World of Industrial Applications

ComAp

CONTROL TECHNOLOGY FOR INDUSTRY MARKET

InteliDrive – a proven family of technology driven control solutions

Welcome to the innovative world of ComAp Industrial controllers. Our products are designed to provide flexible solutions for engine driven applications, pumps and gen-sets using industrial CAN communication providing effective and reliable engine function management.

ComAp's reputation is built around a trusted family of products, software and accessories all supported by technical specialists with extensive practical experience of electronic engines operating in industrial applications. The control packages are easy to configure and provide engineers with the ability to customize functions with a wide range of inputs / outputs options. Continuous management is achieved through a portfolio of dedicated monitoring, supervision and control software tools and remote communication using either standard methods (modem/ internet) or through mobile networks (GSM/ GPRS/GPS).

This brochure aims to demonstrate in some detail how different customers around the world have successfully employed ComAp control products for a diverse range of engine driven applications. We hope these technical case studies give an informative insight into the range, scope and capability of our products.

Aleš Procházka,
ComAp Marketing Director

CONTENT

InteliDrive – a proven family of technology driven control solutions.

ComAp

The Products

InteliDrive Lite

ENGINE CONTROLLER FOR NON-CLASSIFIED APPLICATIONS

AirGate

The InteliDrive Lite is a cost effective sophisticated engine controller, which features outstanding control, monitoring and protection for both mechanical and electronic diesel/ gas engines in one unit. The extended product family offers a range of engine specific versions suitable for land-based and marine non-classified applications.

It can communicate via standard and proprietary CAN J1939 communication protocols to a wide range of EFI engines (both single-speed and all-speed).

Like all ComAp products, InteliDrive Lite features a powerful graphic display providing user-friendly information in an easy to understand format. Real time clock and event and performance history log are priceless when it comes to troubleshooting. Remote control and monitoring is possible via analog/GSM/GPRS modem or Internet. Instrumentation of internal values on analog gauge makes it easy to use, even for untrained personnel.

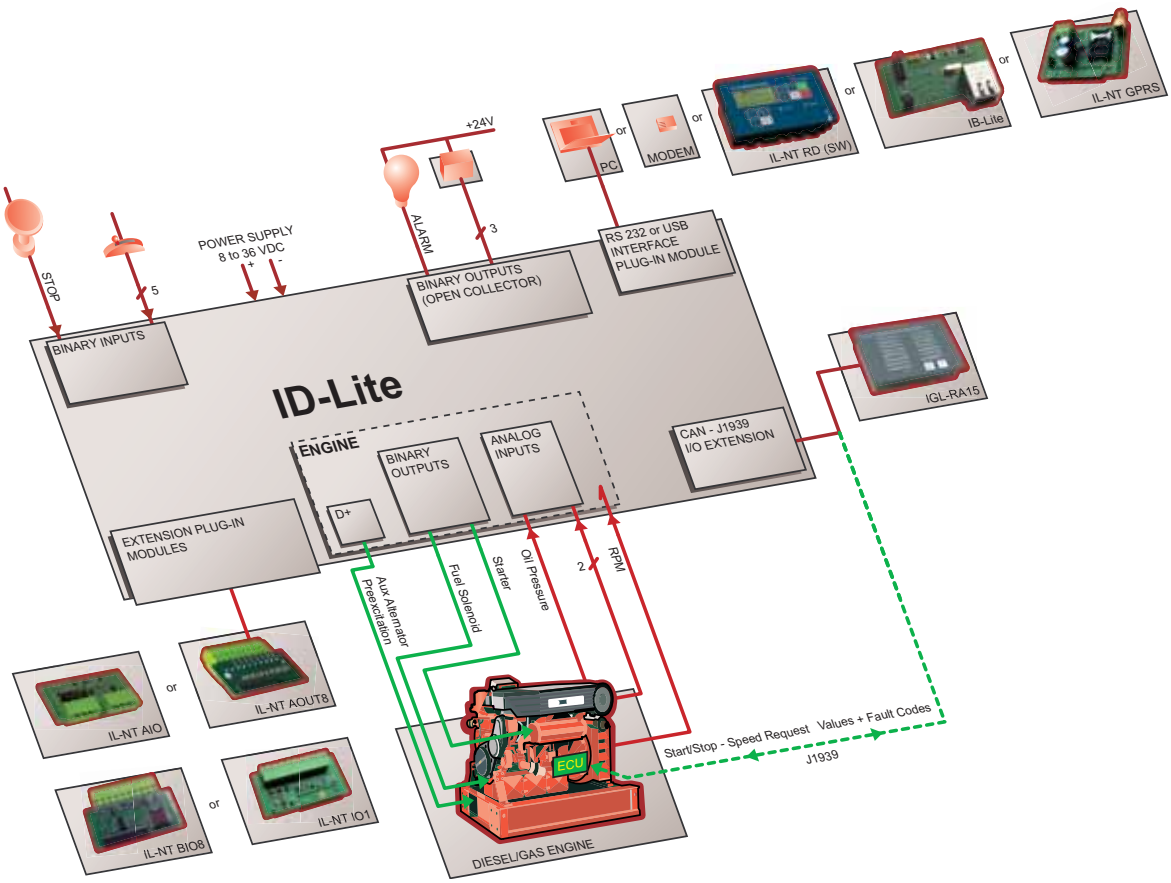
PRODUCT BRANCHES

New InteliDrive Lite

An example of a customer driven modification to InteliDrive Lite featuring 7 binary inputs and outputs, 2+4 additional voltage inputs and a customized front panel. Creating a specific software branch is also available on request.

