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DeviceNet Export Project Award

The potential to develop new design concepts based on distributed architectures using DeviceNet have been the focus of EIC Limited since the availability of DeviceNet products in New Zealand three years ago.

The added savings of not having to recruit installation electricians in Dubai and by using all "off-the-shelf" standard DeviceNet products and cable systems simply plugging into the network gave the confidence to tender on such a project.

This project gave Murray Kerr an export opportunity where combining the controller, network cards and operator interface in a single central computer and then run only four DeviceNet network cables to field mounted motor control stations proved extremely successful.

The field location of variable frequency drives and other control devices using these concepts minimized cabling and at the same time offered better control with



Dianne Hart of Trade New Zealand presenting the IMC award to Murray Kerr of EIC Ltd for a bottling and packaging line project for Dubai..

more information and diagnostics for the operators and plant maintenance personnel.

The outcome is a profit on the project, and 11 months of trouble free running to date.

ODVA New Zealand Gets Website

The ODVA New Zealand User Group will shortly launch its new website at www.odvanz.org.nz giving local updates of activities in the region.

The website gives a calendar of events for 2001 as well as technical information and project summaries from successful DeviceNet projects in the region.



ODVA China Opening Ceremony



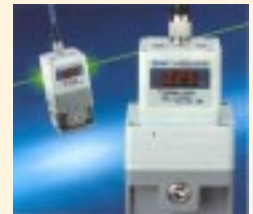
On July 6th 2000 in Beijing the opening ceremony of ODVA China was held at the 2000 China International Fieldbus Technical Exchange and Exhibition. The Shanghai Electrical Apparatus Research Institute (SEARI) is responsible for the establishment and operation of the ODVA in China.

The official opening of ODVA China was carried out by CAI Weici the chief engineer of the National Mechanical Bureau and Graeme Meyer representing the ODVA.

SMC Family Grows

The SMC family of revolutionary electro-pneumatic regulators has just grown. Now you can control the new ITV2000 electro-pneumatic regulator through your DeviceNet system. This versatile regulator now allows greater design flexibility and decentralised control. The features and benefits you will receive with the new ITV2000 include:

- ◆ DeviceNet compatible
- ◆ Provides continuous digital output pressure signal to OMPA if pressure failure occurs
- ◆ Can utilize up to 63 of the new ITV2000s on a single DeviceNet network
- ◆ 3 pressure ranges (.1MPa, .5MPa, .9MPa)
- ◆ IP65 degrees of protection
- ◆ 12-bit input (4096 steps) for fine control
- ◆ 12-bit output (4096 steps) monitor
- ◆ Standalone or manifold mounted
- ◆ Low maintenance and low cost
- ◆ Bright and easy to read LED display



The Most Innovative Installation

Traditional wiring on a ship is both difficult and expensive and multi-core cables end up being run everywhere with some destinations being very tricky to get to. Research prior to the project indicated the DeviceNet was very reliable and a year after installation this has proved correct.

Future proofing is excellent by being able to add I/O to either the Flex I/O or to the DeviceNet by simply placing another IDC on the flat media.

This system has been designed specifically for alarming and monitoring of critical equipment on the Ocean Breeze. This becomes particularly relevant when you consider that vessels of this type normally operate thousands of kilometers from the nearest land off New Zealand.

"If you want to test something in a 'harsh environment', try it on a fishing boat".

Fred Hansford - FHE Electrical



John Wright of Simunovich Fisheries left and Fred Hansford of FHE Electrical with awards from New Zealand Institute of Measurement and Control for the DeviceNet Installation on the Simunovich Fisheries Trawler, Ocean Breeze.

Solid-state Overload Protection on DeviceNet

The E3 and E3 Plus solid-state overload relays from Allen-Bradley incorporate advanced protection and warning capabilities along with direct network connectivity, to deliver greater flexibility for a cost-effective motor management solution.

These new overload relays are equipped with a range of sophisticated features including supplemental I/O, control capabilities, and the ability to operate in failure-prevention mode - allowing users to monitor motor operation to prevent and minimise production downtime.

The E3 and E3 Plus overload relays provide a range of protective capabilities including thermal overload, phase loss, stall, jam, underload and current imbalance. The E3 Plus also provides thermistor input and ground fault protection.

