

40  
Years  
Anniversary Edition

 **brainboxes**

industrial connectivity devices for the automation market

MASTER CATALOGUE

2024



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## FACTORY MONITORING PLAYBOOK



# ABOUT US

Since 1984, Brainboxes have developed, manufactured & supported our own core technologies. Today we are one of the leading communication device developers & manufacturers in the world

Our smart hardware enables machine monitoring, connects industrial IoT projects, innovates factory automation & makes the remote feel right on site



Lifetime  
Guarantee



Innovative  
Industrial  
Automation



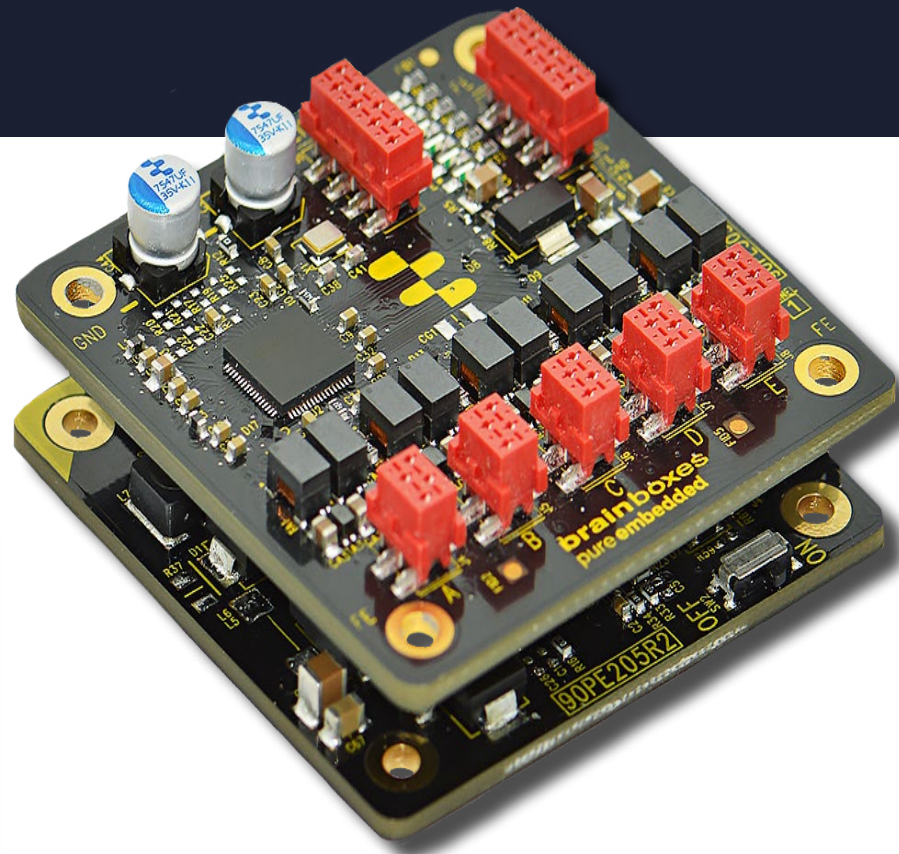
Free Product  
Evaluation  
Programme



Open-source  
Options



# PURE EMBEDDED ETHERNET SWITCH



The perfect fit for any stable, future-proof system, even where space is limited

Board to board & board to cable connection

Seamless integration with design software - logical placements

LEDs visible in all orientations - can be directed to outer casing via fibre optics or light pipes

Mega compact form - smaller than a standard business card (55x55x10mm)



# SFP GIGABIT ETHERNET SWITCH



Fast, low cost, future-proof way to deploy long network segments

Connect to a wide variety of fibre optic & copper cable types for high-speed data connection over long distances

Reduce susceptibility to electromagnetic interference

SFP Port Power Overcurrent protection





The integration of Small Form - Factor Pluggable (SFP) technology with Gigabit Ethernet's high-speed capabilities, enables businesses to easily expand & adapt their networks as their data needs change

Brainboxes' SFP Industrial Gigabit Ethernet switch offers high-speed data transmission, versatile connectivity options long-distance communication capabilities & network security. This contributes to seamless integration of renewable energy sources: ensuring a stable & environmentally-friendly power supply



# INDUSTRIAL EDGE

## CONTROLLER: BB-400



-25°C to +80°C op temp range, 5-30VDC dual power input with built in mini UPS, DIN rail mountable

