



2024

10th & 11th
September
2024

Hosted by



British Occupational
Hygiene Society

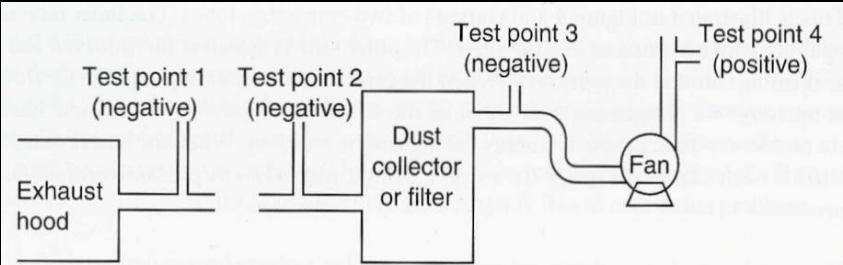
Sensor technologies and alarms

**Adrian Sims (Conference Committee,
LEV Specialist at Vent-Tech Ltd)**

Sensor technologies & alarms

Use of technology in keeping systems working and people safe

Static pressure

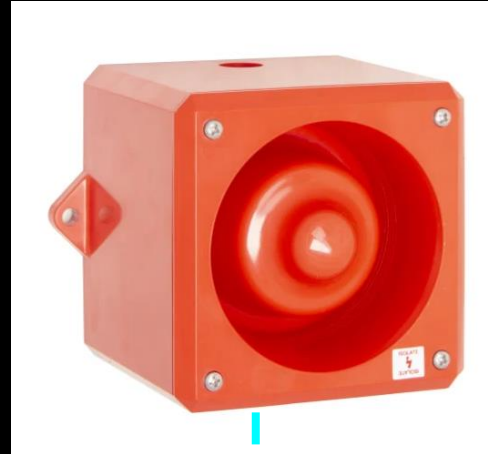


Health & Safety Executive
 "HSG54 Maintenance, Examination
 and Testing of Local Exhaust
 Ventilation."
 1998 2nd Ed.

