

ObelixPlus New Machine Control Solution

 obelixPLUS
made for mining

A revolutionary new user-driven system control platform.

In the past, machine control systems have been based on Login Controllers that run very large dedicated code bases that embody all of the machine operational functions and safety systems.

These systems were typically created for a specific machine application and relied on external specialised programmers.

Any modification to function, configuration or even operator messages or error messages required the intervention of external programmers and the machine's flameproof enclosure needed to be opened to load new code to the controller.

Pempek's revolutionary NEW ObelixPLUS Machine Control Solution now offers users the ability to configure and modify their own control system, edit operational parameters, operator messages, and error messages without opening the flameproof enclosure.

Pempek's revolutionary NEW ObelixPLUS Machine Control Solution includes superior diagnostics visible on the machine, a remote IS tablet, at the surface or your smart phone.

Pempek's revolutionary NEW ObelixPLUS Machine Control Solution puts you in CONTROL.

ObelixPlus Features & Benefits:

Firmware made for Mining

- ObelixPLUS firmware is the result of over 30 years of development of mining equipment control systems, not a general-purpose industrial controller.
- Control of the firmware is crucial to safety in mission-critical environments such as underground mining.
- Pempek's firmware is made for mining.

Hardware Made for Mining

- ObelixPLUS hardware is the result of over 15 years of proven reliable & safe operation on underground miners.
- Proven hardware with CPU performance 9+ times faster than typical industrial PLCs.
- Built-in safety hardware.
- Gold plated metal connectors.
- Mining Legal battery backup.
- Add-ons for Machine Telemetry.

Simple System Configuration

- Pempek now supports CODESYS IEC61131 Programming Software.
- Mine-site's own PCS engineers can view/debug/modify and reconfigure the control system.
- User-driven Error Handler
- Customise fault messages and add lessons learned to instruct operators and repair crews.
- Via Wi-Fi, ethernet, or Mine Network using; ObelixPLUS Edison Software.

ObelixPlus Features & Benefits Continued:

- Wireless Program Load**
 Quickly and easily load new machine program updates without opening the flameproof enclosure.
 Via Ethernet, Wi-Fi, or Mine Network using;
 ObelixPLUS Edison Software.
- Parameter Management**
 Users can see and customise a vast range of machine parameters to optimize your application.
 Via Ethernet, Wi-Fi, or Mine Network using; ObelixPLUS Edison software.
- Superior Diagnostics**
 See I/O and machine status from the machine, your IS tablet, the surface, or your phone.*
 Via Ethernet, Wi-Fi, or Mine Network.

Ordering Information

ObelixPLUS Processor Module CODESYS (Standard) Part Number: L0V41101

ObelixPLUS Processor Module CODESYS (with Fibre-optic CAN Bus) Part Number: LOZU1101

ObelixPLUS Display Module 10.4" Display 24VDC Supply Part Number: LOS81101

ObelixPLUS Display Module 10.4" Display 110VAC Supply Part Number: LOS81201

ObelixPLUS Display Module Flameproof 10.4" Display 24VDC Supply Part Number: LORA0111

ObelixPLUS HMI Module Flameproof Display 6-buttons 24VDC Supply Part Number: LOUA1101

ObelixPLUS HMI Module Flameproof 7" Display 30-buttons 24VDC Supply Part Number: LOWD1101



LOWD



LOUA-ISO



LOZU-Front



LOV4- Front



LOZU- Front



LORA



LOS8 - Front

Complete Machine Automation and Monitoring. From the coal face to the boardroom.