InteliDrive Fire Pump Control

The controller is designed for diesel driven fire pumps applications based on NFPA 20 standard. Manual operation allows the pump to be started (two battery system) for test, whilst automatic operation provides starting by remote system pressure switch.



Benefits

- Integrated solution – less wiring and components
- Available Remote Display panel – economical solution for remote control
- Analog gauge (VDO, Datcon and others) outputs – operator friendly
- History log – easy troubleshooting
- Pressure regulation loop and Load limitation
- Smooth engine speed control
- Less engineering and programming
- Perfect price/performance ratio

Features

- Engine control, monitoring and protection
- Support of engines equipped with Electronic Control Unit (ECU) – J1939 or Cummins Modbus interface
- 6 (7) configurable binary inputs and outputs
- 3 (+2, +4) configurable resistive (voltage) analog inputs
- VDO type analog gauges outputs – 8 configurable channels
- Selectable protections alarm/shutdown
- Setpoints adjustable via keyboard or PC
- 3 levels of password protection
- USB, RS485 or RS232/Modem/Modbus communication
- Real time clock and event history log
- PLC functions: PID loop, Comparators, Timers
- Engine speed control by 3 predefined binary inputs, Speed Up/Down binary inputs or one analog input
- Analog oil pressure, water temperature, fuel level, battery voltage, engine speed (pick-up)
- Automatic or manual start/stop of the engine
- Push buttons for simple control, lamp test
- Graphic back-lit LCD display 128 × 64 pixels
- 2 LED indicators
- Front panel sealed to IP65
- Power supply 8–36 VDC
- Operating temperature:
  -20°C to +70°C regular unit
  -40°C to +70°C low temperature unit
- InteliDrive Lite controller meets several standards (EN, UL, CSA, NFPA)

InteliDrive DCU Industrial

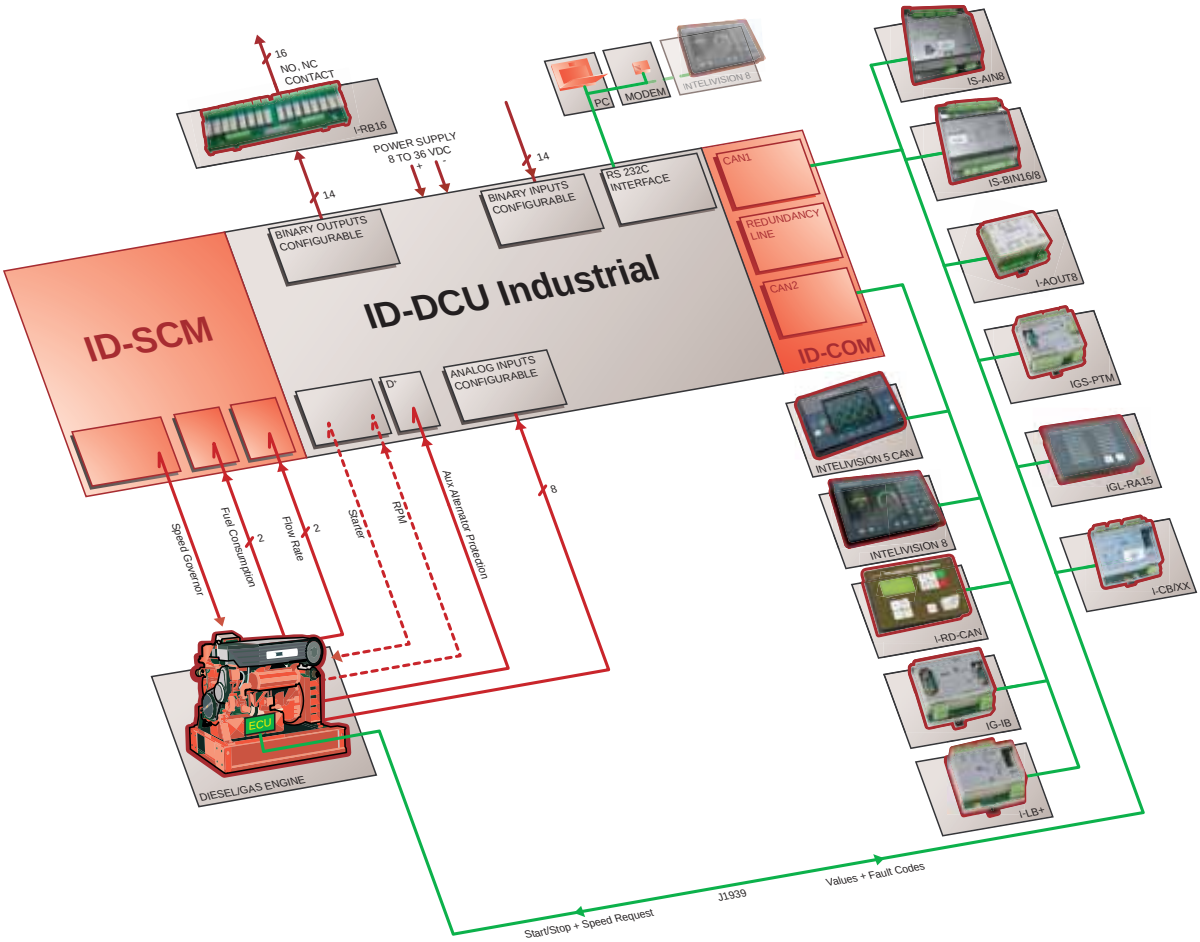
MODULAR ENGINE CONTROLLER FOR INDUSTRIAL APPLICATIONS

The InteliDrive DCU Industrial is a highly flexible sophisticated engine controller, which features outstanding control, monitoring and protection for both mechanical and electronic diesel / gas engines as well as peripheral equipment. The extended product family offers a range of engine specific versions suitable for land-based applications. Most commonly, these tailored applications meet the specific control requirements of engine driven compressors and pumps.

