HMI Solutions for Security and Traceability

By: Gary Labadie
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About Pro-face

Delivering More...
A Global Organization

Specializing in:
- Industrial PCs
- Flat Panel Monitors
- Operator Interfaces
- All-in-one, Operator Interface plus Control

Servicing
- More than 50 Countries
- 300,000 factory-floor Systems worldwide
- Installing 1.5 million units annually
Innovative

- **1st to Market in Flat Panel Industrial Touch Screens**
  - Xycom Brand of Industrial PCs
  - QuickPanel Brand of Operator Interfaces

*Most Experience in Factory Interface solutions*

- **#1 in Factory Connectivity**
  - Multi-platform hardware and data connectivity Solutions
  - Over 800 protocols supported

*Connecting shop floor to top floor*

- **#1 in Investment Protection**
  - 20+ years of product migration & cutout compatibility
  - Recognized with Excellence in industry Award

*Lowest cost of ownership (Retool & Changeover)*
Certified

- Global commitment to quality and reliability
  - ATEX
  - RoHS
  - CE
  - CSA
  - C/USA UL
  - C/USA RU
  - ISO 9001:2001
  - ISO 14000

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Delivering More...
Installed in the world’s most recognized manufacturing facilities providing smooth operations.

Find Us Here (and other places)
- Oil & Gas
- Packaging
- Water/wastewater
- Automotive
- Material Handling
- Semi-Conductor
- Food & Beverage
- Heavy Industrial
## Hot Topics by Industry

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<th>Data Management</th>
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<th>Utilities</th>
<th>Pharmaceutical</th>
<th>Packaging &amp; OEM</th>
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Why Security

➢ Security Concerns:
  – Post 9/11 concerns on security used with Industrial Control Systems (ICS) across all industries
  – Increasing use of remote web-based technology in industry
  – Using Security not only for Plant Security, but also Operator Safety, Diagnostics and Traceability.
Security News Reports

- **Cisco Systems**, March 05 (EXPENSIVE)
  - Successful cyber attacks on [industrial control] systems have increased tenfold since 2000
  - 50% of those attacked experienced losses of more than $1 million

- **Director of National Intelligence**, February 08 (DISRUPTIVE)
  - “Our information infrastructure – including embedded processors and controllers in critical industries are targeted for disruption or destruction.”

- **Manufacturing Business Information**, March 05 (ACCIDENTAL)
  - Disruptions to manufacturing systems come from "inside the firewall." Many are accidental with unexpected side effects from changes to system configurations.
AGP3000 Operator Interface

Touch Screen HMIs

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AGP3000 Operator Interface Connectivity

- CompactFlash Port
- AUX, Audio Port
- Video Mix Port
- Comm. Module
- Sound In
- Video In
- Com 2
  - MPI, RS422/485 Port
- Com 1
  - RS232, RS422 Port
- 10/100 Ethernet
- USB Ports

Direct Video & Sound In
Video Mix Support
HMI Plus Control Versions
Simultaneous Protocol Support

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HMI Security Solutions by Pro-face

- **Protect Intellectual Property**
  - HMI Project Protection
  - Protect System Configuration Information

- **User Access Management**
  - Manage Operator Roles and System Access

- **Traceability**
  - Regulatory compliance

- **Protecting Remote Process Operations**
  - Access to Remote Operator Interfaces (web-based)
  - Remote user access management
  - Using dedicated operator interfaces to provide immunity from viruses or hackers
Addressing Security using HMI Software

GP-Pro EX
HMI Development Software
Multi-Platform, Single Software HMI Package

Screen Editor

**Dedicated HMI**
- AGP3000
- AST3000
- AGP3000

**HMI + Control**
- AGP3000
- LT3000
- LT3000 With CANOpen

**OpenHMI (WinGP)**
- APL3000 Heavy-duty with Keypad
- APL3000 Heavy-duty
- PS3000 Light-duty

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GP-Pro EX HMI Overview

- Performance: Leading Technology
- Advance HMI Development
- Remote connectivity
- Integrated HMI + Control
- Security
- Multi-Platform Open/Dedicated
- Information Access

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Information Access Through Connectivity
Protecting Intellectual Property

Need: Prevent tampering/stealing of an HMI Design

➢ Password Protection:
  – HMI Project Files
    • Base, Window and Logic Screens
    • Global, Local and Extended Scripts
    • Specific objects Groups
    • Prevent Project Upload from HMI
  – For Process/Machine Safety
    • Prevent Project modifications download
    • Lock out Offline (System) Menu
      ▪ CF/USB Upload/Download
      ▪ System Configuration
Application: Asset Protection

- Protecting System Integrator/OEM
  - Providing skids/machines using scripting to communicate to proprietary devices or accomplish signature tasks.