Powered by an industrialised Raspberry Pi & Arduinio

Process data locally & send to the cloud with open-source tools

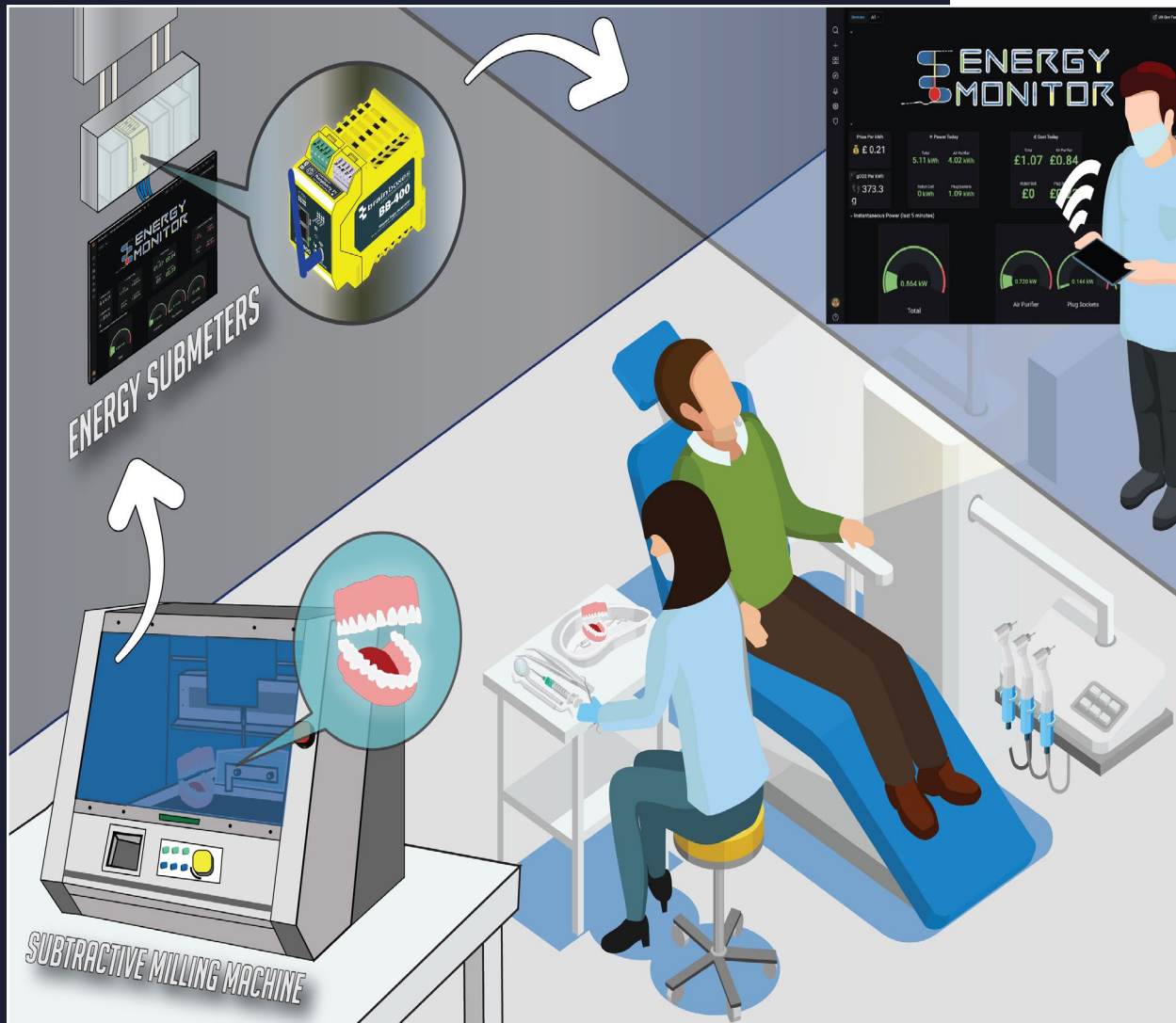
Multiple connections, built in UPS for power management