InteliDrive can communicate via standard and proprietary CAN J1939 communication protocols to a wide range of EFI engines. Designed to be highly flexible, InteliDrive can be expanded by means of additional modules to offer over 100 binary inputs and outputs.

The set of PLC (analog and binary) functions is available in the standard software and can be used by the customer to control and regulate drive-train components.

Like all ComAp products, InteliDrive features a powerful graphic display providing user-friendly information in an easy to understand format – not only for professionals but also for occasional users. The diagnostic information is available in intelligible plain text instead of potentially misleading cryptic codes or flashing lights. Remote control and monitoring is possible via analog/GSM modem, SMS or Internet.



Benefits

- Integrated solution with hardwired safety functions – less wiring and components
- Full communication support of engines with ECU – simpler wiring, access to information from ECU via Modbus
- Event driven History record, easy backtracking and problem solving
- Load sharing for propulsion engines – better utilization of power of installed engines
- Slave panels available – economical solution of remote control
- Integrated clutch control – less wiring and components
- Many types of communication – easy supervision and servicing
- Perfect price/performance ratio
- Built-in PLC-integrated control of compressors, pumps or other driven technology

Features

- Engine control, monitoring and protection
- 14 binary inputs, 14 binary outputs, 8 analog inputs
- RS232/Modem/Modbus/Internet communication
- Engine measurement from sensors or via J1939
- Input/output and J1939 configuration
- Running hours meter, number of starts counter
- Graphic back-lit LCD display with icons and bar graphs
- Sealed membrane panel to IP65
- 180 × 120 mm front panel mounted case
- Operating temperature:
  -20 to +70 °C regular unit
  -40 to +70 °C low temperature unit
- 3 level password protection
- InteliDrive controller meets several forcing counter standards (EN, UL, CSA, NFPA)
- Internal – configurable PLC functions

InteliDrive Mobile

ELECTRONIC CONTROLLER FOR OFF-ROAD APPLICATIONS

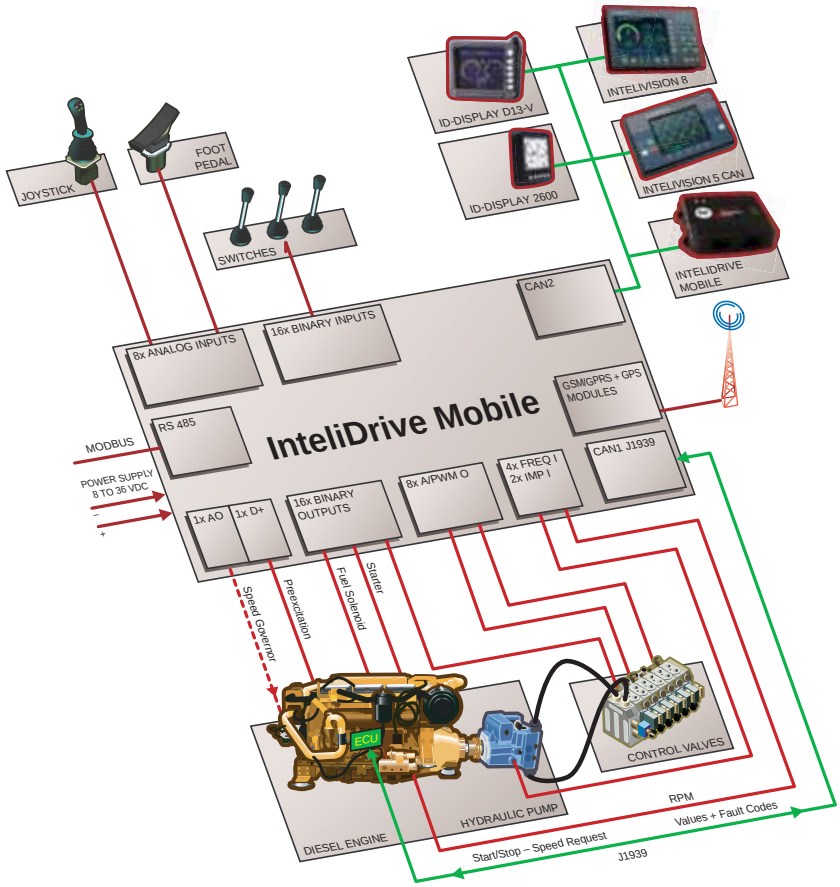
AirGate

The InteliDrive Mobile is a highly flexible sophisticated mobile electronic controller, which features outstanding control, monitoring and protection for diesel and gas engines as well as driven technology. The new controller offers range of specific functions suitable for mobile applications as hydraulic system control, communication with sensors and operational devices control. Most commonly, these tailored applications meet the specific control requirements of mobile hydraulics, engine driven compressors and pumps.

InteliDrive Mobile has been specially designed for harsh environments where mobile machinery is typically used. The unit construction features a fully environmentally sealed enclosure and connector, vibration and EMC robustness along with a wide temperature operating range.

InteliDrive Mobile can communicate via standard and proprietary CAN J1939 communication protocols to a wide range of EFI engines.

The set of PLC (analog and binary) functions is available in the standard software for control of driven technology. Predefined highly flexible functional blocks enable to create a control algorithm without the need for complex programming. CAN-bus and RS485 communication lines together with optional internal GSM modem and GPS module give perfect overview of system status to both local operator and technician in remote monitoring center.