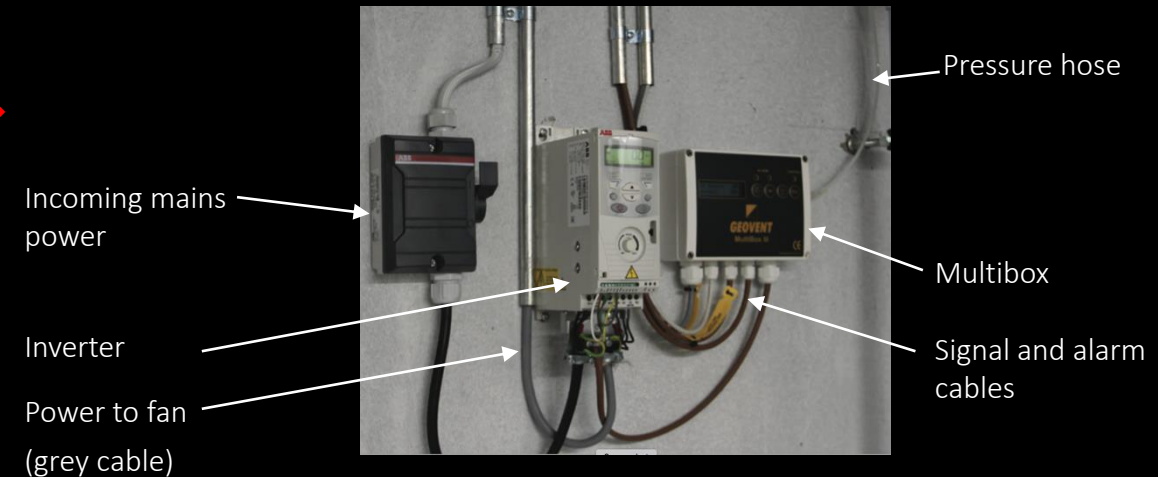
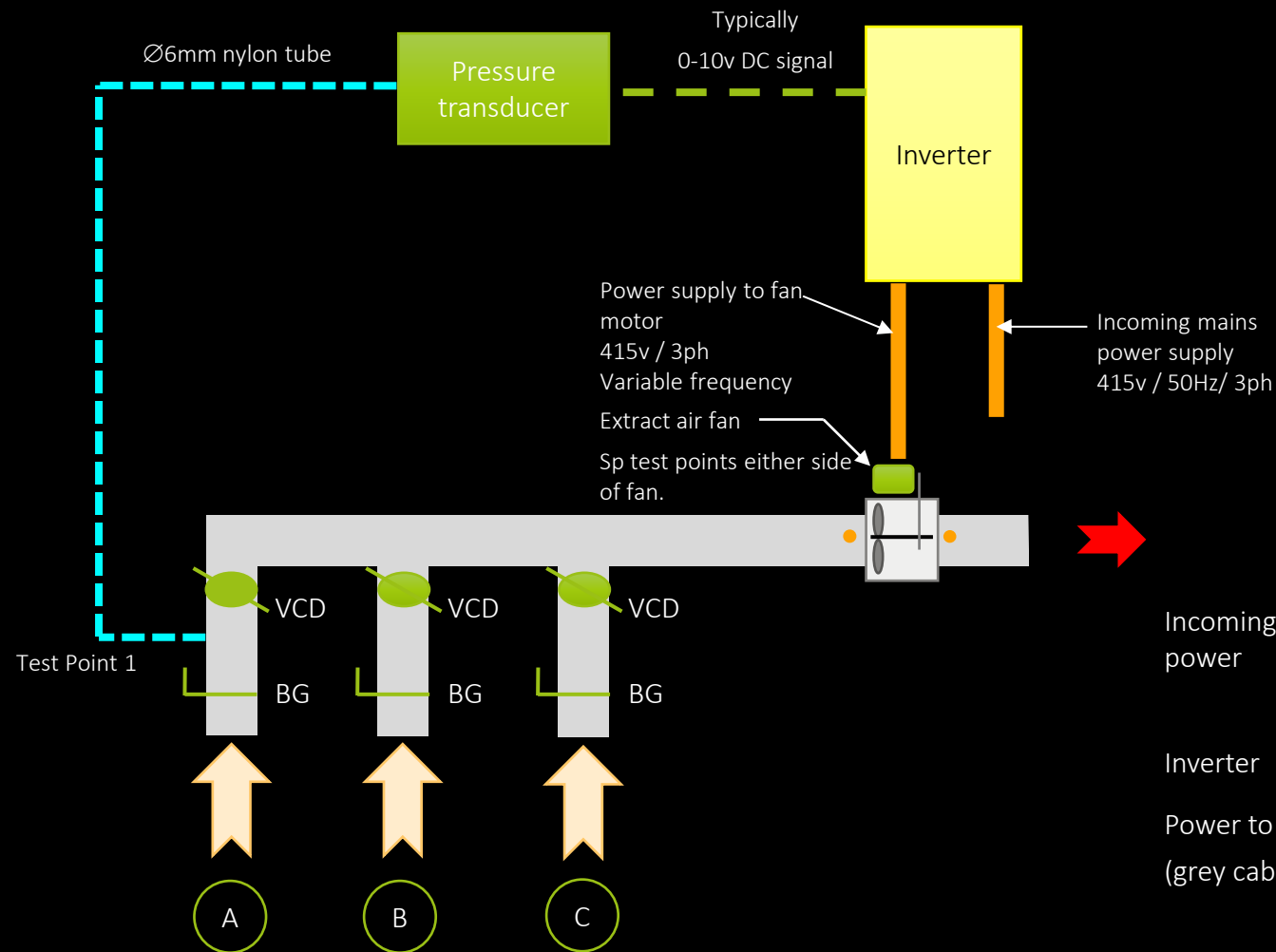
Static pressure at test point compared to normal				Typical Fault
1	2	3	4	
Normal	Normal	Normal	Normal	System operating normally
Low	High	High	Low	Blockage in duct or closed damper between 1 & 2
Low	Low	High	Low	Blocked filter
High	High	Low	High	Missing or damaged filter
Low	Low	Low	Low	Faulty fan
High	High	High	Low	Blockage in hood
Low	Low	Low	High	Blocked discharge stack