Pempek's ObelixPLUS Machine Control Solution

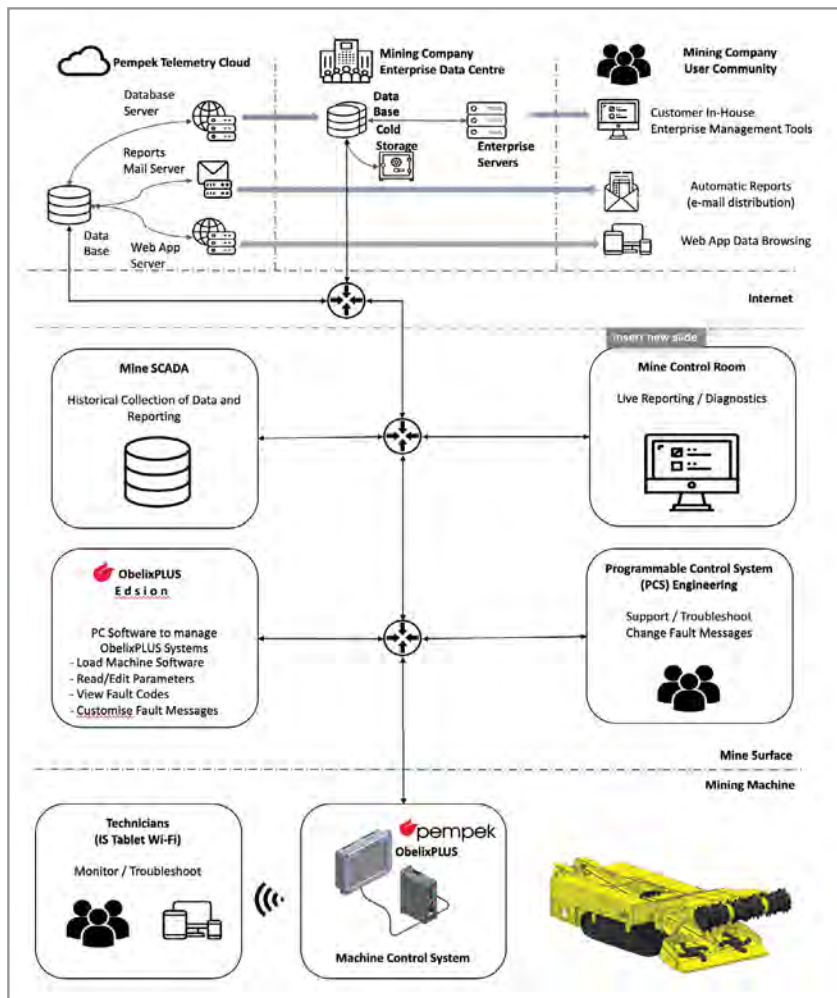
Pempek's ObelixPLUS is one part of a dedicated family of specialised components that are Made for Mining.

Pempek's ObelixPLUS family of made for mining components together create the most reliable, safe, and sophisticated mining equipment control system available in the world.

Pempek's ObelixPLUS product family has been proven on over 700 mining machines; over more than 15 years of reliable and safe operation.

Pempek's ObelixPLUS family of products has proven to add ons for any function you might need now or into the future.

From adding a new VFD Fan to your machine to Enterprise-grade Telemetry solutions that global mining brands rely on to manage their business, Pempek's put you in control.



Firmware and Hardware Made for Mining.

Pempek's ObelixPLUS Machine Control Solution

Pempek's ObelixPLUS is one part of a dedicated family of specialised components that are made for mining.

Some of ObelixPLUS industry-leading features include;

- A truly open-source platform that supports the popular CODESYS programming language, putting you in control of your programming.
- Pempek firmware developed over 30 years for mining that embeds standard safety functions for mining equipment. You get the benefit of the world's best-made for mining PLC and firmware.
- Gold plated contacts and metal connectors that ensure reliable operation.
- Mine legal battery backup.
- Over nine times faster performance than other industrial PLCs.
This is a most important requirement for deterministic safety, critical in a mining environment.



Integer Number (Increment by 1) - 10ms (Task Interval)	
	Average Cycle Time (us)
CR721S - IFM	4986
ObelixPLUS	538

Pempek's ObelixPLUS platform allows your nominated team members to edit machine configurations.

For Example: Adding a Fan Motor (Variable Speed) to an existing project. Just follow four simple steps, takes just minutes!

Pempek can provide your team any required training.