Benefits

- Engine specific, plug and play support of engines with ECU – access to all available values, without the need for programming
- Designed specifically for harsh environment – trouble free operation in all conditions
- Built-in Event & Performance Log – easy troubleshooting and warranty claim handling
- Integrated solution, less wiring and components
- Remote monitoring support – reduced call-out costs of service engineers
- Fleet management program with GPS localization of supervised machines available
- History log out – monitoring of wide range of parameters

Features

- J1939 support with Input/Output configuration
- Engine measurement and control by sensors and actuators or via J1939
- Optional internal GSM/GPRS+GPS modem
- Internal – configurable PLC functions: Logical functions, Comparators with delay or hysteresis, Analog switches, Mathematical functions, Linear interpolation, Filters, PID loops with analog or binary outputs, Counters, Timers, Delay functions
- 4 Binary inputs with detection of broken wire
- 12 Binary bi-directional inputs for contacts switching
- 8 Binary switches configurable as:
  - Hi-side switches 3A with detection of broken wire
  - Low-side switches 3A
  - PWM switches 3A
  - Stepper motor driver
- 8 Binary Hi-side switches with max. current 3A and detection of broken wire
- 8 Analog inputs configurable for industry standard sensors
- 8 Analog inputs/outputs configurable as:
  - voltage outputs compatible with hydraulic proportional control valves
  - 4–20 mA current output
- 2 Impulse inputs for rotary flowmeters
- 4 Frequency inputs for RPM measurement
- Running-hours meter, number of starts counter
- RS485 communication line with Modbus
- CAN-bus line for connection of external display
- Dust and water protection IP67

InteliDrive Mobile Logger

DATA LOGGER FOR DIESEL AND GAS ENGINE DRIVEN OFF-ROAD AND INDUSTRIAL APPLICATIONS

The InteliDrive Mobile Logger is a highly flexible sophisticated data logger, designed for harsh outdoor industrial environments

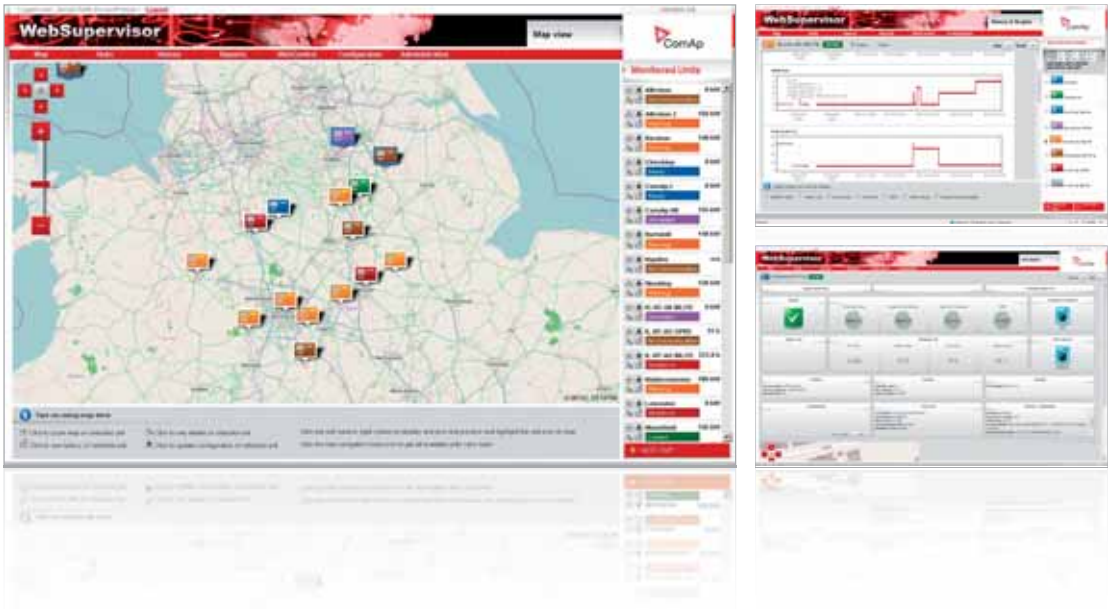
This model features outstanding monitoring and history tracking for diesel and gas engines as well as for peripheral equipment. It can log the engine data from J1939 and Binary / Analog inputs together with optional GPS location.

The large history file enables long-term logging and AirGate technology and WebSupervisor support means important date events and data can be reported and presented in tabular or graphic form.

- Engine measurement by sensors and actuators or via J1939
- 8 binary inputs
- 11 configurable analog inputs
- 2 impulse inputs
- 1 frequency input for RPM measurement
- LED status indication
- Running-hours meter, number of starts counter, battery voltage measurement
- Communication interface: RS485, 2×CAN, J1939
- Operating temperature: -40 to +70°C
- Integral fuel consumption measuring
- Operator log-in possibility
- Memory size up to 220.000 records
- Supported download formats: xls, csv
- Dust and water protection IP67
- Internal GPS and GSM modem (option)

WebSupervisor

WEB BASED SYSTEM FOR MONITORING AND CONTROLLING OF COMAP CONTROLLERS



WebSupervisor is web based system designed for monitoring and controlling ComAp controllers via the internet. This system offers a number of beneficial features that help optimize revenue for machinery fleets, as each piece of equipment can be individually monitored for all important operation values.

The system works when the controller sends regular updates to a remote secure server which then safely stores the information ready for users to view. Connection to the server is easily accessible to any registered user through an internet enabled device such as PC, netbook or even a smart-phone - enabling equipment monitoring at any time or place.

The flexible system provides a high level of security, with the central administrator able to determine users' access rights for specific equipment within the fleet as well as appropriate information. In addition, event generated emails can be created and sent to specific users to give fast and efficient notification to improve decision making or react to additional revenue generating opportunities.