Static pressure

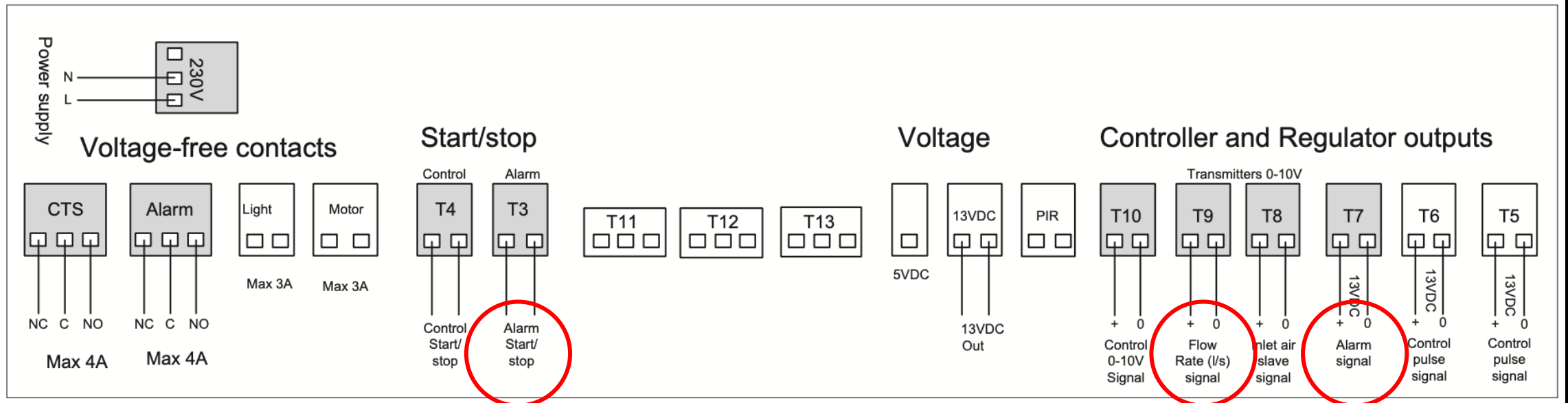


Variable speed drives



Multi-box controls

Connection diagram for software version V530 and V630



Sensors



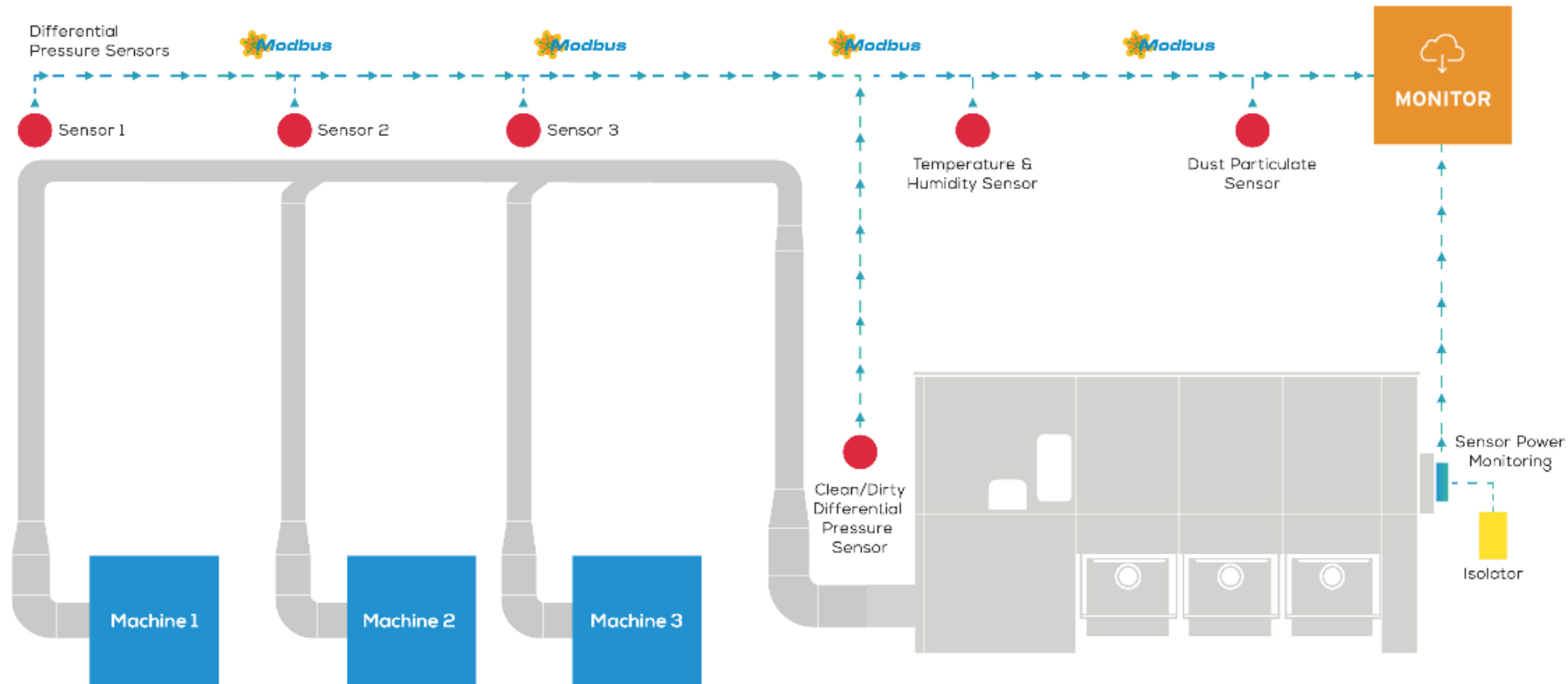
Real time monitoring of plant...