Simple System Configuration

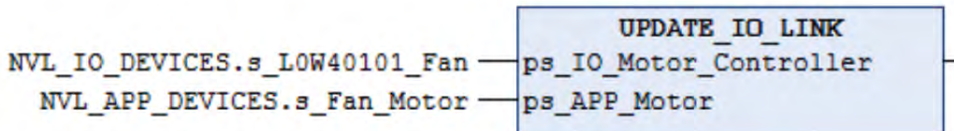
Step (1) – Add instance of device to NVL_APP_DEVICES variable list

```
s_Fan_Motor : s_MOTOR_AC_INDUCTION ; //New Motor!!
```

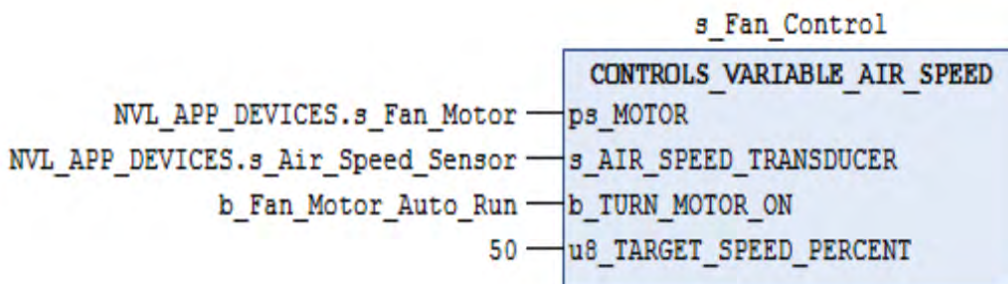
Step (2) – Add I/O Device to manage the motor in NVL_IO_DEVICES

```
s_LOW40101_Fan : s_WARPDRIVE_LOW40101; // New Motor Controller
```

Step (3) – Link I/O Device to Application Device using Update Function



Step (4) – Add Control Block to the new motor (for example, automatic control of air speed)



ObelixPLUS Edison PC Software Toolset allows your nominated team members to edit all fault and event messages.

Reduce downtime by customizing the message to suit site-specific conditions by using lessons learned from earlier events to respond correctly to an error code without opening the enclosure.

User Configurable Error Handler

Example:

Obelix Event Code Number: 1002877

Obelix Event MSG (Standard): "Safety Relay SR1 Open"

End-user can add machine-specific messages to link to this error code. For example, user can set the message to appear as:

Event MSG (Customer Defined): "Safety Relay SR1 Detected as Open"

Event MSG Long Description (Customer Defined):

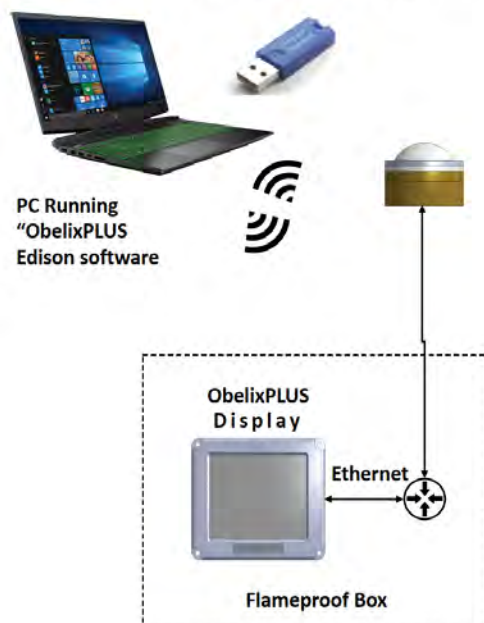
"The control system did not detect a 24VDC feedback from the auxiliary contacts of the safety relay SR1.

Things to check:

- Relay is correctly installed and wiring is intact
- Check 24VDC power supply to relay coil is OK
- Check 24VDC power supply to aux contact is OK
- Check 24VDC input to module
- Replace Relay"



