Control Panel Services

PLC - HMI - SCADA

The Old Moy Schoolhouse, Moy, Inverness-shire, IV13 7YE
Tel: 01808 511765 Fax: 01808 511765
E-mail: info@coldcurve.com Web: www.coldcurve.com
Registered Company SC334540 VAT Reg No 923 5467 17

Coldcurve Limited
The Old Moy Schoolhouse
Moy
Inverness-shire
IV13 7YE

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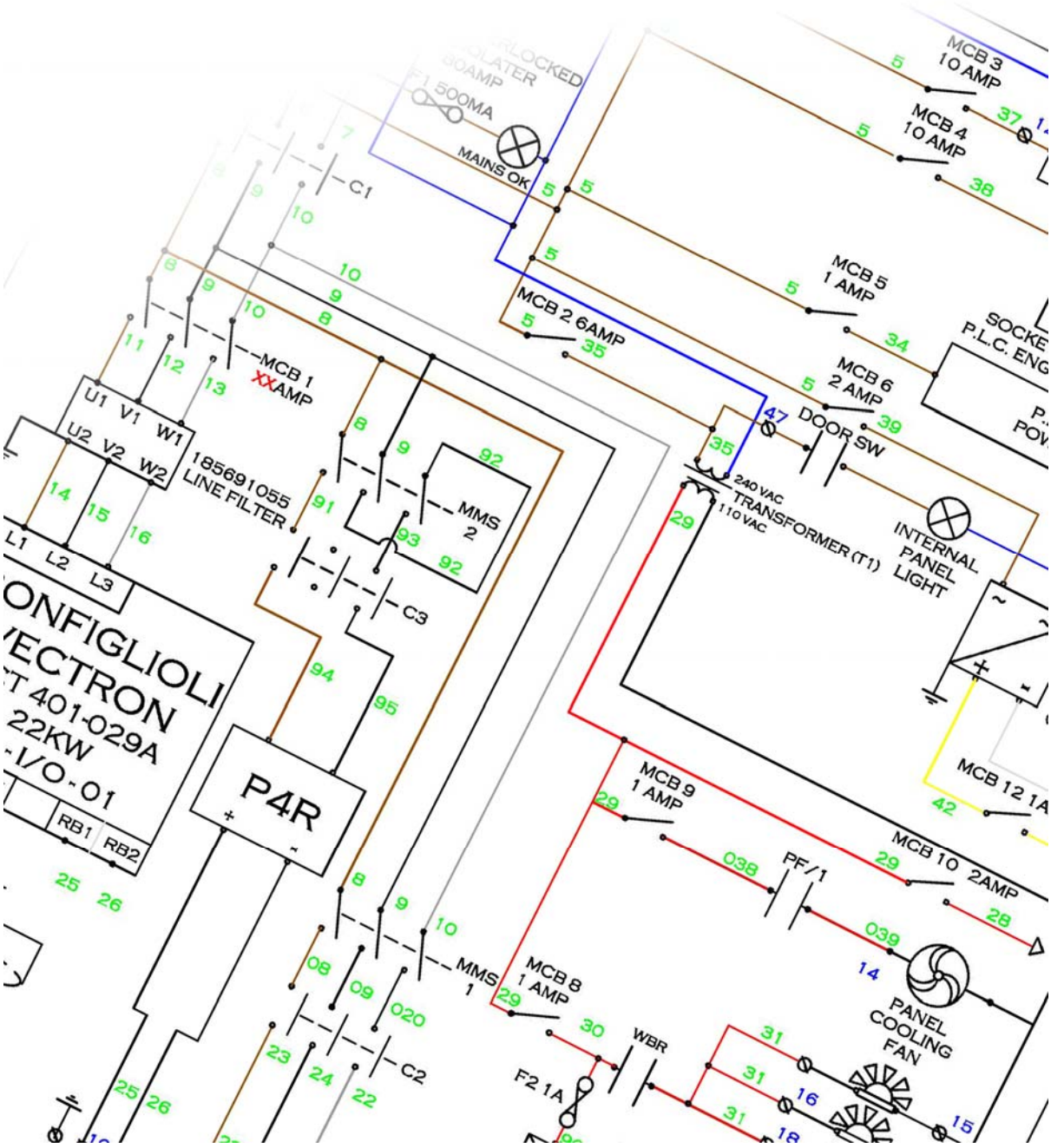

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1. Automated Control Panel Services.