A built-in DeviceNet port allows users to access status information and data from the E3 and E3 Plus relays, as well as perform motor control functions to assist in maximising production.



EtherNet/IP

The ODVA has announced a global standard for using Ethernet on the plant floor, the EtherNet/IP standard. This will allow users to take off the shelf Ethernet physical media and components while using an open and industrially proven application layer.

As a result EtherNet/IP delivers interoperable Ethernet products from multiple vendors.

In spite of industry wide recognition users have been hesitant to apply the Ethernet network to transfer data on the plant floor because Ethernet, combined with the familiar transmission control protocol/Internet protocol (TCP/IP), only guarantees that two devices can transfer data between one another.

To clear this obstacle, EtherNet/IP applies the application layer common to both the DeviceNet and ControlNet networks over TCP/IP protocol operating on standard Ethernet chips and hardware.

Unlike other Ethernet solutions that require costly gateways to and from the network, EtherNet/IP ports encapsulate DeviceNet and ControlNet messages over Ethernet. Because all 3 networks share an application layer, EtherNet/IP uses the same object models and device profiles as DeviceNet and ControlNet. This means that nearly 400 vendors from across the globe have developed products for any of the 3 networks.

PDL Releases RVSX

PDL have released the RVSx, their new reduced voltage starter. DeviceNet compliant this new generation of product continue PDL's strong support for this serial communications protocol.

The RVSx is feature packed and includes:

- ◆ Extensive and highly configurable control inputs and outputs: 3 digital inputs, 2 relay outputs and 1 analogue output.
- ◆ An optional expansion board provides an additional 3 digital inputs, 1 relay output, 1 analogue output and 2 serial inputs.
- ◆ Serial communications - RS232 as standard; software protocols supported include DeviceNet and Modbus.
- ◆ Further customisation is achievable with PDL VISTA® for Windows software, which allows custom configuration of the starter for specific applications.
- ◆ The RVSx as standard is fully filtered and EMC compliant, i.e. no additional filters required.
- ◆ Designed and manufactured under AS/NZS ISO 9001:1994
- ◆ Complies with major international standards (pending) EN 50178, IEC 60947-4-2, AS/NZS1023-1, AS/NZS1023-2

Recognising that not all customers require a comprehensive suite of control I/O, an optional expansion board provides additional digital and analogue I/O capability. This unleashes the full potential of the VISTA applications platform, allowing considerable flexibility in user interface customisation and control I/O processing, in many cases eliminating the need for additional PLC control.

The RVSx is easy to apply to simple pump and fan applications yet can be configured to an advanced level, by end users or engineers, to handle complex starting and control requirements within the standard features of the product.



Control 99



Control 99 was a great opportunity for intercompany and customer communications, as well as demonstrating a combination of products working together with DeviceNet.

Training Plays Major Role

Training continues to be one of the most important factors in the success of an installation in an environment where DeviceNet is used for the first time.

The availability of ODVA approved DeviceNet training from the Waikato Polytech and Manukau Institute of Technology has ensured several successful projects. Attendees have appreciated the opportunity to attend a course and be trained on products from several manufacturers.

One day courses are available for DeviceNet cabling and installation and two day courses are offered for software and configuration at both venues.



John Lamb of Manukau Institute of Technology instructs Peter Bayne of Forest Research on the configuration of a DeviceNet device.



DeviceNet students at the Department of Electrical Engineering at the The Waikato Polytechnic in Hamilton.

Events - 2001

In response to requests from industry the ODVA NZ has several events planned for 2001.

The events include:

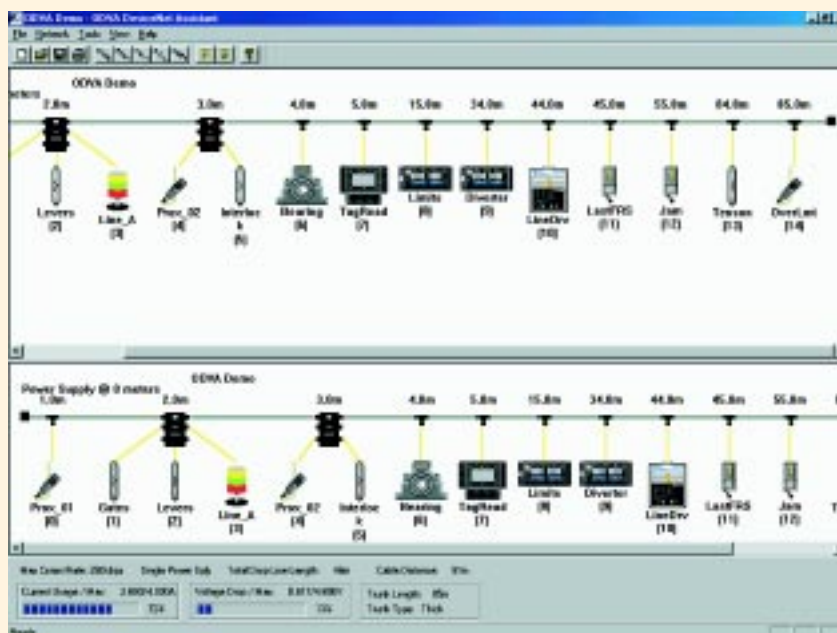
- April DeviceNet Technology Forum Wairakei
- April DeviceNet for Consultants Auckland
- April DeviceNet for Electricians Auckland
- June Electritech Auckland
- July South Island DeviceNet Forum
- July ECANZ Trade Exhibition Christchurch
- Nov Control 2001 Auckland

Check the ODVA NZ website for event details and registration forms.

DeviceNet Assistant

The ODVA is globally releasing a network configuration tool to allow the documentation and calculation required to correctly engineer a network in conformance with the specifications. This will include correct placement of power supplies and drop cables.

The tool will be generic and allow product data and power consumption's to be downloaded from the ODVA website to keep the database of information current.



TCS DeviceNet Scope Expands

When Carter Holt Harvey investigated control philosophies for the new tissue plant in Hamilton, TCS and DeviceNet once again came to fore. The complex flexiline conveying system from manufacturing to the packing plant and from the packing to the palletising requires 71 variable speed drive motors, proximities, photo beams, reed switches, solenoids, message displays, operator interface panels, label printers and barcode scanners.

Traditionally this would have meant a matrix of multicore cables, cable ways, junction boxes, motor control cabinets, data cables, motor cables etc., but when Tait Control Systems Ltd of Hamilton was consulted the obvious solution became a distributed architecture based around DeviceNet.

TCS designed and developed a distributed motor control station that consisted of a Circuit Breaker to act as an isolator, motor overload and protection for the transfer in cable size from the distributed power supply to the individual motor.



The TCS Motor Control Station provides both remote and local control capabilities and can be configured via the DeviceNet Parameters to a myriad of control operations and safety default settings.

More importantly is the diagnostic feed back to help both maintenance staff and operators quickly locate problems should they occur. The ability to combine complex data transfer and simple bit status on a single physical medium is what makes DeviceNet stand head and shoulders above its competition.

EIC Product Range Expanding

The Electrical Importing Company has increased its product range to include more DeviceNet products.

Cutler Hammer's commitment is illustrated by its extensive range of Automation products - everything from DeviceNet physical media, an exhaustive range of DeviceNet limit switches and photoelectric sensors (including the world's smallest), DeviceNet motor control centres, motor starters, combination starters, contactors, push-button stations and indicators - through to the world's leading brand of electronic operator interfaces, the PanelMate range - to PLCs, a vast range of automation PCs and peripherals with the automation software to run them.



DeviceNet Technology 2001

The very popular DeviceNet forum held in April 2000 is to be repeated in 2001. Check the ODVA website for details of seminars and speakers.

Facilitator's column



The support of the ODVA and DeviceNet technology in New Zealand is becoming part of New Zealand's automation culture. With the large number of DeviceNet projects now running reliably, and training programmes well established the implementation of DeviceNet will continue to grow and evolve to improve New Zealand's manufacturing advantage.

Many installers have now completed several projects and found innovative ways of applying DeviceNet to reduce the cost of installation and greater design flexibility.

The use of DeviceNet by so many industries is also creating a demand for new products currently not available on the technology and the ODVA has begun an initiative to assist in the development of these specialised products.