WebSupervisor offers equipment owners a number of powerful reporting tools allowing monthly summaries of availability and revenue creation ensuring that maintenance scheduling and asset utilization can be maximized for individual equipment and the whole fleet. The information generated from each controller can be archived on the central server for future analysis and trend evaluation.

Various displays available

ID-Display 2600

- 4,25″ FTSN
- 160 × 128 pixels
- 110 × 110 × 38,5 mm
- Monochrome
- 5 buttons
- Rugged plastic ABS case with Deutsch connector
- Operating temperature: -25 to +75°C
- Protection IP 67
- Power supply: 10 – 32 VCD
- CAN interface

InteliVision 5 CAN

- 5,7″ color display
- 320 × 240 pixels
- 245 × 164 × 56 mm
- Operating temperature: -20 to +70°C
- Protection IP 65
- RS485 interface (CAN bus option)
- Plug and Play structure following controller configuration
- Power supply: 8 -36 VDC

ID-Display D13-V

- 6,5″ VGA
- 640 × 480 pixels
- 203,5 × 162,5 × 74,7 mm
- Color
- 5+1 buttons + Jog-Dial
- Rugged plastic ABS case with Deutsch connector
- Anti-reflection real glass front cover
- Operating temperature: -30 to +85°C
- Protection IP 65
- CAN interface
- Interface for 2 cameras optional

InteliVision 8

- 8″ TFT
- 800 × 600 pixels
- 289,5 × 186 × 40 mm
- Operating temperature: -20 to +75°C
- Front IP 65 / Rear IP 20
- CAN bus interface
- Plug and Play structure following controller configuration
- Power supply: 8 -36 VDC

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Worldwide Usage

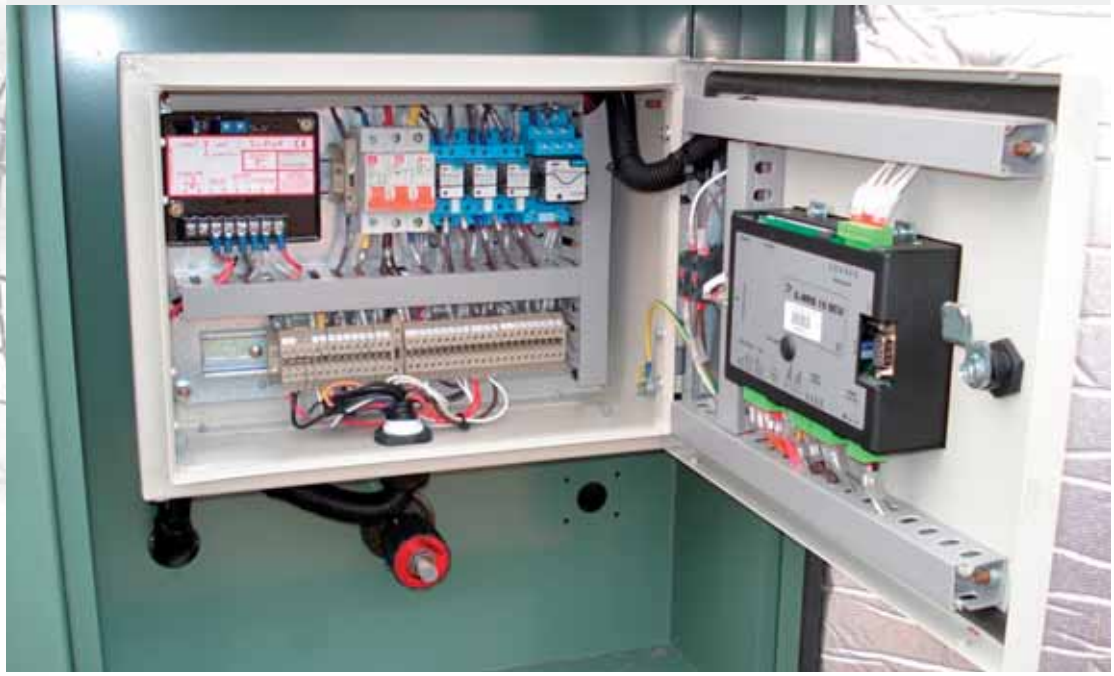
Australia

Drilling Machine

ComAp InteliDrive Diesel Control Unit (DCU) was selected for this application because of its ease of integration of engine control with advanced PLC functions for the control of additional devices.

- The ability to use the on-screen display of the DCU or, as in this application, the option of attaching additional displays at different locations on the machine was a great advantage. These displays were also programmed to provide the operator information which was specifically required at that location.
- The DCU with its inbuilt PLC provides a simpler, more robust solution to the typical method of separate controllers and PLC units while producing a much more powerful and flexible complete solution.

Australia



Hydraulic pump

POWER DRIVE SYSTEMS (GREENBIRD DISTRIBUTOR FOR QUEENSLAND) FOR ROMA DIESEL

Control and monitoring of a GM V8 gas engine powered hydraulic pump to be installed on a gas field to power hydraulic equipment.

- Each unit has a control panel designed and built by Power Drive Systems of Brisbane and the pump units utilize an ComAp InteliDrive Lite controller.
- The units are driven by GM V8 gas engines with the fuel derived directly from the wells.

Belgium

Shearing machine

Lefort S.A. is a world leading manufacturer of mobile shearing machines, located in Belgium. The machines on the pictures are driven by a hydraulic pump, coupled to a SCANIA engine which is supplied by a Belgium Scania dealer - company Stevens and equipped with a ComAp InteliDrive DCU Industrial controller.

- The main purpose of these machines is to cut scrap metal into pieces. The machine works as a big guillotine. The metal is first compressed into a big square block and then pushed out of the machine through a big cylinder and finally cut into small blocks. The ID-DCU-Industrial is also used to control the hydraulic pressure by means of a standard integrated, free configurable PLC function.
- The pictures are from a small mobile machine outdoor (blue) and from a big mobile (grey) indoor.