Easy to use secure web interface



# SUSTAINING SMILES WITH

# SMART ENERGY MONITORING

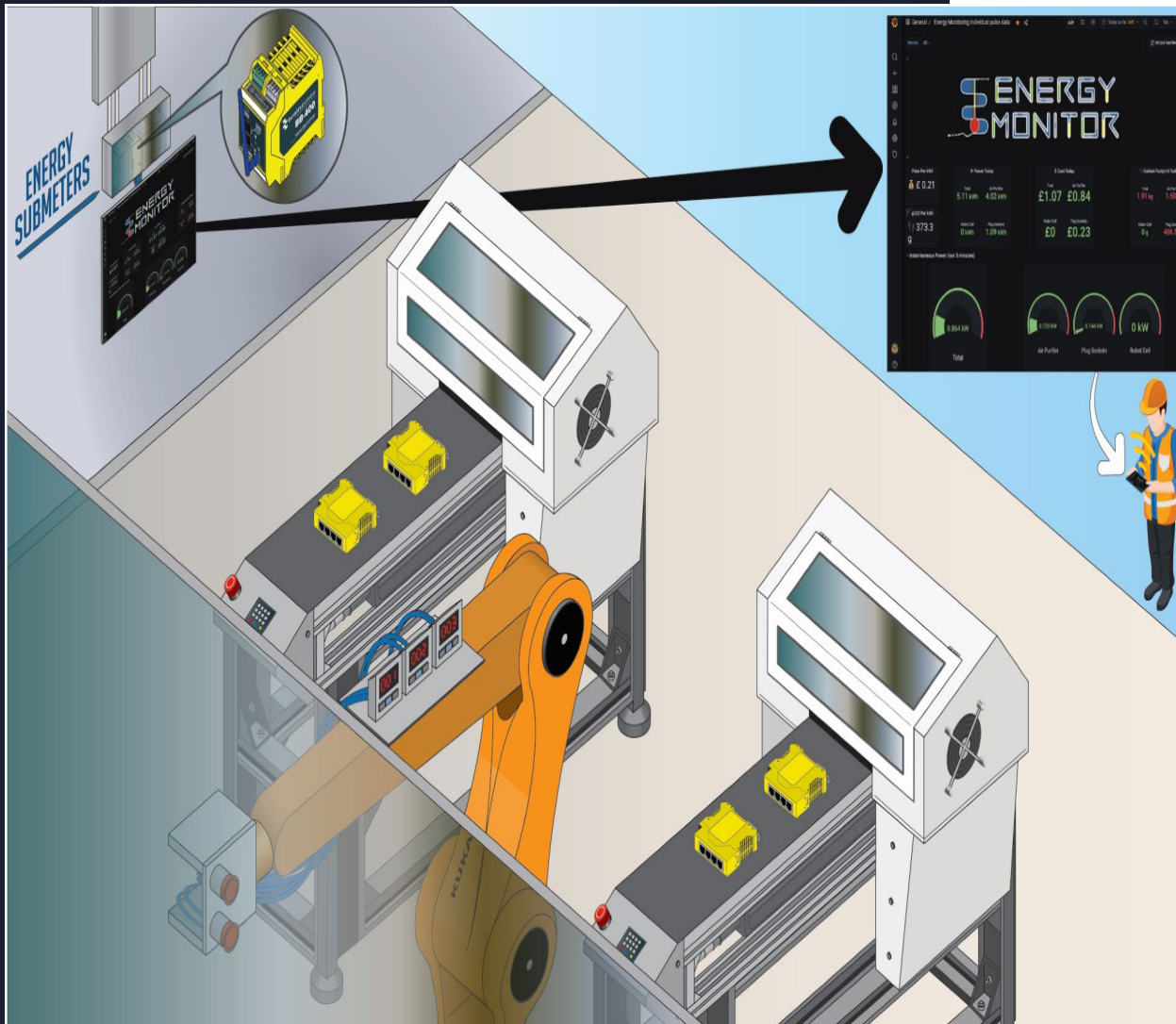


Brainboxes' Smart Edge Controller (BB-400) provides an industrial solution for sub-metering the process, efficiently capturing & aggregating power data from across your entire facility

The BB-400 combines proven IO & serial connectivity with a range of network connections, allowing you to process data locally & send accurate data to the application of your choice. Brainboxes smart energy monitoring system allows you to proactively monitor your energy usage to identify potential flaws



