APPLICATION CATALOG

Innovative Design Solutions for Industrial Processes

2021

MORA TECHNOLOGIES

Mora Technologies
Industrial Automation and Technology

At Mora Technologies, our passion is solving industrial business problems with technology. We do this by maximizing our customers' competitive edge through automation, process control, maintenance, and design.

As an American owned technology company, we want to contribute to our nation's rich legacy of innovation and discovery. What we do is more than just about business: we want to continually push the boundaries of what is possible, finding unique ways to meet our customers' needs and help drive their performance.

Integrity

We believe in conducting our business with integrity as the core of everything we do. This means we do not overpromise or under-deliver and we keep our word.

Professionalism

We are dedicated to designing and implementing the highest quality, most professional solutions utilizing parts from industry-trusted companies.

Excellence

Our standard is to deliver excellent solutions that surpass our customers' expectations. We expect the best from ourselves because we want to be the best at what we do for our customers.

Schedule a consultation or product demonstration with us:

www.moratechusa.com/schedule-appointment

Automation and Integration

The fundamental task of automation and integration is solving a customer's production or data management problem with technology. We work with our clients to define the problem that needs to be solved, the criteria for project success, budgetary concerns, expected ROI, and how this technology will be supported by their maintenance personnel. We then develop a turn-key solution with the following:

PLC Programming

We have years of experience in programming PLC's from various manufacturers, such as **Siemens**, **Beckhoff**, **Allen-Bradley**, and **GE**.

HMI and SCADA

HMI and SCADA software from **Ignition** and **Beckhoff** allow us to visualize your plant's status, track production and machine data on computers and mobile devices.

VFD's and Servo-Drives

With VFD's, we can lower power usage and motor wear, remove costly gearboxes, and achieve precise motor speed and torque control during operation.

Robotics

Robots can optimize performing repetitive tasks, movements that could injure personnel (heavy lifting), or tasks that are located in hazardous environments. Manufacturers like **Universal Robots** allow us to deliver solutions with robots that are easy to use, reprogram, and require less guarding and safety systems than industrial robots.

Vision

Installing a vision system is a fantastic way to determine if a part has been properly manufactured, is free of surface and material defects, or to sort a collection of parts based on type, color, or shape. Pairing a vision system with a robot allows us to create pick-and-place applications where the robot is guided to specific locations by the vision data.

Safety

All industrial designs need to ensure a fundamental level of personnel and material safety. Our solutions achieve a safe work environment by using safety laser scanners, light curtains, keyed door interlocks, and proximity switches, as well as a risk-assessment of the job task, associated hazards, and environment.

Our Preferred Brands

BECKHOFF

Ignition by inductive automation

UNIVERSAL ROBOTS

KEYENCE

Ignition HMI and SCADA

Responsive, mobile-ready HMI and SCADA platform

DESKTOP AND MOBILE HMI

Unlimited Clients

Ignition uses a revolutionary business model where **one server license** allows you to view your plant from an unlimited number of clients (desktop and mobile).
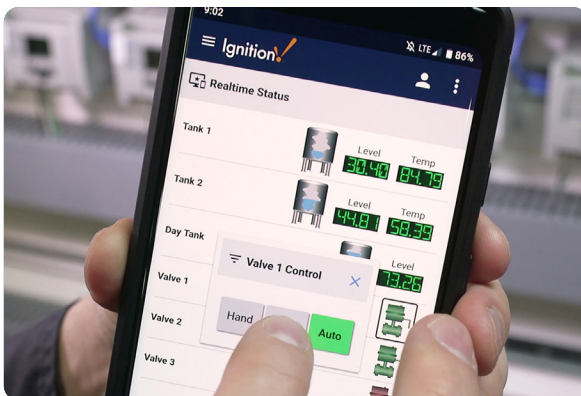
There are **no annual "support" fees**... a single license provides unlimited visualization and control of your process.

Unlimited Tags and Connections

There are **no tag limits** for your Ignition server. With one license, you have access to as many tags as your plant can provide.