- Power usage
- Compressed air conditions
- Differential pressures
- Temperature & humidity
- Vibration
- Noise
- Bin full warning
- VOC's & particulate

DUST EXTRACTOR

Differential pressures are continuously taken over Modbus RTU to an edge controller

The system can handle up to 120 Modbus sensors



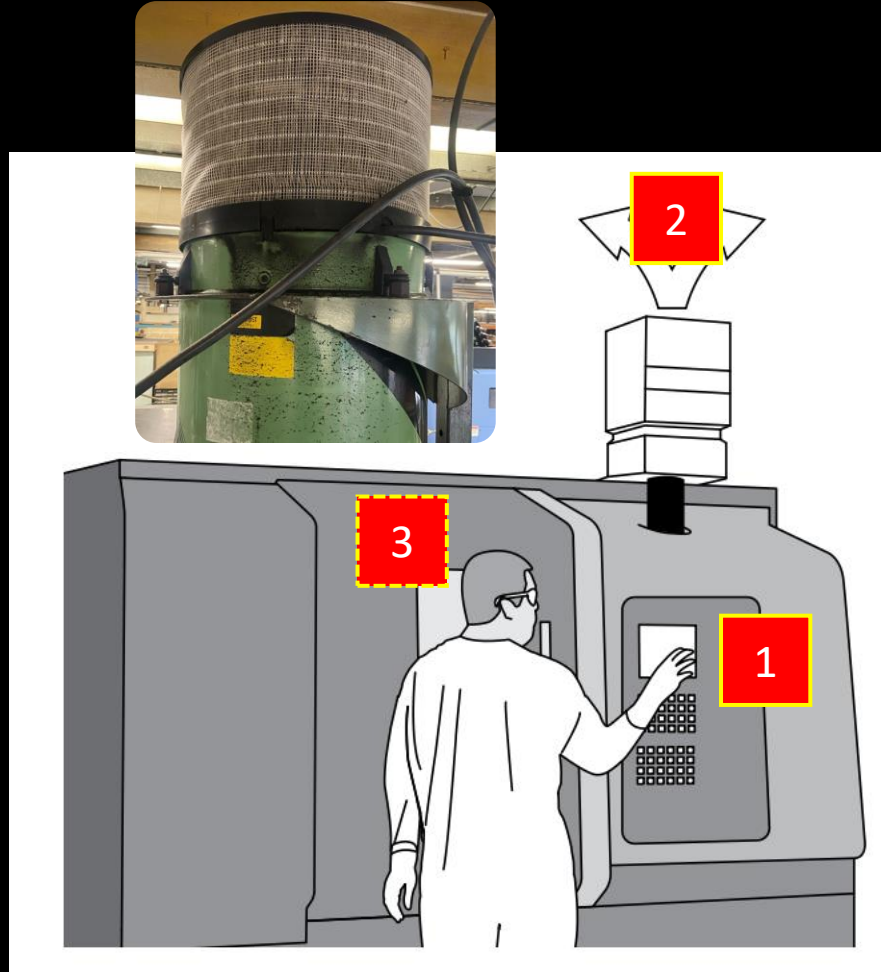
KEY: Machines Isolator Sensors Monitor

Sensors

- Real time monitoring of environment...
- Temperature & humidity
- Noise
- Particulate – mists, dusts & fumes
- Total VOC's



Where to monitor?



Sensor 1	Sensor 2	Sensor 3	Issue?
Low	Low	High	Normal
Low	High	High	
High	High	High	
High	High	Low	

After the filter?