# IMPROVE YOUR BOTTOM LINE WITHOUT COSTING THE EARTH



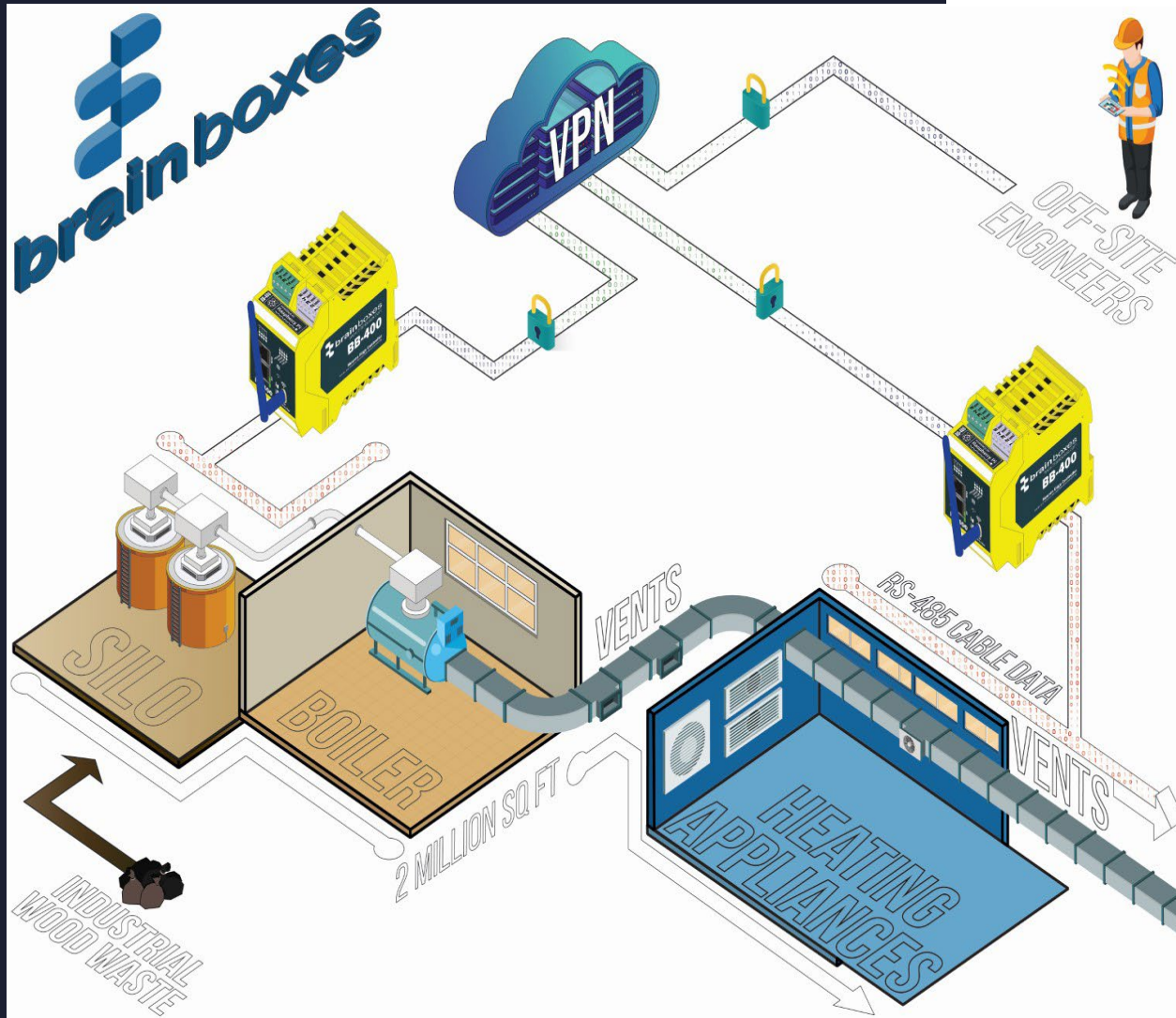
The first step in understanding energy costs is to monitor power consumption, simply achieved by retrofitting energy monitoring devices into the existing production environment

The BB-400 allows you to monitor power consumption across your facility, capture timestamps & record historical usage data. Globally, businesses are committed to steep decarbonisation targets & reducing power consumption is a critical factor in achieving cost-saving solutions