Customer Authentication Dongle required for edit access to fault messages

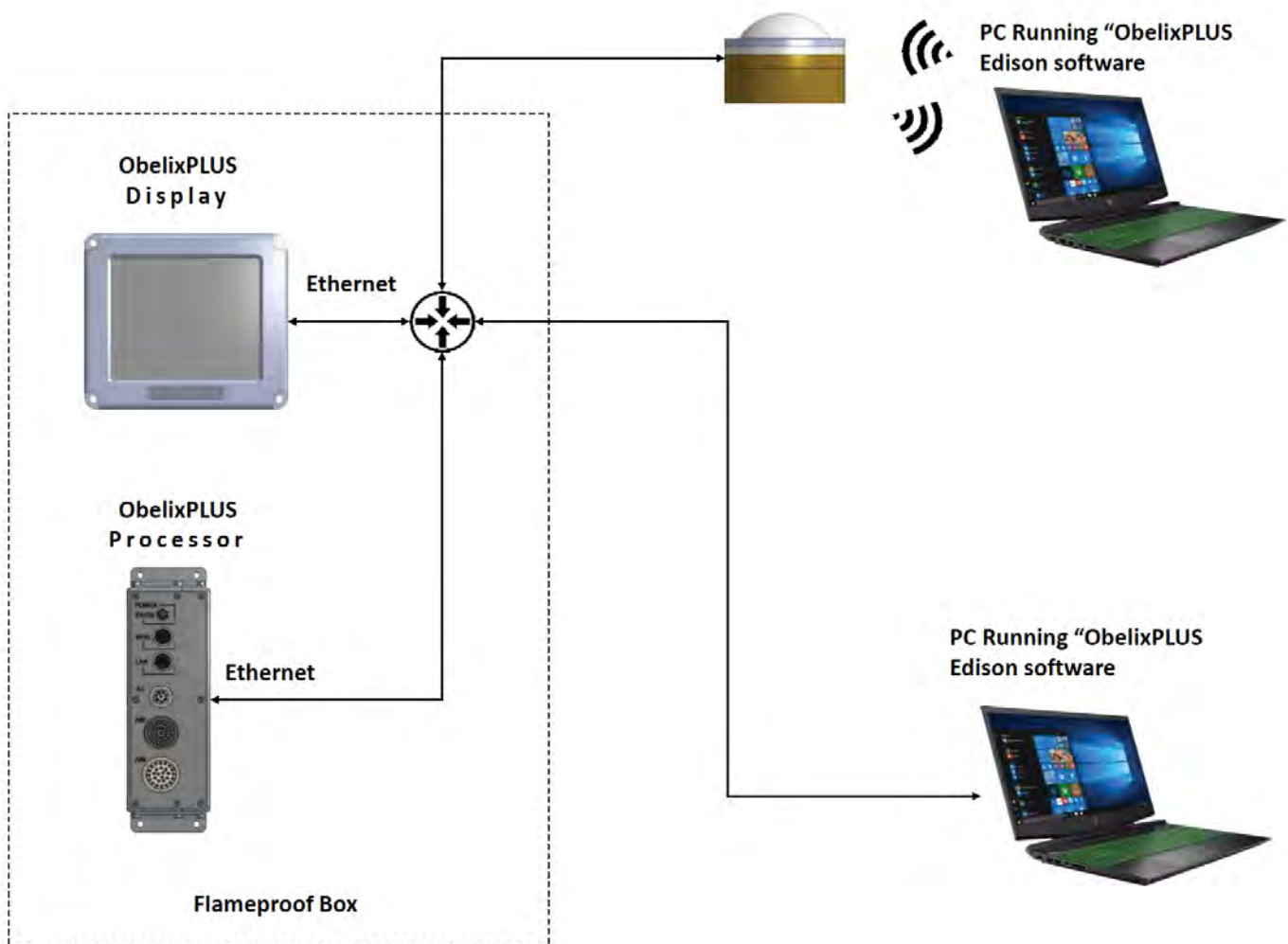


Pempek's EDISON PC Software Tool Set allows you to Quickly load machine programs and display and parameter edits to the ObelixPLUS controller.

No need to open the flameproof box! Software can be loaded via;

- Pempek's Oracle Wi-Fi.
- or the mine network.

Wireless Program Loading



ObelixPLUS Edison PC Software Tool Set allows your nominated team members to view and modify a vast range of machine setup parameters remotely.

Achieve optimal machine performance.
Changes are logged so separate audit is not required.

Editing available any time via Wi-Fi or mine network.