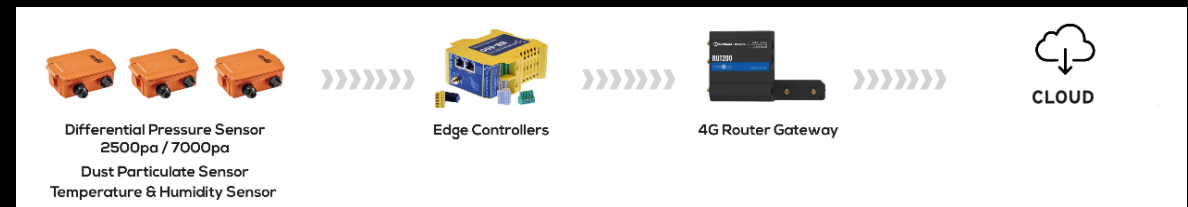
Sintral 305QAL Dust Monitor

- An MCERTS and TÜV certified Dust Emissions Monitor for official emissions measurements
- Certified for official regulatory monitoring
- Lowest certified range 0 – 7.5mg/m³
- Simple one-sided installation

Controllers



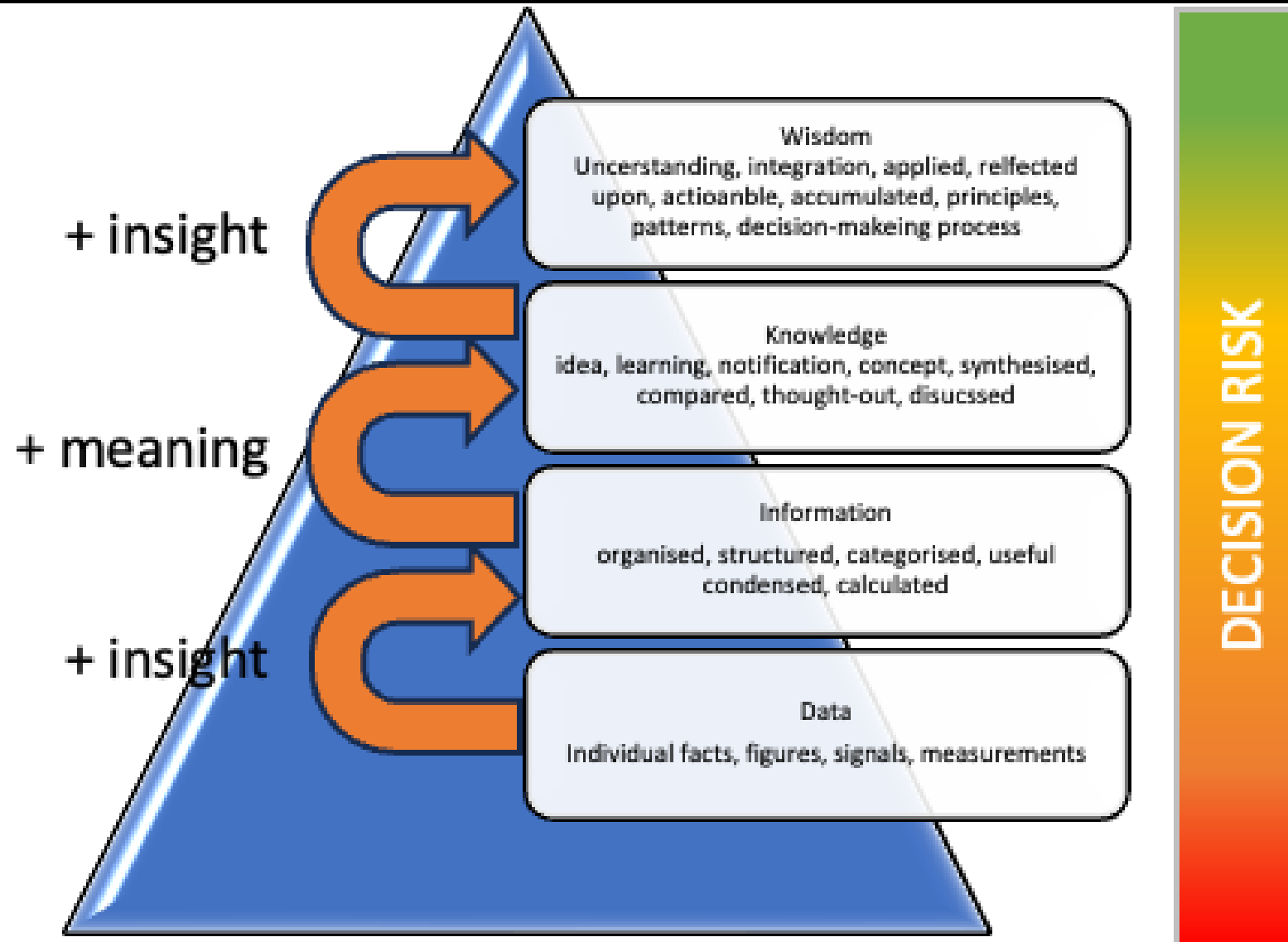
Using technology such as OPC UA to connect to PLCs, Modbus TCP / RTU, LoRaWAN Wireless to connect field bus devices or simple digital/analogue signals cover most machinery & building automation.