The organisation continues to be supported by a voluntary effort from many of the board members and the facilitator. Potential user members are encouraged to join the organisation to ensure that New Zealand industry can get the maximum benefit of emerging technology and the advantages that this can bring to the New Zealand economy.

The New Zealand ODVA User Group is an example for the rest of the world on how vendors and users working together can benefit both parties with efficient manufacturing practices based on open technology.

Graeme Meyer

Physical Media meets Latest DeviceNet Electrical Installation Requirements

The DeviceNet Electrical Installation Requirements recently published by the ODVA NZ/Australia User Group calls for specific requirements of DeviceNet physical media. These relate to the environmental demands placed on the physical media by industrial environments commonly found in New Zealand.

New Zealand industries have unique needs, an example being the dairy industry. Specially designed products from Connector Systems Ltd are aimed at these requirements.

Through international relationships with suppliers Lumberg and Commscope, Connector Systems are able to offer a vast range of connection systems and cable. Customised multiport taps, moulded cables and rewirable connectors are also available to suit custom design situations.

Several unique features such as secure locking, stainless steel mini and micro lock rings, as well as UV stabilized materials ensure that Lumberg products provide superior performance in the harsh conditions found in New Zealand manufacturing plants.

The special multiport tap is designed with trunk and drop cable management features, which are ideal for valve clusters and other devices commonly used in NZ Dairy factories. Latching lock rings prevent loosening under vibration conditions. Stainless steel components provide corrosion resistance and black plastic materials offer UV resistance in the face of harsh sunlight exposure.

Bulk DeviceNet trunk, drop and flat cable from Commscope, a member of the Rockwell Automation select Encompass



partners program, and the ODVA are also well suited and proven to offer superior performance in New Zealand industrial conditions.

For flat media applications, the Lumberg Multimate Sensor/Actuator box system is ideal. The Multimate system is multimedia and multifunctional. The I/O box and base design is interchangeable, providing unparalleled flexibility and cost effectiveness.

Installation Standard



The development of the ODVA DeviceNet Electrical Installation Recommendations has been well received, with many copies being sold around the world.

The document has been written for use by end users and consultants for New Zealand conditions to allow them to specify DeviceNet technology and ensure that all tenders include a level of design that will ensure a successful installation.

The standard is generic with no brand names and it has been found that newcomers to DeviceNet can understand the document easily when used in conjunction with one of the ODVA training courses, ensuring a successful project for the client.

DeviceNet Detective



A bus-powered, hand-held tool that performs comprehensive DeviceNet diagnostics and configuration.

- Change Network Node Configuration On or Off Line
- Display High, Low and Present 24 VDC Network Voltage
- Display Range of the High & Low CAN Bus Voltage
- Report CAN Errors/Second and Total CAN Errors Detected
- Log CAN Errors From Each Node
- Detect % Traffic Load on the Network

For more information checkout the ODVA site at www.odvanz.org.nz

DeviceNet Safety Plans Released

At the Hannover Fair 2000 the ODVA released plans for "DeviceNet Safety" where the safety protocol is on top of standard DeviceNet protocol. Many different safety topologies will be supported and will meet the requirements of DIN 19250 AK6, EN 61508 SIL 3 and EN954 Category 4 depending on the configuration.

Safe hardware is required to allow safe generation and consumption of data, but this hardware can be used on conventional DeviceNet networks in conjunction with standard cables, scanners and other non-safety devices.

There was a lot of interest in this technology from the mainly European audience, and development is continuing in order to allow products to be available in early 2001.

OMRON Open Network Controller – Communication Network Gateway

Omron's unique and innovative Open Network Controller, the first product of its type, is a revolutionary compact industrial computer with tremendous capability and flexibility for integrating industrial control systems. The Open Network Controller provides users and integrators with a new cost-effective platform for integrating all types of manufacturers' industrial automation networks into ERP/MES and SCADA systems; it also enables web monitoring of control information and can act as the primary controller simultaneously.

Many control applications do not provide information to a plant's information system or a company's ERP because the control system does not have the capability of moving data through the network. The Open Network Controller acts as a gateway between DeviceNet and Ethernet, becoming a resource to solve that problem. This dramatically reduces the time and cost required establishing and maintaining communications connections between various devices in DeviceNet, Ethernet, serial and other industrial automation networks.