Switzerland

Shunting loco

The shunting locomotive re-power application uses a ComAp InteliDrive DCU for the complete control, monitoring and protection of the Volvo D16 engine which drive a Voith Hydro – Turbo gear-box for propulsion via a system of push-rods. It is also used for a number of auxiliary functions which includes the air-system compressor or for the vehicle speed by monitoring the RPM in the Voith Hydro – Turbo.

- Full communication between engine, InteliDrive DCU and the two InteliVision displays is achieved with J1939 CAN bus – making the system wiring and integration very simple.
- All values, warnings and fault codes from the engine (EMS) are displayed on the two large InteliVision displays, located on both sides of the locomotive cabin.
- Smooth take-off and moving, with wheel-slip limitation, is controlled by Ramp function – made possible with the standard ID-DCU integrated, free configurable PLC logic.

Australia

Wheel loader

InteliDrive Mobile was used in this application because of the need for advanced PLC functionality to achieve a complex range of additional functions and safety features on this specially modified wheel loader. The programmable Hi-Resolution colour display fitted in the cab gave the operator specific text advice on alarms that were present, corrective actions needed as well as the option for camera display for rear or obstructed views.

- The unit has J1939 CAN interface as standard for direct communication and control with the electronic engine, the option of Geo-Fencing and GPRS modem communications.
- A robust IP67 rated waterproof, vibration and dust proof enclosure completed the package designed to exceed the most demanding environmental conditions.

Australia

Dredge

The ComAp InteliDrive DCU was selected for this project due to the need for operation of additional devices (clutch), speed control and interface to electronic engines.

- The operator was some 500m away on the main dredge, operating the booster pump using radio Modbus links.
- The ability for the DCU to operate using standard and engine specific J1939 and Modbus gives it great flexibility in these sorts of applications as control and engine data can easily be transmitted back and forth to the remote operator.
- Remote displays gave the operator duplicate, up to the second information from the remote pump while a range of safety, fault detection and protection devices ensured there was no risk to personnel or the engine when operating un-supervised.

Australia

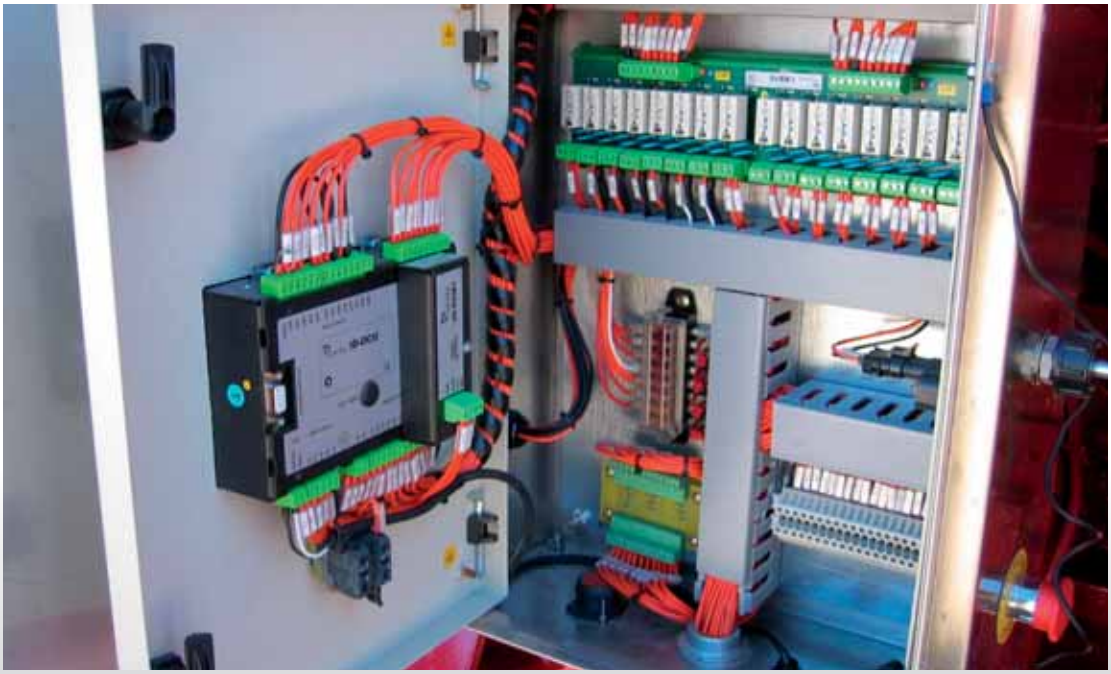
Mobile pump

MOBILE ACID PUMP FOR THE MINING INDUSTRY

Dynapumps of Perth have supplied a mobile engine driven pump for acid movement to the Western Australian mining industry.

- The Cummins 6BT engine is connected to a stainless steel self priming centrifugal pump specially designed for pumping acid. The control system comprises a ComAp InteliDrive and a GAC governing system.
- This combination starts the engine and ramps the speed to 1600rpm and then in response to a shutdown signal ramps the engine back to idle and shuts it down.
- The engine speed can be varied between 1600 and 2100 based on pressure inputs. All control signals are sent to the InteliDrive via telemetry in Modbus protocol utilizing the high level communications capabilities of the controller. As well as providing engine protection the InteliDrive controller also monitors and provides protection for pump pressure and flow.

Australia



Fire Pump

POWER PROVING SERVICES FOR RESOURCE EQUIPMENT CO.

Control and monitoring of a QST30 powered water pump supplying cooling water for a burn-off flare on an offshore production platform.