- Example
  - Oil & Gas: Custody transfer algorithms
  - Oil & Gas: Temperature Compensated Flow Equations

- Benefit
  - Prevention: Protected critical scripts ensure proper system operation, accidental adjustments
Applications: Plant Standardization

Medium and Large Process Facilities
- Using multiple integrators
- Enforce standardization project templates & guidelines

Example
- Refineries, Water/Wastewater, Power
- Batch Processing Consistency

Benefit
- Consistency, Efficiency, Safety, Reduced Mishaps.
  - Image logos, Screen Layout, Diagnostic/Maintenance screens
  - Common controls grouped that are common to every installation
  - Specific functions locked from editing by the integrators reducing operator training while maintaining functionality
Security: User Management

- **User-Based Security**
  - 64 Users, 16 Levels, (Alpha) Numeric Passwords
  - Remote User Management via CF/USB & FTP

- **Interlock Operator Actions**
  - Operations available based on Security Level
  - Prevent enabling without safeguards in place

- **Control Process Visibility**
  - Hide dedicated functions used in maintenance

- **Control Screen Level Access**
  - Protect Base and Window Screens
Security: User Management

Access Level
- GP-Viewer EX
- Web Server
- FTP Server

Remote User Management
- FTP Server

Operation Log

Visibility

Interlock

Offline Menu
- Screen Settings
- Service Settings
- Timing Settings
- Device Settings
- Sensor Settings
- Relay Settings

Card Reader

Camera

Screen Change

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Applications: User Management

Authorizing Access

- Multi-user levels: Applications requiring different control & information access.
  - Basic Operator
  - Maintenance Staff, Plant Supervisors,
  - System Design Engineers

Use Examples

- Utilities, Refineries, pipeline operations, Power Generation
- Remote field site access

Benefit

- Clarity of information/operations – users see only what they need to see.
Security: Traceability

Who Did What, When, and History

➢ Value of an Operation Log
  – Stores Date, Time, User and Object/Value Changed
  – View on the HMI for tracking product quality adjustments
  – Remotely access and upload via FTP

➢ Limit Access to information
  – Use Card Readers to Log on users
  – Decrease data tampering

➢ Black Box Event Recorder
  • Event Recorder, who’s there?
  • Vision Camera Recorder, who did it?
Security: Traceability

Enhancing control system using an HMI
Applications: User Management

Regulations, Policies, Procedures
- Enforcing corporate regulations and policies or customer requirements requiring the logging of machine / parameter changes

Example
- Require Operator safety check each time before starting process
- Maintenance - Step by Step Repair instructions using HMI

Benefit
- Operator interaction traced in the Operation log
- Indicates Who did what & When – Maintenance log
- Reducing Liability, increasing Operator Safety,
- Reducing Downtime
Security: Remote Operations

- **Remote User Management**
  - Update security settings via CF/USB through FTP

- **Using Dedicated Platform**
  - Significantly reduction in risk of viruses or hackers

- **Remote Access protection**
  - FTP Server, and Web Server adhere to security settings on the remote HMI
  - Transfer (Upload/Download)
  - Pro-Server EX Data Connectivity Networks
Security: Remote Operations

Upload/Download

Network Access

Access Level

Remote User Management

Operation Log Upload

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Applications: Remote Operations

End-User Monitoring, OEM/Integrator Servicing

- Requiring remote access to Monitor and/or Control the HMI via a Web Server or FTP Server.

- **Demand for Use**
  - Automotive, Utilities, Oil & Gas, Utilities, Material Handling, Packaging

- **Benefit**
  - Security levels for FTP/Web Server are determined by the security settings on HMI
  - Multiple security levels and users can be set up to grant read only or read/write access using remote tool
Applications: Remote Operations

- **Remote Field Sites Data Collection**
  - Remote facilities that require access level protection and logging of operator interaction

- **Remote Sites/Station**
  - Utilities (Water / Waste Water), Oil & Gas

- **Benefit**
  - Operator interaction with the machine can be traced in the Operation log and retrieved remotely
  - Camera Video can be recorded and uploaded to review access to the remote facility
  - Security levels, users and passwords can be changed remotely without the need to visit the remote site
Summary: Protection of HMI Access Points

- CompactFlash Port
- AUX, Audio Port
- Video Mix Port
  GP2000-VM41
- Comm. Module
- Video In
- Sound In
- 10/100 Ethernet
- USB Ports
- Com 1
  RS232, RS422 Port
- Com 2
  MPI, RS422/485 Port
- 10.4"
- 7.5"
- 5.7"
- 3.8"
- Delivering More...
Pro-face Security Solutions Summary

– Protect Intellectual Property
  • HMI Project Protection
  • Protect System Configuration Information

– User Access Management
  • Manage Operator Roles and System Access

– Traceability
  • Regulatory compliance

– Protecting Remote Process Operations
  • Access to Remote Operator Interfaces (web-based)
  • Remote user access management
  • Using dedicated operator interfaces to provide immunity from viruses or hackers
Thank you for your time.