The design, build and installation of every Coldcurve Ltd. control panel is always completed 'In House' guaranteeing the highest quality with every standard and specification closely followed.

Utilizing modern technologies such as:-

- **P**rogrammable **L**ogic **C**ontrollers,
- **H**uman **M**achine **I**nterface
- **S**upervisory **C**ontrol **A**nd **D**ata **A**cquisition
- Networking
- Inverters
- Steeper Motors
- Servo Drives

Our talented team members work closely with our customers to understand all their wishes and concerns. Every control panel design is carefully planned to make sure it closely follows the customer's specifications and requirements.

Upon completion an electronic project folder is created for each project all relative documents and certifications are traceable for years to come.

This is retained by Coldcurve Ltd. and a copy is handed over to the customer for future reference.

Coldcurve Ltd. is able to offer full project management with in-house design, manufacturing and commissioning; this allows us to offer a full turnkey project service.

Coldcurve Ltd. has successfully developed a number of integrated hardware and software solutions for the Off-shore, Manufacturing, Refrigeration, Food and Beverage industries.

These systems have incorporated all aspects:

- Power Distribution,
- Control Systems,
- Monitoring and Data Collection,
- Process control all with machine and plant interfaced signaling.

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2. Control Systems.

Electrical control panels can vary in sizes and complexity ranging from multi-site (networked), multi-bay, wall mounted or machine mounted enclosures. They can control the most complex of systems to the simplest systems such as a valve timer.

Electrical control panel systems have the ability to make complex processes that may require many operators, into a simple one man task. All necessary facts and information is displayed to an operator at a main control station or locally.

This can vastly reduce the costs of production, saving time and labour.

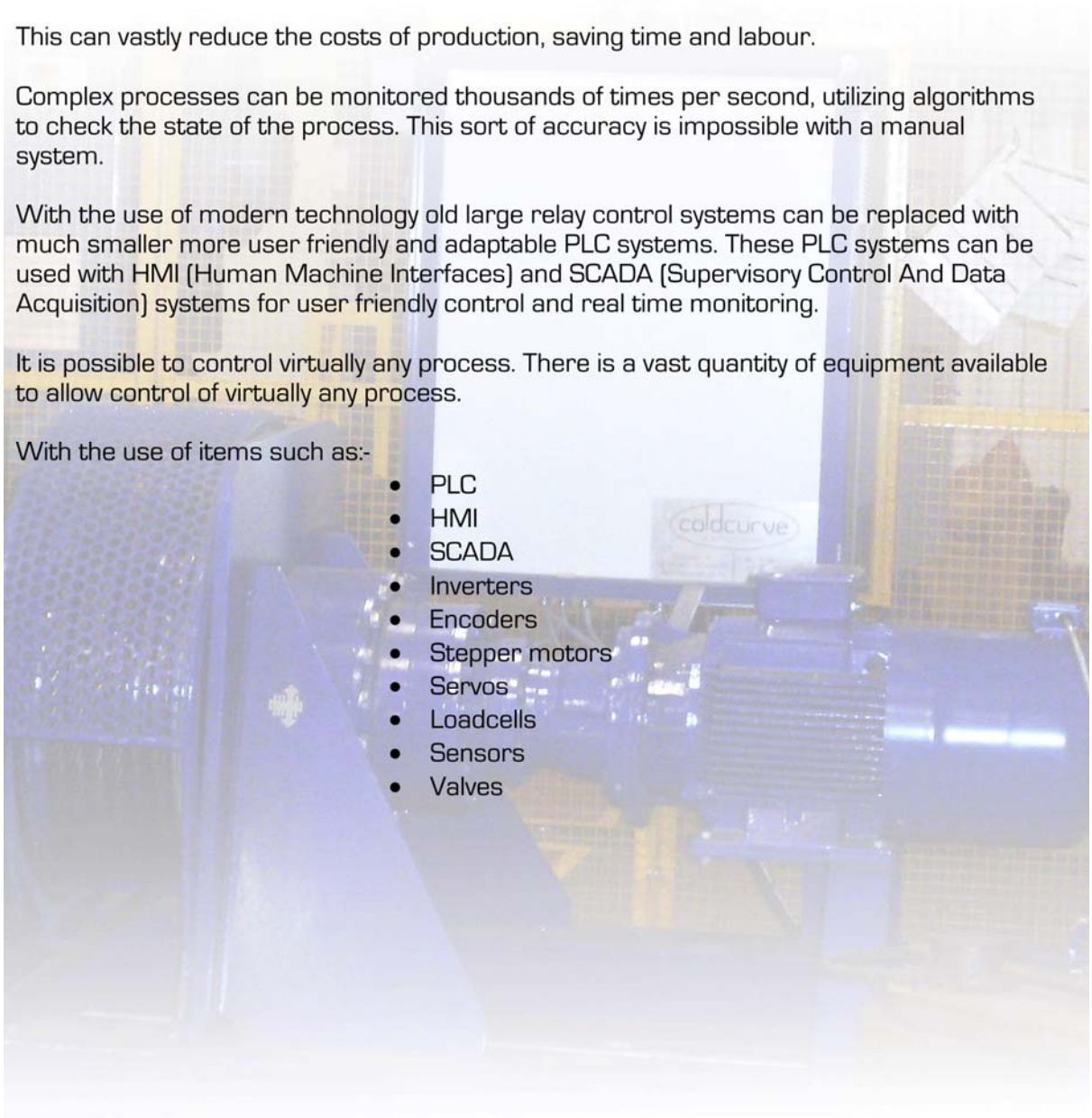
Complex processes can be monitored thousands of times per second, utilizing algorithms to check the state of the process. This sort of accuracy is impossible with a manual system.

