

design Internet of Things

FAQs

FREQUENTLY ASKED QUESTIONS

Q: What are the current challenges of the Internet of Things?

A: The current challenge of the Internet of Things is how to connect the people, things, and services in one unified system. Humans provide simple data collection, analysis, visualization, clear indications of anomalies and risk of failure, individualized data density, and content related to recipients. Things are classified as end devices or sensors that can communicate data. Things are able to provide local intelligence analysis and preparer data for a specific location. The data is sent over standardized Ethernet protocols. The last piece of the system is the services and processes. This is how humans and things exchange relevant data autonomously without the need for humans to dig through raw data. The system analyzes and provides proactively the necessary information.

Q: What are the market potential and projected benefits of upgrading your system?

A: According to the TNES Emnid market research group, by 2020 European industrial companies will have invested 140 billion euros annually in IoT applications. These companies will invest 3.3% of their annual turnover into IoT solutions. The largest areas of investment will be information and communications, electronics and electrical systems, and manufacturing and engineering. It is predicted that in these markets the IoT investment will increase productivity and resource efficiency by 18% within five years.

Q: What are the benefits of collecting data from pneumatic systems?

A: To properly collect data in pneumatic systems, a combination of not only hardware but also electronics and analyzing software is necessary. Increasing the volume of data transfer, however, stresses controls and IT networks. Having local data analysis can help ease the strain on systems. IoT systems must create value-add for the user in the ways of predictive maintenance, energy savings, efficiency earnings, and ease of use.

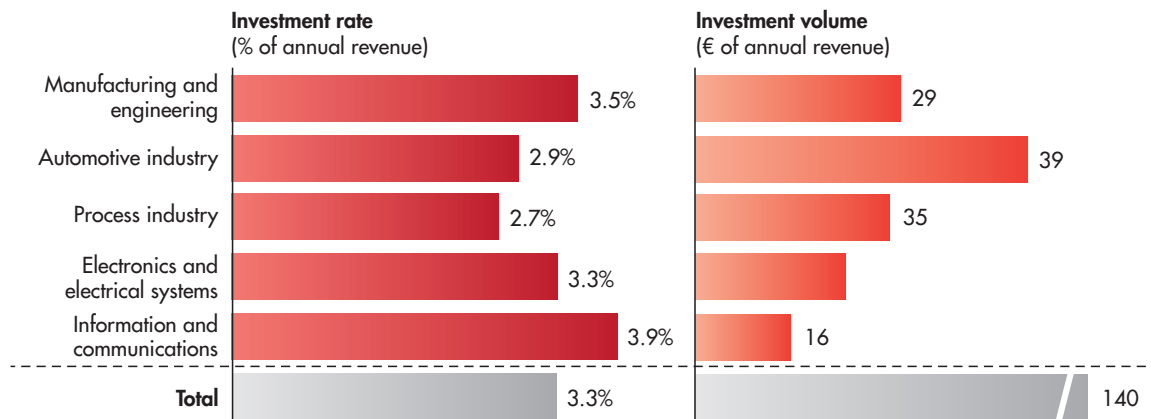
Q: How is data collected from sensors?

A: Collecting data at localized points requires adding monitoring systems at specified system positions. By integrating a monitor module as part of a valve assembly data collection is available at the source. These monitor modules are directly connected to the gateway, are Ethernet-, Wi-Fi-, and Bluetooth-enabled, and are completely independent from and do not interfere with the process control through fieldbus. OPC-UA server is the preferred communication standard of this type of monitor. The software modules on these monitors typically include pressurized air consumption, leakage detection by consumption monitoring, and wear monitoring for actuators and shock absorbers.

Q: What are the most important factors to track in a pneumatic system?

A: The benefit of monitoring at the valve location is to

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obtain more accurate data on how your unit is performing. This includes predictive maintenance options to prevent downtime or unit failures. Here are a few conditions that can be used for predictive maintenance.

Wear on shock absorbers is an important condition to monitor. This can cause vibration in your pneumatic system. Deterioration of shock absorbers can be recognized by timing differences. The wear begins due to oil loss and maintenance requirements increase significantly after oil loss.

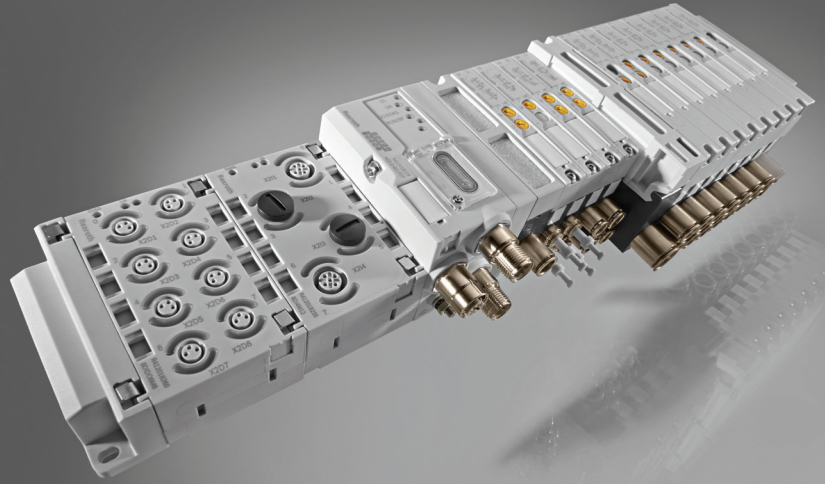
Valve lifecycles can be evaluated by cycle counts of the valves. Switching on the cycle counter, the user can determine the predictive maintenance schedule.

By tracking the correlation of flow measurements and process control data, one can support leakage placement. If air leakage is in the supply tube, consumption per cycle and basic consumption rise. If air leakage is in the actuator tube, only consumption per cycle rises. To optimize consumption, one can monitor the reduction of pressure and air as well any increase in cycle time.

Q: What are the advantages modern IoT systems provide?

A: One crucial advantage of modern IoT systems is the enhanced data displays and alerts available for users. The graphical user interface collects raw data and provides useful analysis for the user. Instead of the user having to dig through the raw data, the software package provides insights by computing the raw data based on pre-selected criteria. Some of these advanced software modules include energy efficiency, valve cycle counters, and wear analysis against time. The software can provide a variety of different alerts to the engineering team based on the analysis. These alerts can be sent either via email or text messages. The software being connected via an Ethernet network allows also for remote access. This provides users that are located offsite with the necessary information to make improvements based on alerts. ■

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