HMI Design for Smart Manufacturing

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TechSolve, Inc.

Cincinnati-based, not-for-profit organization founded in 1982 by Cincinnati Chamber of Commerce, City of Cincinnati, and University of Cincinnati

- NIST-Manufacturing Extension Partnership (MEP) affiliated Center
- Hundreds of member organizations – manufacturers, research organizations, universities
- Core Competencies: Process/performance improvement and advanced manufacturing, machining & grinding technology
- 40+ Member Team: Engineers, MBA's, PhD’s, chemists, and former business owners
Major Equipment List

• Mazak Integrex i200S Mill Turn
• Makino V55 – 3 Axis VMC w/20K spindle
• DMG DMU-50 – 3+2 Axis VMC
• DMG DMU-70 eVo Linear – 5 Axis
• Hardinge Cobra 65 – 2 Axis turning center
• Milltronics HMC35 – 4 Axis HMC
• Chevalier Smart B1224II CNC Grinder
• Sheffield Cordax D-8 CMM
• Kistler Force Dynamometers
• Spindle and Feed-axis Test-beds
• Keyence VHX Digital 3D Microscope
• Fluids Lab
Be the framework for the identification, development, and transition of technologies that recognize the goal of “First Part Correct” manufacturing.
VIZProducts® – HMI Design and Development

MTConnect®- based equipment and process monitoring & reporting software

VIZ Adapter®: MTConnect®- based adapters

ShopViz®: Enterprise-wide monitoring & reporting software

MiniViz®: Local, simple monitoring & reporting software
HMI – What Industry Wants

• Safety
• Reliability
• (Cyber)security
• User friendliness
• Remote operation
• Minimal learning curve
• Digitization & Standardization
• Easy integration with other systems
• Unattended operation (“set it and forget it”)
• Easy to understand (particularly error messages)

“Many HMIs are developed with little user input. Many [developers] do not have an HMI design guideline. This means every HMI they receive on every project will be different. This lack of standardization will naturally cause problems. Many HMIs are created by white collar, college educated engineers; yet the systems are used by blue collar, high school educated operators.”

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