Even though industry 4.0 is often referred to as the blueprint for the future factory, intelligent applications that enable a customizable and highly flexible production, are long since reality. As the trend for the future factory, intelligent production processes have a variety of positive effects on productivity and quality.  

### Industry 4.0 – Applications in Practice

- **Fast detection of tags at gates**:  
  - User benefit: Reliable and fast identification of cargo on fetches, ensuring smooth passage by the detection of positions, exceptional objects, and products.
  - Function: Comprising the gate reader and the reader head of the multiplex operation of the system, the Q300 UHF RFID reader head communicates through the UHF band (868 MHz) and also supports 4-antenna configuration.

- **Fast and unproblematic product changes in flexible systems**:  
  - User benefit: Mixed production of different products depending on demand and delivery times.

- **RFID tags in each casting mold control the production process**:  
  - User benefit: Reliable and fast verification of cargo on forklifts with RFID tags.
  - Function: The RFID tags on the casting molds have a unique code that allows for the tracking of the entire production process.

- **Automatic selection of casting and mold washing program**:  
  - User benefit: Cost reduction, simple central parameterization via IO-link, and more plant downtime.

- **Control of chocolate production via the molds**:  
  - User benefit: Increased plant availability through prefailure warning.

- **Reliable detection even during fast travel through multiplexed operation of the system**:  
  - User benefit: Accuracy in the process of manufacturing chocolate products.

- **User benefit: Avoidance of allocation errors through reliable product identification across multiple sites**:  
  - User benefit: Identification of Cryovessels in the pharmaceutical industry.
  - Function: The RFID tags on Cryovessels use the UHF band (868 MHz) and are read/written by the UHF RFID reader head Q300 with up to 4 connected antennas.

- **Fast detection of tags at gates**:  
  - User benefit: Increased plant availability through prefailure warning.

- **Contactless operating linear position sensors with IO-link detect the horizontal location of the gondola arms of a fairground ride**:  
  - User benefit: Increased plant availability through prefailure warning.

- **User benefit: Identification of bumpers**
  - Function: Identification of bumpers can occur in coating lines as well as increased operational reliability and availability.

- **Signal quality of the sensor indicates whether a severe fault exists or is imminent, as for example a bent or torn-off reflector**:  
  - User benefit: Increased plant availability through prefailure warning.

- **Integration of the collected data in ERP and WMS systems**:  
  - User benefit: Cost reduction, simple central parameterization via IO-link, and more plant downtime.

- **Cryovessels allow clear identification of the container and contents with the help of RFID**:  
  - User benefit: Reliable tracking of the body through the entire production process.

- **Identification of car bodies**:  
  - User benefit: Reliable and fast identification of cargo on fetches, ensuring smooth passage by the detection of positions, exceptional objects, and products.
  - Function: Controlling production via the molds.

- **User benefit: Identification of car bodies through the process**:  
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- **Data logger captures also gradual changes, such as porous seals**:  
  - User benefit: Identification of car bodies through the process.

- **Data and Communication**
  - **Capture the sweet movement of a core box girder**:  
    - User benefit: Increased plant availability through prefailure warning.
  - **Data and Communication**
    - **Contactless operating linear position sensors with IO-link detect the horizontal location of the gondola arms of a fairground ride**:  
      - User benefit: Increased plant availability through prefailure warning.
  - **RFID tag contains all information for controlling the processing machines**:  
    - User benefit: Increased plant availability through prefailure warning.
  - **Bumpers can be identified with RFID tags through the entire production process**:  
    - User benefit: Increased plant availability through prefailure warning.
  - **QR24-IO-Link encoder registers the swivel movement of the core box girder**:  
    - User benefit: Increased plant availability through prefailure warning.
  - **Reduction of mechanical breakdowns of the encoder and continuous monitoring of the resonator position**:  
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- **Monitoring of cabinets and protective housings**:  
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Industry 4.0 – User Benefits

- Better quality assurance up to the end user
- Increased availability of machines and plants
- Condition Monitoring allows predictive and preventive maintenance
- Increased production efficiency in small quantities

Industry 4.0 – Key Technologies

- Data and Communication Solutions
  - Requirements for the communication solutions
  - Data exchange with higher-level systems via PROFINET, EtherCAT, OPC-UA and other protocols
  - Data transmission of condition monitoring information via conventional Ethernet
  - Additional data from sensors can be used for condition monitoring
  - User benefit: Easy integration into systems and diagnostic functions on all levels

Industry 4.0 – Data and Communication Solutions

Benefits from the wide range of products in its extensive portfolio of data and communication solutions. Turck has the right Industry 4.0 tools for you.