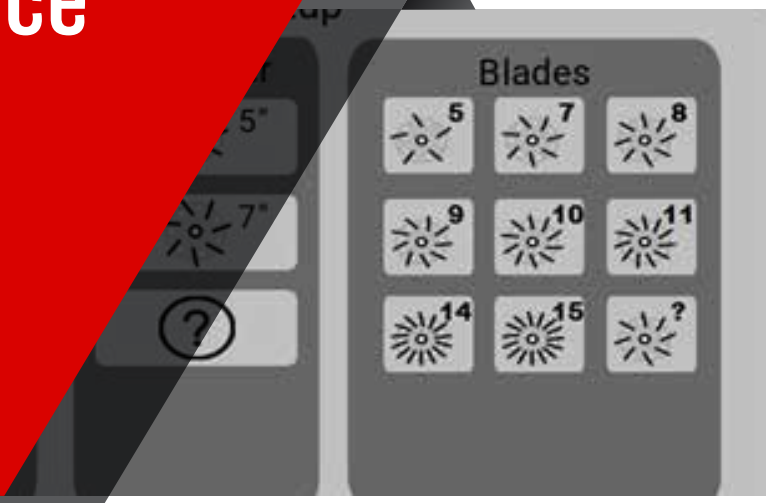
TRI-PHASE AUTOMATION

Engineering Excellence

SUCCESS STORY

Precision Control for High-Performance Reel Grinding



THE COMPANY

A leading manufacturer of reel grinding equipment produces advanced machines used to sharpen reel-style lawnmower blades for golfcourse maintenance. These grinders play a critical role in ensuring turf equipment delivers the highly accurate and consistent cut required for greens and fairways. Because turf quality directly impacts playability and course reputation, the manufacturer continues to refine its equipment to meet the performance expectations of golf course superintendents and maintenance teams worldwide.

OVERVIEW

The company developed a reel grinder machine designed to sharpen reel-style lawnmower blades commonly used on golf courses. These machines restore blade geometry with high accuracy, ensuring consistent turf cutting performance across greens and fairways. Tri-Phase and i-Tech were selected to design and implement the program control system, including electrical component selection, control panel fabrication, system installation, and full PLC programming. The objective was to create a modern, intuitive control platform capable of supporting global distribution.

CHALLENGE

The reel grinding process requires precise coordination between multiple motors and motion components to maintain blade accuracy. Even minor inconsistencies in speed or positioning can affect sharpening quality. The system also needed to be user-friendly for operators with varying technical experience. Because the machines would be sold internationally, the interface had to support multiple languages while remaining visually clear and easy to navigate. Additionally, the platform needed the flexibility to store and manage sharpening parameters for different blade types, allowing operators to switch configurations quickly without manual recalibration.

SOLUTION

Tri-Phase and i-Tech developed a fully customized control platform designed to bring precision, consistency, and operator simplicity to the reel grinding process. Rather than retrofitting a standard control package, the team engineered a purpose-built system tailored specifically to the machine's motion requirements and global deployment needs. From component selection to panel build and system installation, every detail was designed to improve performance, simplify operation, and create a scalable platform for future machines. The team selected all electrical components, built the control panel, completed system installation, and programmed the PLC and HMI to deliver a cohesive and scalable control platform. The solution included:

Advanced Motion Control Architecture:

Multiple motor drivers coordinated by a central PLC to ensure accurate, repeatable sharpening performance. This synchronized control allows smooth motion transitions and consistent blade contact throughout the grinding cycle, improving overall sharpening quality.

Custom HMI with Mobile Tablet Interface:

A modern, tablet-based operator interface using custom vector graphics for improved clarity and intuitive navigation. The visual layout simplifies machine setup and monitoring, helping operators quickly understand machine status and make adjustments with confidence.

Recipe Storage & Language Switching:

Built-in blade profiles and seamless language toggling to support international markets. Operators can easily select pre-configured sharpening parameters for different blade types, reducing setup time and minimizing the risk of incorrect adjustments.

RESULTS & OUTCOMES

The completed control system delivered measurable improvements in performance, usability, and global scalability. By combining precise motion control with an intuitive operator experience, the upgraded platform strengthened machine accuracy while making day-to-day operation more efficient and consistent. The result was a solution that not only enhanced sharpening quality but also positioned the manufacturer for broader international deployment. Key outcomes included:

ENHANCED SHARPENING CONSISTENCY

Coordinated motor control ensures repeatable, high-accuracy blade geometry and dependable cutting performance.

REDUCED TRAINING TIME

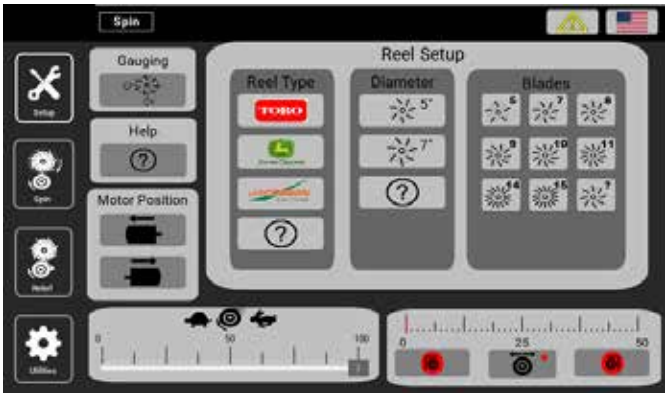
Clear graphics and simplified tablet controls make operation straightforward for operators of varying experience levels.

INTERNATIONAL READINESS

Multi-language capability supports broader global deployment without requiring separate software versions.

INCREASED PRODUCTIVITY

Stored recipes enable fast changeover between blade types, minimizing downtime and improving overall efficiency.



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