No connection limits means Ignition can connect to as many PLC's as you'd like.

MOBILE-READY

HMI Anywhere

Ignition's mobile-first vision for HMI provides two approaches to mobile displays:

• HTML5 compliant HMI screens that display and resize automatically in any **web browser**
• Or you can run the same HMI used on your computer desktop via Ignition's **Vision mobile app**.

Mobile Device Sensors

Ignition directly supports **accessing**, **storing**, and **using** mobile device sensors.

• Camera data for Barcode/QR Codes
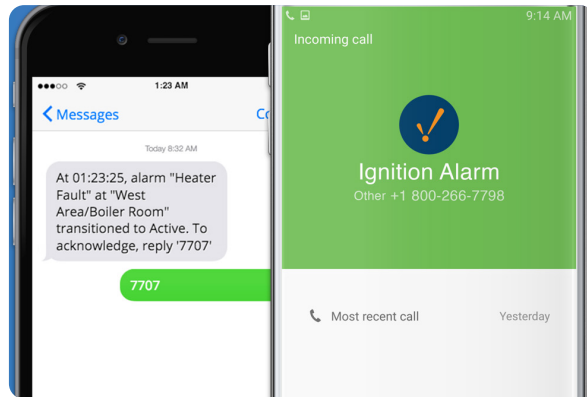• GPS location data
• Accelerometer data for personnel safety

ALARMING AND NOTIFICATION

Real-Time Alarm Notification

With Ignition, you can configure alarm notifications to go to whoever you want, whenever you want, for whatever reason you want.

Personnel can **receive** and **acknowledge** alarm notifications via **2-way Email** or **SMS Text Messaging**.

Call Rosters and User Roles

Call rosters allow for dynamic notification based on which personnel are on-shift or available to respond to the alarm.

User roles allows for increased control of alarm processing: certain personnel can view alarms, while only qualified personnel can acknowledge or clear an alarm.

DATABASES AND REPORTING
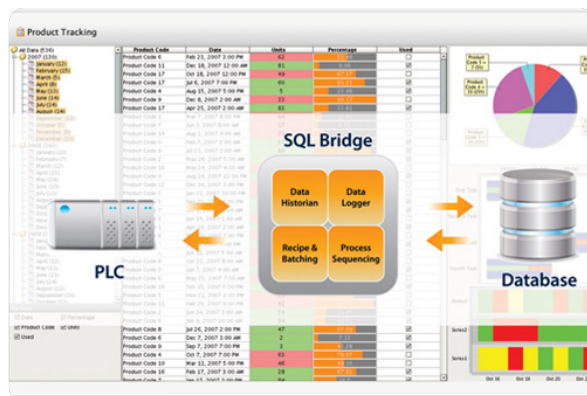
Easy Database Connectivity

With Ignition's **SQL Bridge Module**, you can easily record process data into an SQL Database for long-term storage and analysis.

This allows for historical trending and **significantly reduces** troubleshooting time by reviewing process data before a problem or alarm event occurred.

Automatic Report Generation

Ignition's **Reporting Module** lets you define custom reports using any data available to your Ignition server.

Reports can run on a **schedule** or be triggered by a **tag change**. You can also determine who reports are sent to and where they are saved for historical tracking.

Universal Robots

Machine Tending

Features:

- Improve cycle time
- Overnight operation
- Multiple programs
- Remote alarm notification
- CNC, Injection Mold

Utilizing Universal Robots in machine tending operations relieves operators from physically demanding, repetitive work and eliminates the risk of injuries. Transform your process into 24/7 operation with the ability to automate part loading, unloading, switch between multiple programs, and notify personnel when problems in the production process occur.