- The system utilises an InteliDrive DCU Industrial controller mounted in a panel on the unit.
- The pump is powered by a Cummins QST 30 and delivers 245 litres per second against an 80 meter head.

Australia

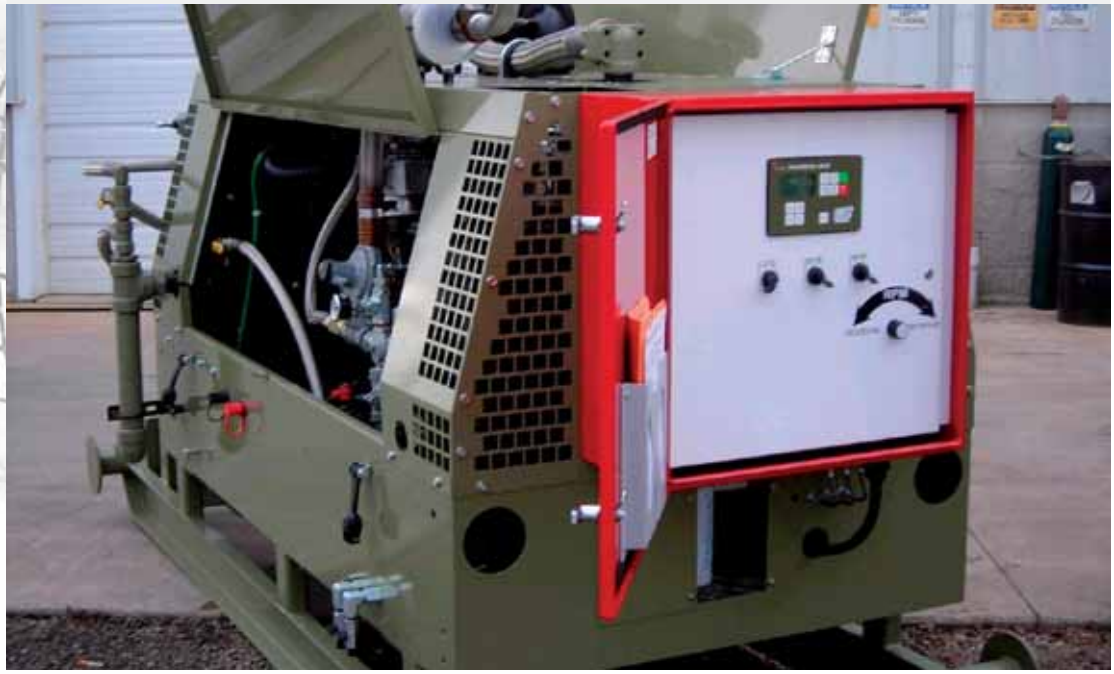
High-pressure water pump

GAS FIELD IN THE COOPER BASIN

A high-pressure water pump (CAT4312) is installed on a gas field in the Cooper Basin to improve gas recovery on site.

- The system, which was designed, supplied and commissioned by Greenbird Technology for Schlumberger uses InteliDrive DCU Industrial plus IS-AIN8 to measure all of the engine, drive and pump values via explosion proof 4-20 mA sensors.
- The application is double-fronted to protect from weather and dust.

USA



Booster gas compressor

"ComAp's compressor/engine control solution optimizes the natural gas production of our gas well booster compressor units allowing our customers to maximize gas production by providing very accurate process control utilizing digital pressure transducers and temperature thermocouples at a 1% accuracy which gives much finer process resolution at even extreme ambient temperatures down to -40 degrees.

ComAp's panel also provided us with automatic start/stop as well as automatic engine speed control based on the gas well conditions optimizing the performance of the unit by conserving energy and wear and tear on engine and compressor components. Our customers are very happy with its event history capabilities as well as its compressor and engine protective features.
We also value the fact that the ID-DCU controller is fully compatible with future electronic emission certified engines and is also capable of offering integrated remote monitoring. BOSS Industries has standardized on the ComAp panel for our gas well booster compressor units."

Ed Ketcham,
VP Sales
www.bossair.com

Italy

Compressor

CNG FILLING STATIONS

Dresser Wayne, an innovator of retail fuel dispensers and technologies, is partnering with its sister company Dresser Waukesha, a leading manufacturer of spark-ignited, gaseous-fueled engines, to supply gas engine driven compressors in CNG (compressed natural gas) filling stations in Thailand.

- Dresser Wayne's Cubogas™ compression systems will be packaged with Dresser Waukesha VGF® engines at the company's facility in Talamona, Italy.
- ComAp Italy ComAp Systems – Italy supplied these compressor systems by control panels with InteliDrive DCU Industrial.

