

## Festo Motion Terminal and AI driven Dashboards

Herald great strides in process automation

**Digitalisation and artificial intelligence (AI) are mega trends that are opening up potential savings in process automation at every phase of a plant's lifecycle. Industrial automation specialist Festo already offers a digital field device, the VTEM Motion Terminal, and Festo Dashboards are available that visualise plant conditions, indicating that AI is becoming a reality in process automation.**

Just as the smartphone provides different functions on a standardised hardware platform using apps, Festo's VTEM Motion Terminal uses the concept of separating hardware and user software. So-called Motion Apps make it possible to carry out 50 different pneumatic applications using just this motion terminal, effectively eliminating the contradiction between standardisation in hardware and flexibility through software.

The VTEM Motion Terminal combines mechanical system, electronics and software. Valve terminal technology combined with piezo technology are at the heart of the device, which is equipped with additional sensors. Apps are then used to eliminate the need for additional components, such as traditional limit switch boxes for end position detection for on/off process valves.

### Save with Apps

Significant savings are possible using this approach. For example, almost every design engineer includes a generous safety reserve when sizing the pneumatic actuators for a plant. As a result, most actuators have more torque and force than required for the actual working movement. This is particularly noticeable in the compressed air consumption of plants in continuous operation. The "ECO drive" Motion App pares down the compressed air consumption caused by the safety factor and the actuator size by reducing the pressure in the actuator to the minimum required for the application movement. Experience has shown that energy savings of up to 50% are possible.

Meanwhile, the "Leakage diagnostics" Motion App enables leaks to be detected without interrupting production – saving time and money. Leaks in the compressed air system can be detected and localised to specific actuators through diagnostic cycles. Predefined, precise threshold values thus allow preventive maintenance and mean that laborious troubleshooting in extended compressed air networks is no longer necessary. Maintenance staff can start working on eliminating the leaks whenever there is a planned break in production.

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### **Cloud aids visibility**

Festo Dashboards and the CPX-IOT internet gateway are also enabling production managers and operators to detect irregularities at an early stage and initiate the necessary measures before a system failure can occur. These turnkey, preconfigured dashboards do not need any additional programming or installation of software.

Further processing and long-term analysis of data can take place on Edge or in the cloud. The data can be called up at any time and visualised via the Festo Dashboard. Plant builders, end users and plant operators can use the comprehensive diagnostics available at any stage to improve condition monitoring and maintenance, or look for energy saving potential – even to compare the process control systems of plants across several locations. The result is increased productivity, greater energy efficiency, less unplanned downtime and major cost savings.

### **AI coming soon**

Having the positioner function in a decentralised control unit – in other words not directly at or in the actuator – opens up new horizons, including the use of artificial intelligence. This starts with the decentralised automation of modular plants. When using the International Standards of ZVEI/NAMUR in their Module Type Package (MTP) approach, a module in higher-level control systems can be easily visualised, and communication can be established at little extra cost.

The next step is the decentralised implementation of machine learning algorithms on Edge: in other words at the specific production stage to be monitored. Decentralised monitoring of actuator characteristics, such as pressure in the actuator chambers, travel speeds and their correlation over time, not only enables the parameters of the actuator itself to be analysed, but also allows anomalies in the technical process to be detected. This is the basis for predictive maintenance concepts and for data analyses aimed at optimising the production process. The artificial intelligence in the module controller detects any anomalies without the need for additional programming.

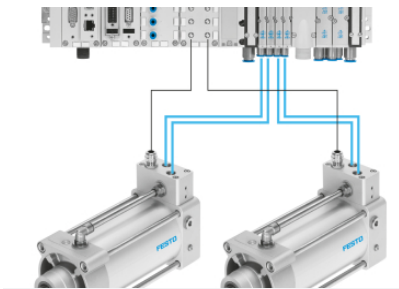
The algorithms are taught in based on a database representing normal production, allowing them to independently detect deviations in the production process or in the performance of the actuators. This enables plant operators to detect problems in good time and avoid unscheduled plant downtimes caused by malfunctions.

### **Ends**



### **Dashboards in process automation**

Detecting irregularities at an early stage and initiating the necessary measures before a system failure can now be done with the dashboards from Festo.



### **Actuators with decentralised control units**

Having the positioner function in a decentralised control unit, in other words not directly at or in the actuator, opens up new horizons right up to the use of artificial intelligence.