## Material Handling

Net Wt. 16 Kg
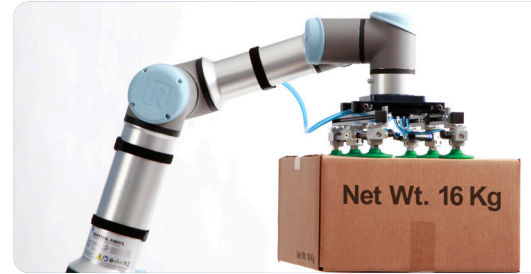
Features:

- Small footprint
- Multiple gripper and picking heads
- Higher product handling output

Streamline your material handling, packaging, bin picking, labelling, and kitting operations with collaborative robots. Using collaborative robots in material handling tasks removes the strain of heaving lifting and risk of injury to personnel. Automating material handling increases product throughput and alleviates seasonal demand peaks and labor shortages.

Palletizing
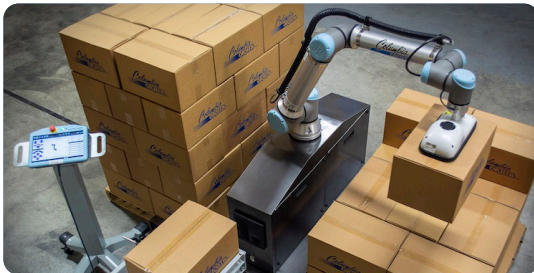
Features:

- Fast installation
- Tested solution
- Easily reconfigurable
- Higher throughput
- Repeatable stacking

Modular palletizing robot systems allows for high-performance package palletizing that is easily reconfigurable if you wish to move your robot to a new production line or environment. These palletizing solutions require no external PC or custom programming.: everything can be setup or reconfigured via an easy to use graphical interface.

Quality Inspection

Features:

- Automated measurement
- +/- 30 micron
- 3D vision inspection
- Inspect tight spaces

A collaborative robot will consistently and repeatedly follow exact processes and predefined workflows with miniscule deviation, providing optimum conditions for study or analysis. Universal Robots has a team of product partners that provide vision inspection of products for conformity to shape, color, size, drill hole patterns, as well as end-measurement devices such as calipers for ensuring products meet design specifications.

Average Payback in 195 DAYS

EASY PROGRAMMING **FAST SETUP** **FLEXIBLE AUTOMATION** **COLLABORATIVE AND SAFE**
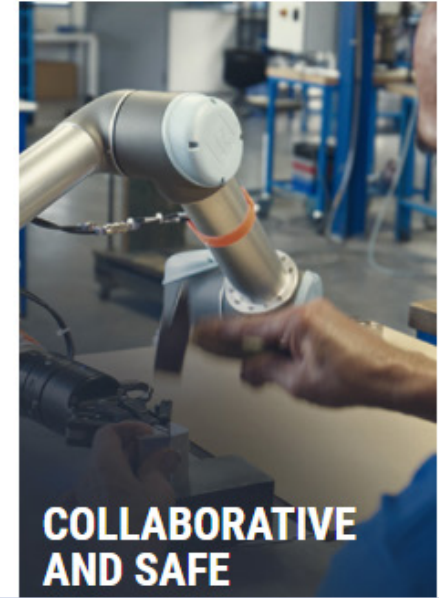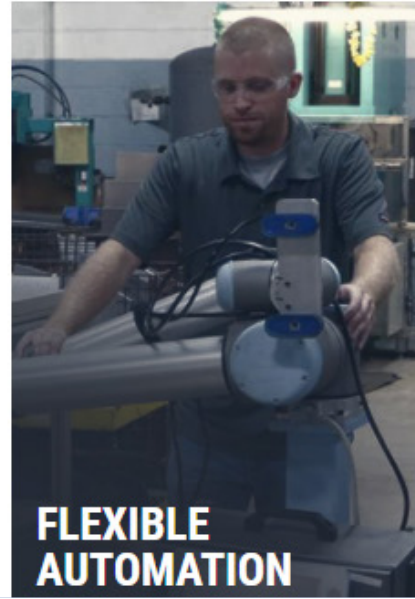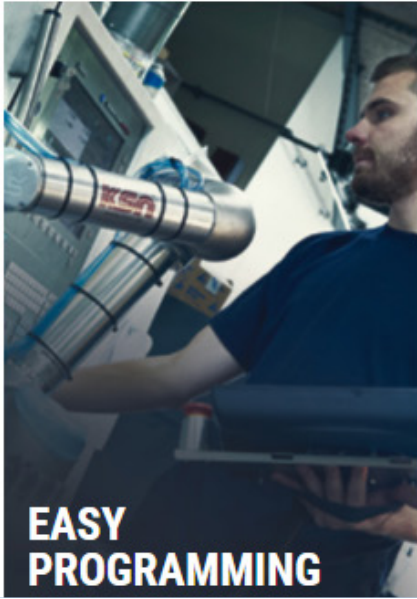
Easy Programming