Remote Parameter Management

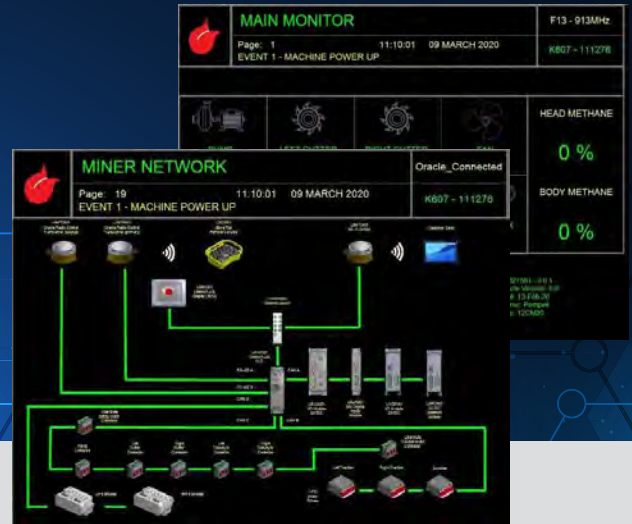
Parameter Name	PUMP MOTOR PRESTART WARNING DELAY								
Obelix Description	PUMP START DELAY WHEN OPERATOR PRESSES SHIFT + PUMP ON KEYS ON THE REMOTE CONSOLE. SIREN ACTIVE FOR THIS DELAY.								
Customer Defined Description	PUMP START DELAY WHEN OPERATOR PRESSES SHIFT + PUMP ON KEYS ON THE REMOTE CONSOLE. SIREN ACTIVE FOR THIS DELAY.						EDIT		SAVE
Current Value	5		SECONDS			EDIT		SAVE	
Properties	Units	SECONDS	Max	10	Min	1	Default	5	
Historical Values	Date / Time Changed						Value		
	10 Feb 2020 - 16h37:03						5		
	21 Dec 2019 - 6h16:27						4		



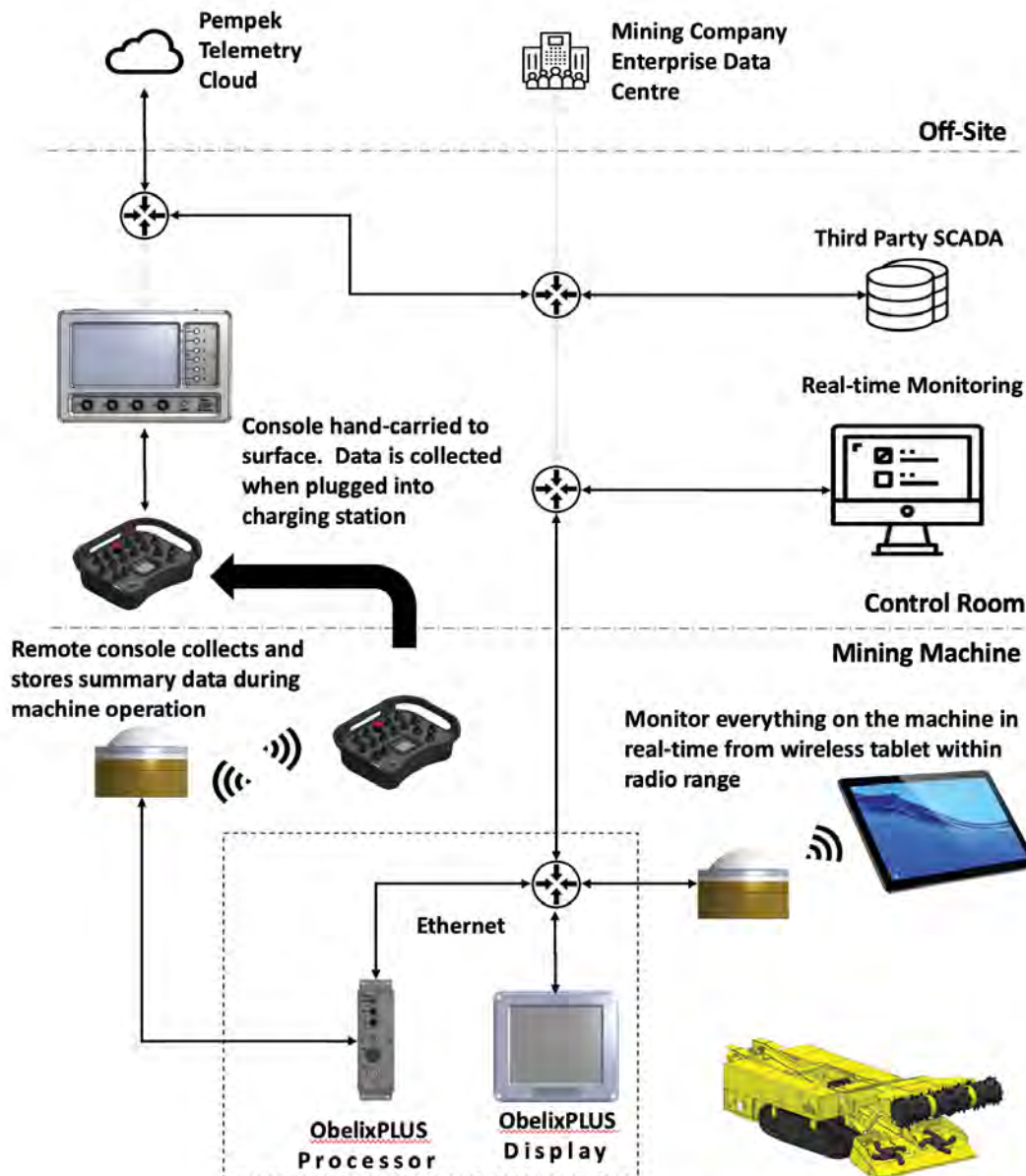
Customer Authentication Dongle required for edit access to parameters