With the use of modern technology old large relay control systems can be replaced with much smaller more user friendly and adaptable PLC systems. These PLC systems can be used with HMI (Human Machine Interfaces) and SCADA (Supervisory Control And Data Acquisition) systems for user friendly control and real time monitoring.

It is possible to control virtually any process. There is a vast quantity of equipment available to allow control of virtually any process.

With the use of items such as:-

- PLC
- HMI
- SCADA
- Inverters
- Encoders
- Stepper motors
- Servos
- Loadcells
- Sensors
- Valves



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3. Programmable Logic Controller.

What is a PLC?
A programmable logic controller (PLC) is a digital computer used for automation of electromechanical processes, such as control of machinery on factory assembly lines and process plants, off-shore, amusement rides, traffic management and many other applications.

PLCs are used in many industries and machines. Unlike general-purpose computers, the PLC is designed for multiple inputs and output arrangements, extended temperature ranges, immunity to electrical noise, and resistance to vibration and impact.

Programs to control machine operation are stored in battery-backed memory. A PLC is an example of a real time system since output results must be produced instantaneously in response to input conditions.

If you would like more information on PLC's or any other aspect of your current manufacturing process or productivity please contact us, you can contact us online or by phone to arrange an appointment, we would be pleased to discuss how our solutions might benefit your organisation.

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4. Human Machine Interface.

To work with a system, users have to be able to control the system and assess the state of the system.

The term "user interface" is often used in the context of computer systems and electronic devices. The user interface of a PLC installation is sometimes referred to as the human-machine interface (HMI). HMI is a modification of the original term MMI (man-machine interface).

The system may utilize several user interfaces to serve different kinds of users. For example, a computerized factory database might provide different levels of user interfaces, one for operators (limited set of functions, optimized for ease of use) and another for engineers (wide set of functions, to allow better analyses of equipment and data).

This allows for precise and accurate control of the system in hand.

HMI screens are available in a vast range of sizes to suit the individual requirements. They can be key or touch screen controlled. HMI's are designed for harsh industrial environments.

Key control HMI screens are commonly used in situations where the operators may have oily or dirty hands which would impair the operator's view of the screen.

Touch control HMI screens are the typical choice for most plant and machinery, as for they are more user friendly.