Universal Robots' patented technology allows operators with no programming experience to quickly set up and operate collaborative robots. Robots can be programming by physically guiding the robot through its path or with arrow keys on an easy to use touchscreen tablet.

Fast Setup

The ease of Universal Robots has revolutionized the timeline from concept to deployment. The average set-up time reported by Universal Robots' end-users is only half a day. The time to unpack the robot, mount it, and program the first simple task is typically less than an hour.

Flexible Automation

Cobots aren't limited to performing only a single task. Universal Robots are lightweight, compact, and easy to re-deploy to multiple applications. Moving the cobot to a new process is easy, granting the agility to automate small batch runs and frequent line change-overs.

Collaborative and Safe

Safety is paramount in robot installations and Universal Robots' integrated safety system can be easily configured to stop motion when personnel enter a restricted area or unexpected contact with material occurs. 80% of the thousands of Universal Robots installed operate with no safety guarding (after a completed Risk Assessment).

Beckhoff - New Automation Technology

Industrial PC and Control Panels

Native Windows/Linux OS

Beckhoff IPC can utilize OS services and interact with applications on the same IPC.

Free Programming Environment

There are no licensing costs for Beckhoff TwinCAT's development environment or libraries.

Extensive Function Modules

Beckhoff TwinCAT has a large function library that provides powerful code for process control.

Runtime Licensing

Beckhoff TwinCAT 3 development environment and all libraries are free. You can install a TwinCAT Runtime on any Windows machine, write a program, and run your application for up to 7 days at no cost. The only cost you pay is the **Industrial PC hardware and Runtime license** that your program runs on once installed in the production environment.

TwinCAT Functions

- HMI
- Measurement
- Motion Control
- Connectivity
- Vision
- Industry-Specific

Motion Control

Fully Integrated

Beckhoff's motion control is fully integrated from hardware to software. By manufacturing all their servo motors, servo drives, controllers, and software, Beckhoff makes motion control easy to implement and maintain.