Additional NX-Server for DeviceNet software allows the Open Network Controller to collect the I/O data of the

devices in the existing DeviceNet network, by analysing the network frames and without participating as a valid node. Since it never consumes a MAC-ID, which is one of the network resources, it does not perform message communications with each device and therefore does not add to the DeviceNet network traffic allowing maximum network efficiency.

The Open Network Controller also has the powerful ability to host web applications running on its embedded web server. The Open Network Controller's web server function provides for interactive remote monitoring, setting and maintenance through a web browser of the PLCs, DeviceNet and other devices connected. The Open Network Controller can even be set to send out status data in e-mail messages periodically, or based on conditions of the on board event memory.

Built for harsh industrial environments, the Open Network Controller meets noise and vibration requirements of any typical industrial controller except there are no parts to fail, such as fans and hard disks.



Its compact size allows for installation in almost all sites and existing control panels. When fitted with a compact flash card the Open Network Controller becomes a "soft PLC" (ISaGRAF) target machine with the same environmental durability as a PLC. Its built-in event memory can be used to control DeviceNet slaves directly. As added extra capability, the Open Network Controller features an open ISA slot that can use both Omron and non-Omron communication cards. Future built in network support is under development as a gateway for ControlNet.

DeviceNet to ControlNet Linking Device

The DeviceNet to ControlNet linking device has recently been released to provide a powerful link between the two technologies.

The linking device includes a scanner with the capacity to handle 4k input and output on a DeviceNet network.

The ability to combine DeviceNet and ControlNet without having to pass information through a PLC back-plane is an important advancement that allows for greater cost reduction and an improvement in speed on major installations where there

are a multiple of DeviceNet networks in a control architecture.

The ability to use a single ControlNet network backbone allows the handling of all control and diagnostic feedback and monitoring of devices attached to the DeviceNet network.

ControlNet is a 5Mbps network that is complementary to DeviceNet, and products share many of the features and profiles of the technology. The ability to connect a DeviceNet network to the linking device that has a



ControlNet scheduled adaptor with redundant media and a network access port is seen as an important feature on major installations giving greater flexibility.

Anchor Project Wins ODVA Award

The largest wholemilk drier in the world recently commissioned in New Zealand has been judged a winner in the ODVA DeviceNet project competition.

1600 nodes are distributed across the Te Rapa plant to control and monitor the operations. These include wet and dry processes, powder handling, refrigeration, water and waste water. Using DeviceNet eliminated multi core cabling, reduced installation labour and time as well as the need for major cable support systems. The networks intelligent features allow Anchor to control its processes, capture data and monitor any component without additional costs.

With DeviceNet being used for process valves, variable speed drives, motor starters, pneumatics along with specialist interfaces for dairy industry specific equipment, Anchor Products was able to achieve their goal of achieving optimal plant performance and productivity with state of the art technology.



The use of DeviceNet for the control and monitoring of variable speed drives makes it possible to obtain the thermal model of the drive, frequency, current, acceleration rates as well as the ability to store drive information in a central location and download it when installing a new drive. With all drives being a separate node on the network this becomes a very powerful tool for large process operation.

Using DeviceNet gave the opportunity to use equipment from around the world and also products engineered in New Zealand. With 60 networks the design of the DeviceNet cabling system was one of the critical components of the project, as over half of the nodes are external to the building.

A downloadable PDF file describing the DeviceNet installation on the project is available at www.odvanz.org.nz

Norgren Training

IMI Norgren Ltd has recognised the potential of bus systems in processing and manufacturing industries, and has been focussing on upskilling their staff in fieldbus control systems.



of installation and commissioning cost reductions, and future proofing control systems.

Norgren has recently been involved in a project for PPCS a pelt processing plant in Dunedin where engineers were able to simplify the commissioning process considerably by choosing Device Net control.

Key benefits were the ability to pre test systems in an office environment, plug and play, minimum on site wiring, and ease of future expansion.

Norgren V20 valves were chosen for actuator control as they provided advanced diagnostic features and configuration versatility.

Part of the ongoing training program included having Graeme Meyer from the ODVA attend their recent sales meeting at Cambridge in August. Speaking to 24 of Norgren's sales and management team, Graeme provided training on the future direction of control systems, user benefits

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