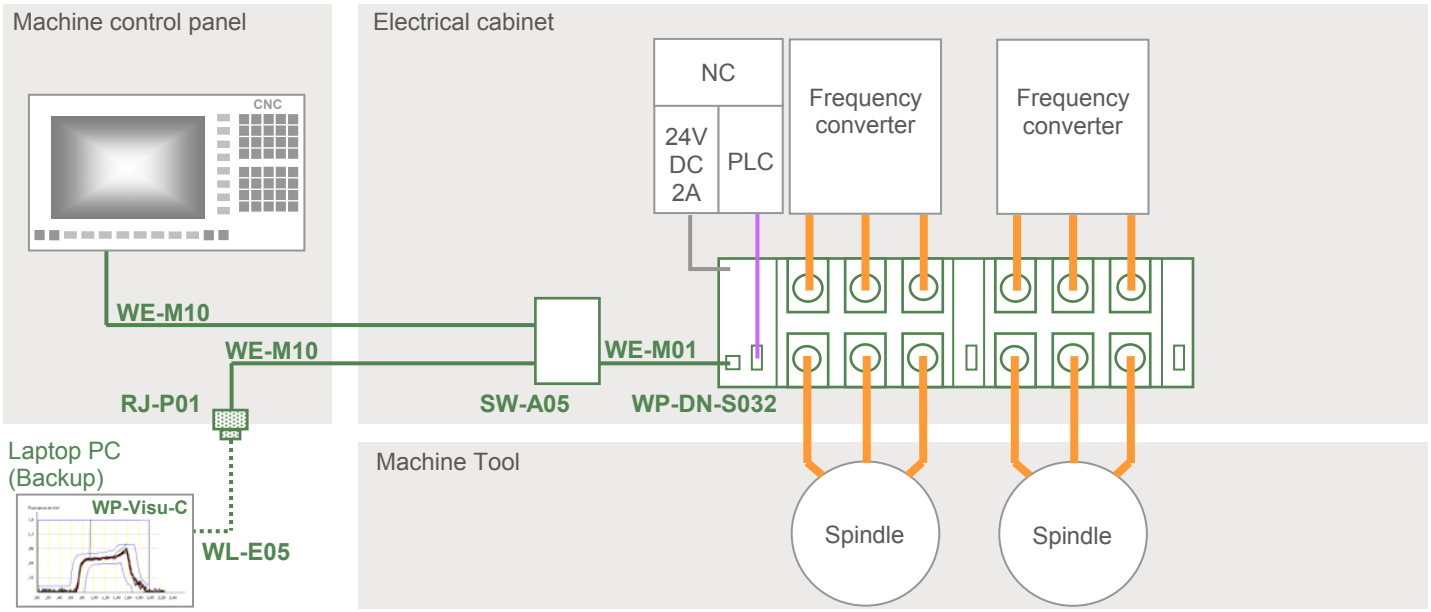
WattPilote Dual, Triple and Quad have independent wear and breakage monitoring systems in the same box, only the wiring with the PLC is in common, so the system is compact and easy to install.

Diagnostic and supervision functions available on numeric controls

The 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.

Dual

Evolution Model range



2 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	2 x 120
Minimum machining cycle time	0.07 sec.
Maximum machining cycle time	50 minutes
Reaction speed	0.005 sec.
Saved machining cycle curves	2 x last 30
Saved faults	2 x last 30
Saved wear rate	2 x last 65,000
Power, derivative, energy control	Simultaneous
Measurement accuracy	0.01 %

Technical characteristics — Dual

Power supply	24 VDC ± 10%, 0.9 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 292 mm, W 105 mm, H 96 mm
Protection rating	IP 20
Weight	2kg 125

WattPilote Dual Evolution reference — Part Nr.