TwinSAFE Hazard Control

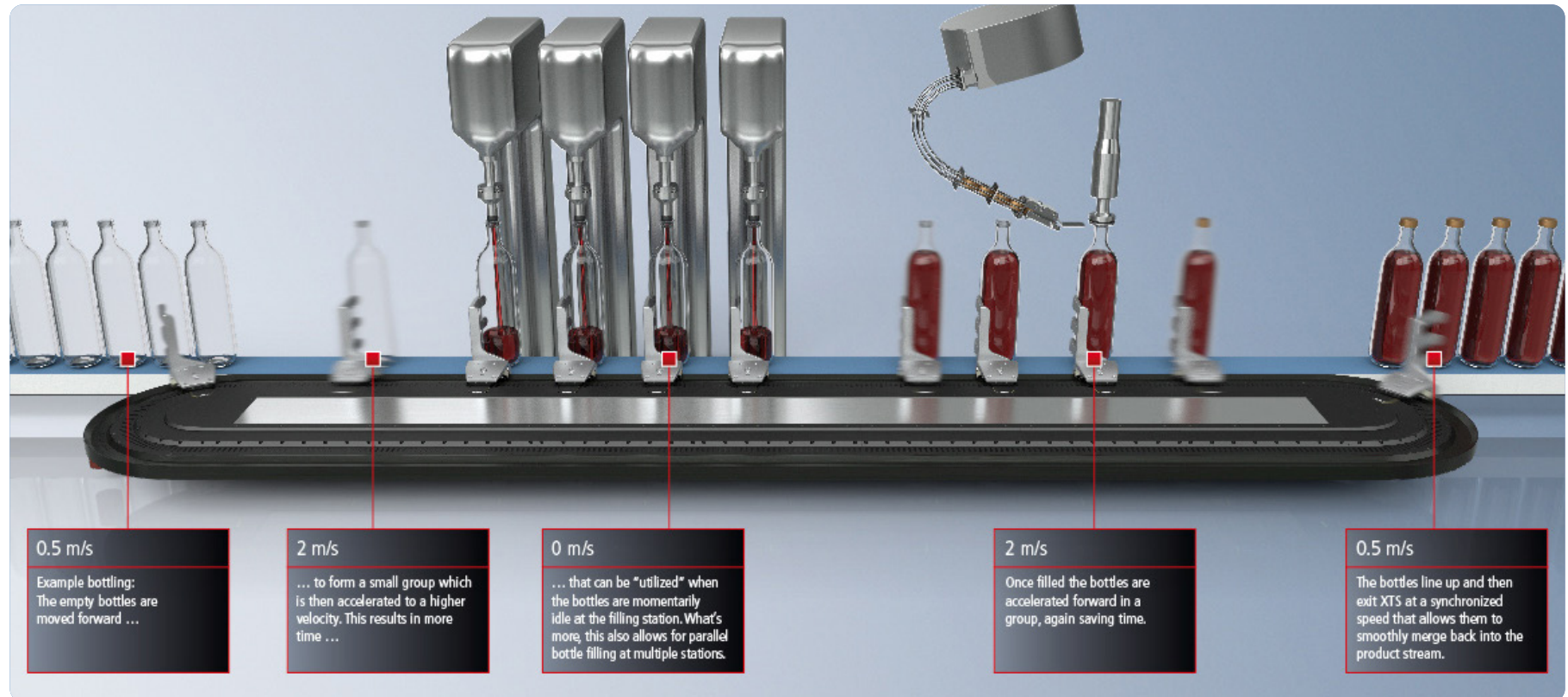Automated movements can cause serious hazards to personnel and property if not properly protected. Beckhoff makes motion control safety easy with **TwinSAFE** and integrated **EtherCAT** communication, so machinery can be safety stopped without any additional safety wiring.

Applications

- CNC
- Multi-Servo Synchronization
- Hydraulic Positioning
- Linear Product Transport
- Kinematics Analysis
- Robotics

Revolutionary Material Transport with XTS

0.5 m/s
Example bottling:
The empty bottles are moved forward ...

2 m/s
... to form a small group which is then accelerated to a higher velocity. This results in more time ...

0 m/s
... that can be "utilized" when the bottles are momentarily idle at the filling station. What's more, this also allows for parallel bottle filling at multiple stations.

2 m/s
Once filled the bottles are accelerated forward in a group, again saving time.

0.5 m/s
The bottles line up and then exit XTS at a synchronized speed that allows them to smoothly merge back into the product stream.

Increase Production Volume

Beckhoff XTS **dramatically increases** production volume by decoupling product speed from the slowest element in the production process.

Each XTS Mover has its own individual speed and location profile, meaning individual movers can be accelerated and decelerated as needed.

Software Based Format Changes

XTS Movers are completely **software controlled**, so there is no longer a need to changeover a production line to run a different product. After the initial commissioning of the products to be transported, switching between product profiles can be handled completely with software switching, eliminating costly downtime.

Floor Space Optimization

With the XTS circulating product stream, a minimal amount of floor space is utilized. More importantly, placing the XTS in the center of the product processing creates a highly efficient system for taking an object from raw material to finished product.