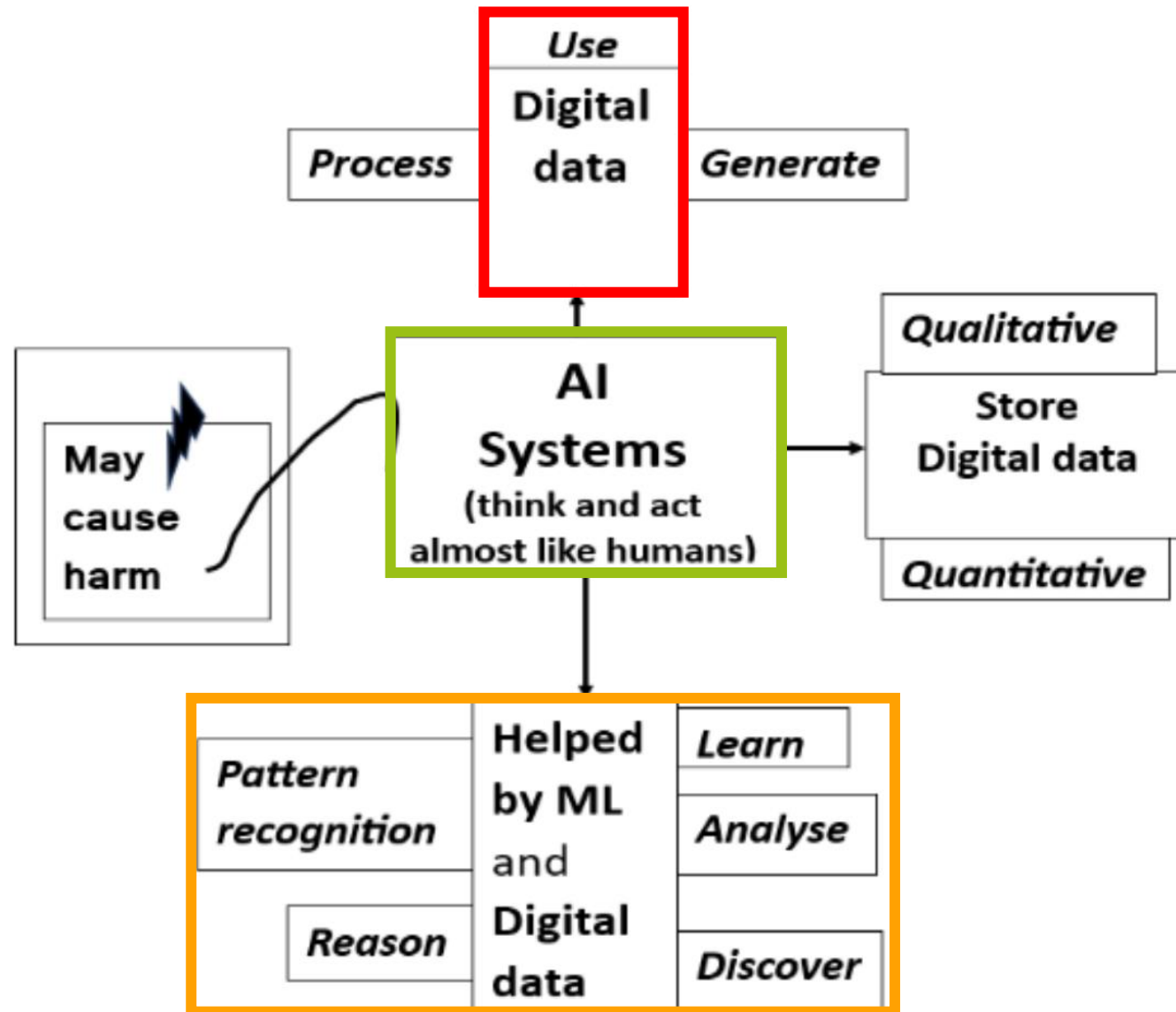
Dashboard

- Realtime data
- Stored time series databases
- Alerting via email, telegram or SMS





Prof. Cas Badenhorst
IOHA Conference 2024



"AI in OSH" Bob Rajan
2024 1st Ed.