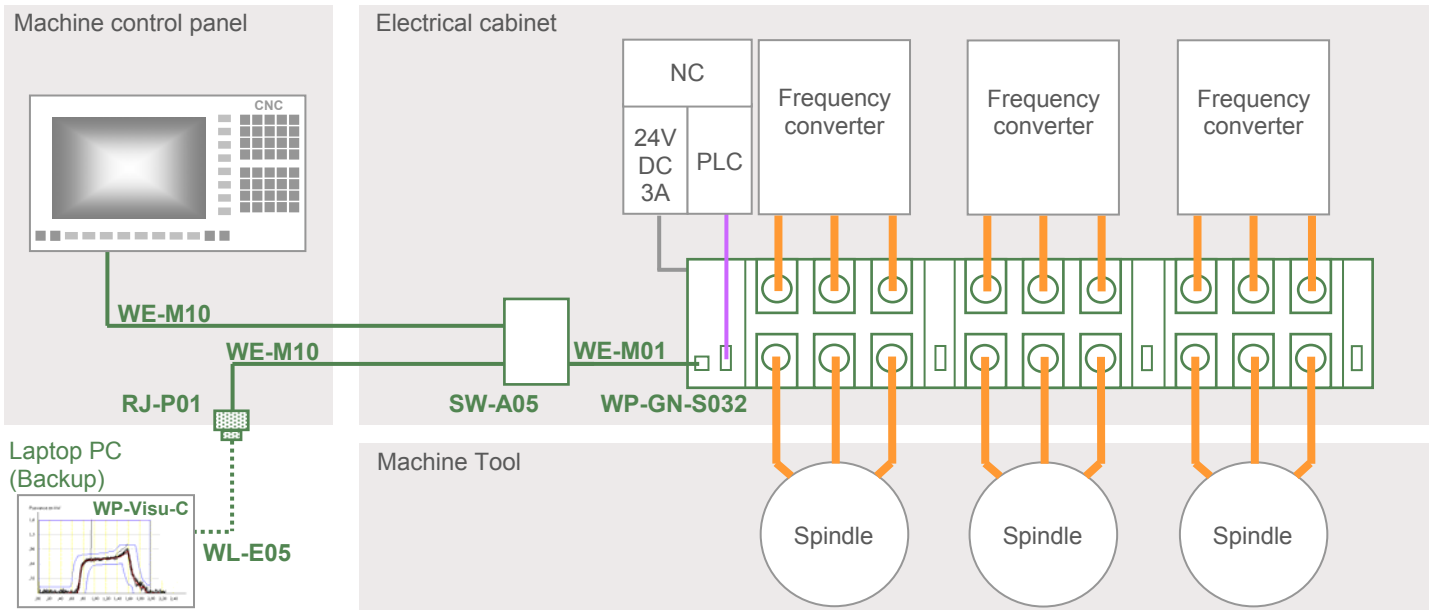
WP–D X – X 000

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-DN-S032 : WattPilote Dual Evolution – 2 x 32KW three-phase spindle – ProfiNet interface

Triple

Evolution Model range



3 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	3 x 120
Minimum machining cycle time	0.07 sec.
Maximum machining cycle time	50 minutes
Reaction speed	0.005 sec.
Saved machining cycle curves	3 x last 30
Saved faults	3 x last 30
Saved wear rate	3 x last 65,000
Power, derivative, energy control	Simultaneous
Measurement accuracy	0.01 %

Technical characteristics — Triple

Power supply	24 VDC ± 10%, 1.3 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 414 mm, W 105 mm, H 96 mm
Protection rating	IP 20
Weight	3kg 000

WattPilote Triple Evolution reference — Part Nr.

WP–G 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-GN-S032 : WattPilote Triple Evolution – 3 x 32KW three-phase spindle – ProfiNet interface

Para más información, visite nuestra página web:
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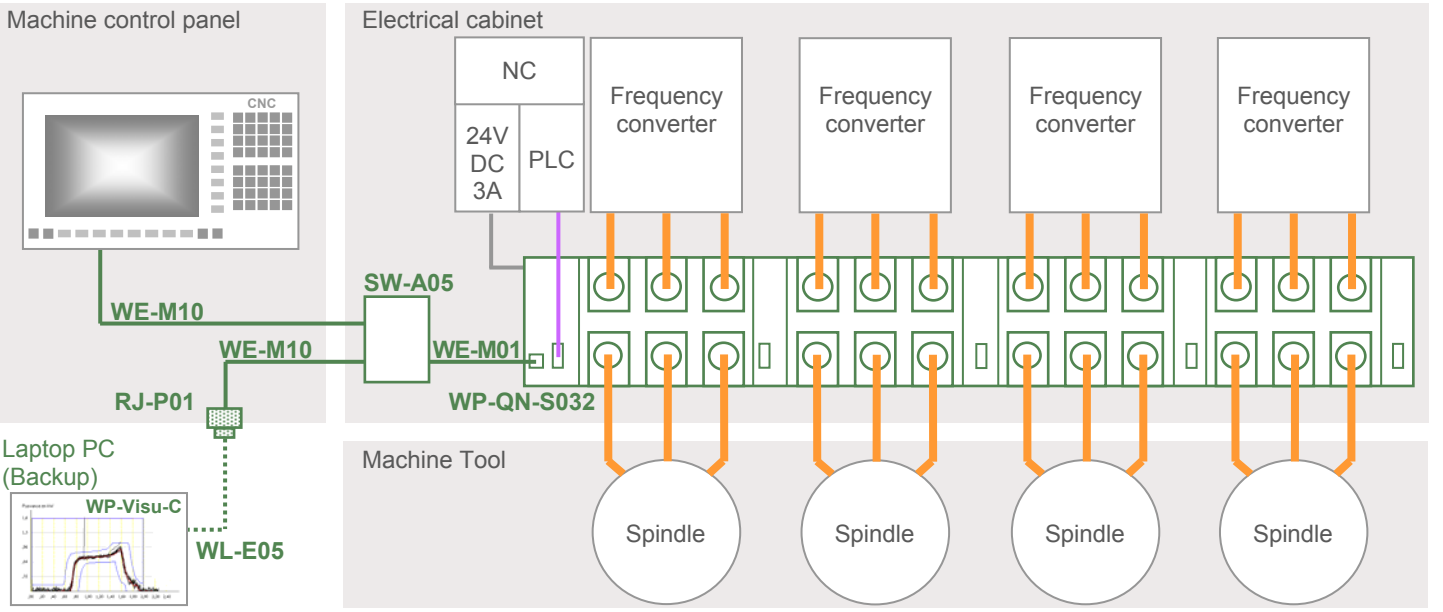
Quad

Evolution Model range



4 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	4 x 120
Minimum machining cycle time	0.07 sec.
Maximum machining cycle time	50 minutes
Reaction speed	0.005 sec.
Saved machining cycle curves	4 x last 30
Saved faults	4 x last 30
Saved wear rate	4 x last 65,000
Power, derivative, energy control	Simultaneous
Measurement accuracy	0.01 %

Technical characteristics — Quad

Power supply	24 VDC ± 10%, 1.7 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 536 mm, W 105 mm, H 96 mm
Protection rating	IP 20
Weight	3kg 820

WattPilote Quad Evolution reference — Part Nr.

WP–QX–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