Safety Systems
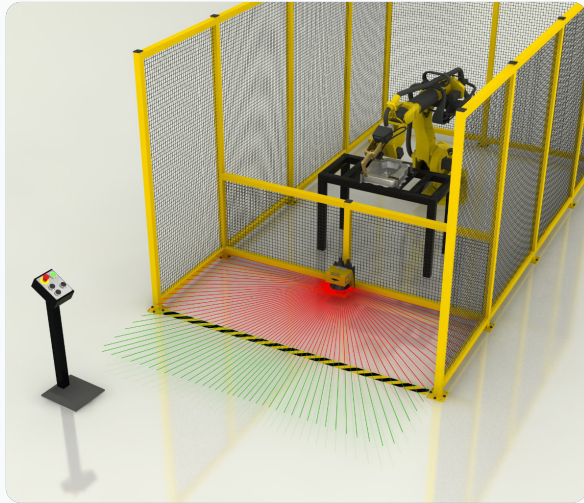
Laser Area Scanners

Automatically slow or stop moving equipment when personnel or material enter into fully customizable **Warning** or **Exclusion** zones.

Laser Area Scanners can provide real-time feedback about the status of an environment around the machine and a machine can resume operation as soon as the personnel or object has moved out of the defined areas.

Door Interlocks and Switches

Create safe work cells to protect personnel from moving parts with door interlocks and safety switches to determine safe operation.

Safety door interlocks allow for easy implementation of Lock-Out procedures with two-key control. Proximity switches on doors and access-ports create positive verification that all safeguards are in their proper position.

Light Curtains

Increase flexibility while maintaining safety with low cost sensors that stop movement when an object has entered a production area.

Light curtains can be programmed to allow objects of a specific size to enter an area, such as a tool head from another machine that is retrieving a part. However, if an object with different dimensions enters the area, the light curtain outputs a safety stop.

Vision Systems

Quality Inspection

Verify Part Defects

Vision systems can verify part defects for process tracking and improvement
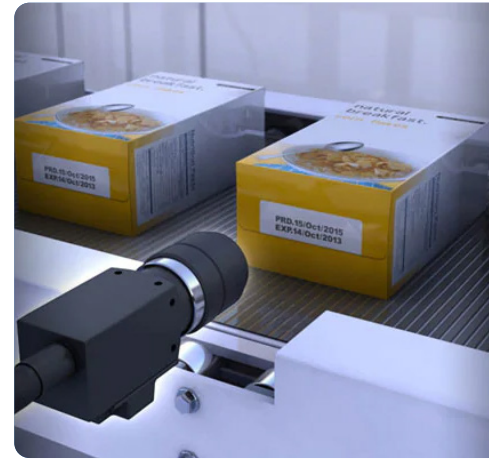
Easily Programmable

Easily program new parts into your vision systems as they are added

Remote Notification

An alarm can be generated and personnel can be notified when a part fails inspection

Bar Code Scanners

Barcodes

Read barcodes moving on a production line at up to 1300 scans/sec

QR Codes

More complex patterns, such as QR Codes, can be scanned and tracked

Optical Character Recognition

OCR, or Optical Character Recognition, can convert handwritten or printed text into data for verification and storage

2D Vision Guided Robotics

Intelligently Guide Robots

Adding a vision system to an existing robot allows for dynamic movements. The vision system transmits part location data to the robot for automatic movement in environments where part locations vary

Minimize Programming

Allowing the vision system to tell the robot where to go drastically reduces the programming of various robot paths, increasing plant flexibility

3D Vision Guide Robotics

Dynamic Navigation

3D vision systems allow robots to move in additional axes by relating depth and angular data, as well as X and Y-axis position.

Robotic Bin Picking

With the additional data 3D vision systems provide, fully automated applications such as autonomous robot part picking from bins are possible and greatly increase production speed while lowering cost

American Innovation at its Finest

Veteran owned and operated

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