United Kingdom

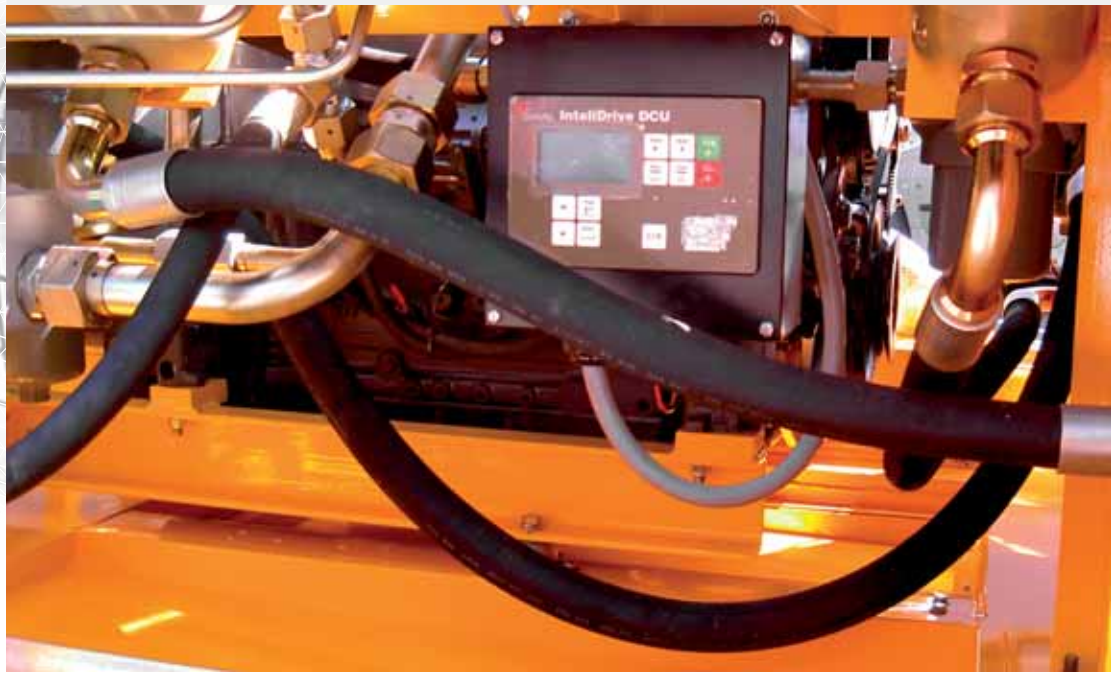
Industrial Diesel Engine Controller

INDUSTRIAL DIESEL ENGINE CONTROLLER RELEASED

Power Torque is proud to announce the launch of the "Power Torque InteliDrive" diesel engine control system. The system was developed specifically for the JCB444 Dieselmax & Sisu 6 cylinder Citius Tier 3 industrial diesel engines but can be developed to run ANY modern industrial diesel engine with a common rail Fuel injection system.

- The control system comes as a package with Control Panel, Fuse/Relay Box, Bespoke wiring Looms and instructions on CD-ROM.

United Kingdom



Aviation test equipment

ComAp InteliDrive DCU controller was reviewed and chosen as the preferred solution as there were several system functions only InteliDrive could monitor and control. These functions were outside the scope of other manufacturers engine controllers. The functions included the requirement for constant monitoring of the hydraulic systems boost pressure, hydraulic fluid temperature, and the operation of the trolleys vacuum system (required to de-aerate the hydraulic fluid before it is applied to the aircrafts hydraulic system).

- The system devised by SUN HML incorporates an InteliDrive DCU together with a Remote Display in a Master/Slave relationship.
- As well as providing system functionality the InteliDrive DCU also provides standard engine monitoring and protection.

New Zealand

Frost Machine

FMR, NEW ZEALAND

Control and monitoring of an engine which drives a propeller for a frost protection machine in vineyards and orchards. A prime requirement was remote communications capabilities and an idle/run feature.

- Replaces an old style analog panel.
- Vineyards and orchards in New Zealand must be well protected against the freezing weather.
- Control and monitoring of engines which drive propellers for frost protection machines is done with ComAp InteliDrive Lite controllers.
- The whole project was done by Greenbird Technology for the company FMR.

About ComAp

ComAp is a dynamic international company with a solid reputation for delivering innovative electronic solutions to the power generation, industrial engine and equipment markets. By providing customers with state-of-the-art products, ComAp has built a name for delivering excellent reliability and good value.

www.comap.cz

Excellent and reliable product solutions

ComAp specializes in creating electronic control and management solutions for use in the power generation industries and drive power markets. Our portfolio of products, software and accessories is designed to support emergency power, standby power generation and engine driven applications all over the world. We also work closely with our customers to develop unique customized and turn key solutions for ordinary and extraordinary applications delivering high standards of excellence on every project.


KEMA Quality

CERTIFICATE

ISO 9001:2008

ComAp products represent some of the most reliable solutions on the market today. Every component and product undergoes the most rigorous standards during manufacture, with every stage being undertaken in accordance with international ISO 9001 certification. Our products are backed with the approvals from major Marine Certification Societies. Accreditation at the highest-level breeds confidence, and every ComAp product is supplied with an appropriate warranty and after-sales support for complete peace of mind.

Professional partnerships

ComAp products are directly available in more than 60 countries, spanning almost every continent in the world. Through our professional and highly dedicated global distributor network we can satisfy customers' needs, however challenging.

Each ComAp distributor is carefully selected for their professionalism, product expertise and recognized quality standards and accreditation, and as such can advise customers on any matter relating to ComAp products and their applications.

People make the difference

ComAp's key strengths are flexibility, experience, knowledge and enthusiasm. This blend of values defines our personality and gives you the assurance of a truly honest and positive relationship. By supporting our people, investing in their development and encouraging creativity, our teams work hard to find new opportunities, technologies and solutions that enable us to successfully help our customers solve their problems effectively.

At ComAp, we believe passionately in the importance of continuously developing new technology along with forward thinking software and hardware to maintain the enviable position as worldwide leader in communication and control for power generation and drive power applications.

At the heart of this process is a strong desire to exceed our customers' expectations by finding outstanding solutions for them and drawing upon the company's most valuable asset – people. Over 80% of ComAp employees are graduates with specialized electronic and programming knowledge appropriate to the innovative development of market-orientated engine management systems. This unique know-how is matched by ComAp's significant investment at every stage of the research and development process, resulting in the creation of leading edge modern development facilities. ComAp consistently set high standards, reflected by our achievement in the 'Best Employers Study in the Czech Republic' (conducted by Hewitt Associates), where we were awarded first place in 2008 following our consecutive third places in both 2006 and 2007.

ComAp

Manufacturer

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