Machine status visible anywhere, from the coal face to the boardroom.

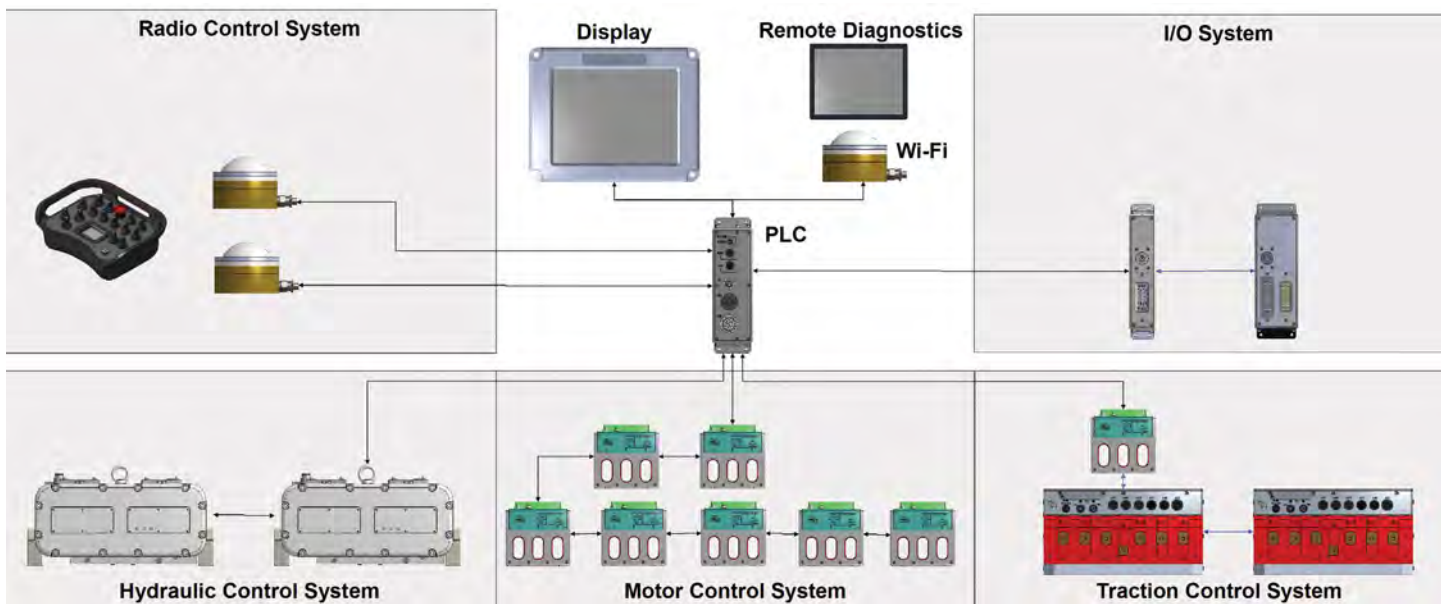


Data Download and Superior Diagnostics



Pempek'S FAMILY OF PROVEN MINING CONTROL SOLUTIONS

Made for Mining





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