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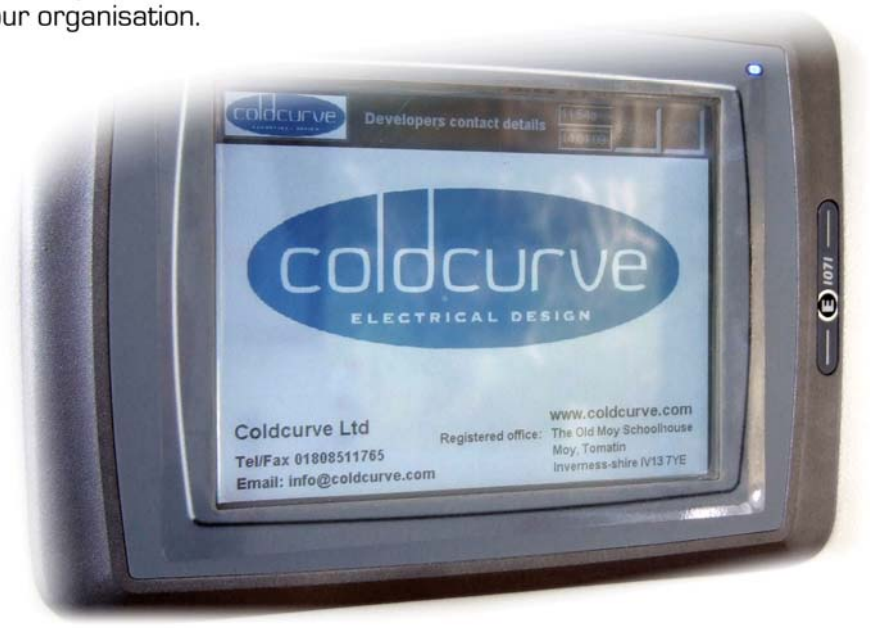

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5. Supervisory Control And Data Acquisition.

The term SCADA usually refers to centralized systems which monitor and control entire sites, or complexes of systems spread out over large areas (anything between an industrial plant and a country).

Most control actions are performed automatically by Programmable Logic Controllers ("PLCs"). Host control functions are usually restricted to basic overriding or supervisory level intervention. For example, a PLC may control the flow of cooling water through part of an industrial process, but the SCADA system may allow operators to change the set points for the flow, and enable alarm conditions, such as loss of flow and high temperature, to be displayed and recorded. The feedback control loop passes through the PLC, while the SCADA system monitors the overall performance of the loop.

Data acquisition begins at the PLC level and includes meter readings and equipment status reports that are communicated to SCADA as required. Data is then compiled and formatted in such a way that a control room operator using the HMI can make supervisory decisions to adjust or override normal (PLC) controls. Data may also be fed to a Database Management System, to allow trending and other analytical auditing.

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6. Examples of systems we automate.

PLC's are widely used for the analysis and control of automated systems. They are an extremely reliable, time and cost efficient alternative to the traditional method of using hardwired relays for system control. For each system, we design and code a tailor-made PLC program to the customer's specification. PLC's can be operated by SCADA and H.M.I. screens which we also program to suit the customer's requirements.

Any system can be automated, from the flow controls in a whisky distillery, automated product manufacturing to the refrigeration controls of large food manufactures. We have a wide range of experience in automating different types of systems, such as the examples below.

Motion control:

- From food and drink production to land movement controls
- System design using valves, sensors, conveyers, etc

Flow control:

- From food and drink production to effluent controls
- System design using motorised valves for isolation and distribution
- Pressure transducers to measure flow pressure
- Flow volume analysis
- Pressure control and flow volume control via inverter-driven pumps

Temperature control:

- Air conditioning on any scale, from commercial environment control to industrial blast freezers and cold stores

Testing systems:

- Automation of testing rigs which may be either too dangerous or too repetitive for manual operation. For example, the automation of the testing rig for offshore equipment such as deep-sea valves, which need to be repeatedly tested at pressures in excess of 10,000 psi.

Motor control:

- Automation of motors and servos
- Speed analysis and control
- Forward/reverse functions
- Optimisation of power consumption

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INVERNESS-SHIRE
IV13 7YE

7. Contact information.

Tel: 0044 (0) 1808511765
Tel 2: 0044 (0) 7878503781

Email: info@coldcurve.com

Web: www.coldcurve.com

Address: The Old Moy Schoolhouse,
Tomatin,
Inverness-shire.
IV13 7YE
Scotland.

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- **H**uman **M**achine **I**nterface.
- **S**upervisory **C**ontrol **A**nd **D**ata **A**cquisition.
- Automated industrial electrical control systems.
- Programming, installation, maintenance.
- Infrared thermal surveys.
- Consultancy service.

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TEL: 01808 511765 FAX: 01808 511765
E-MAIL: INFO@COLDCURVE.COM WEB: WWW.COLDCURVE.COM
REGISTERED COMPANY SC334540 VAT REG NO 923 5467 17