# INDUSTRIAL WASTE

# TO CLEAN ENERGY



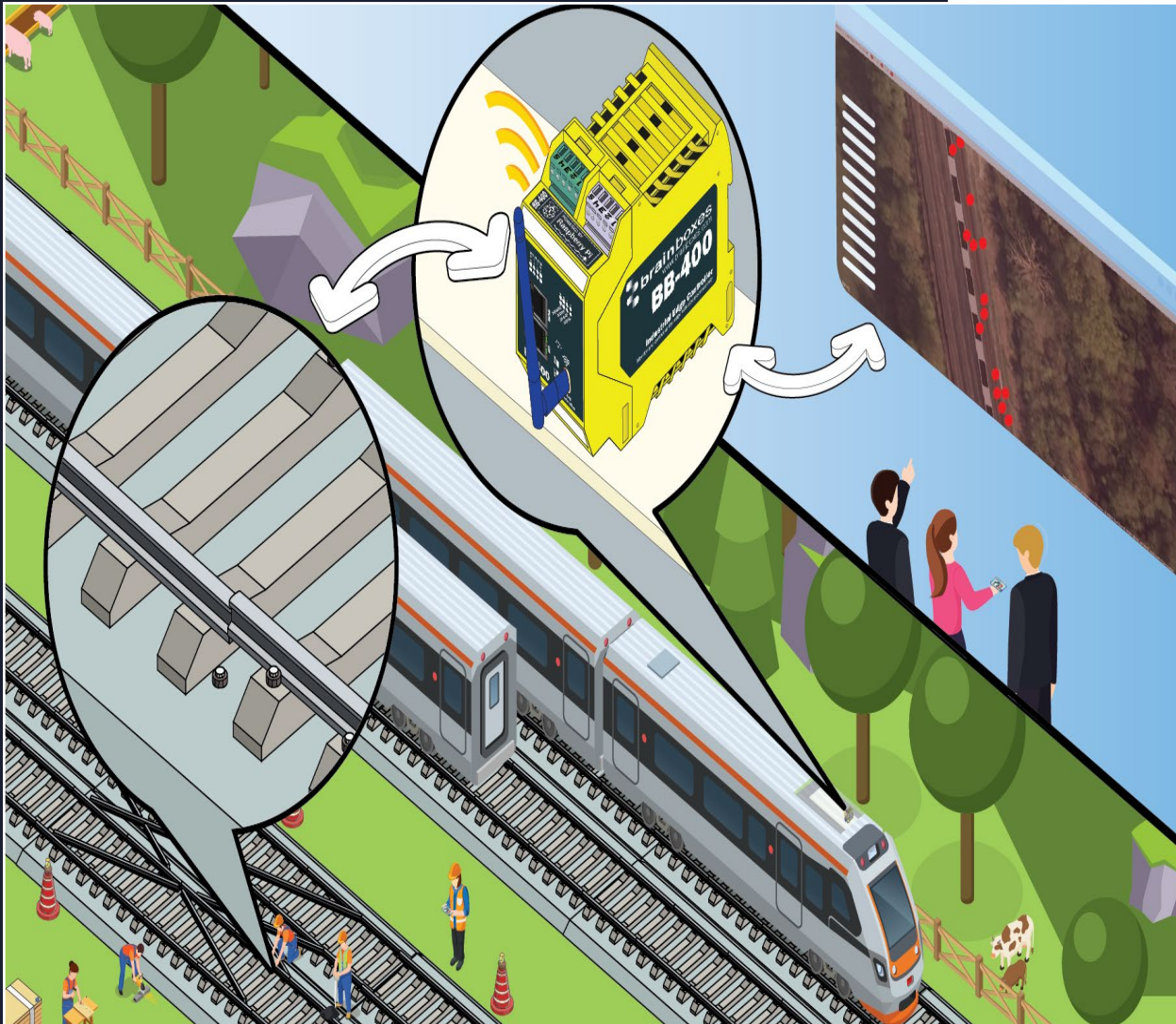
To tackle climate change, & achieve the target of net-zero by 2050, it is essential to reduce carbon emissions, lower carbon footprints & seek low-carbon fuel alternatives

Brainboxes' Industrial Edge Controller (BB-400) allows communication across large networks, enabling the various elements of complex systems to interact over any distance; whether within vast factories or across the world. The BB-400's encrypted connection to the cloud also allows off-site access to the data required to build a unified usage picture



# UNATTENDED CONDITION

# MONITORING ON TRAINS



Condition monitoring allows engineers to understand the health of key assets, such as railway journeys. This makes it vital to identify sections of the track that cause or contribute to the ride falling below acceptable comfort levels

Brainboxes' Industrial Edge Controller (BB-400) has on-the-go software updates available & the hardware able to meet the challenging specifications for rail. The BB-400 can also gather & send accurate data points on comfort score & GPS location to the cloud every second



# INDUSTRIAL FAST ETHERNET SWITCH



Remote functionality for automation & monitoring

Available in a range of formats & specifications to provide the perfect solution for your application

Wide power input range enables devices to be run from a variety of sources

Compact design enables them to fit into cabinets with limited space

Simple, reliable network expansion

# INDUSTRIAL GIGABIT ETHERNET SWITCH



Designed for network intensive applications where data transmission is key

Connect to devices that are 10Mbps, Fast Ethernet (100Mbps) or Gigabit

Supports high-speed data transfer between devices

The perfect fit where more network throughput is key

Increased speed, efficiency and performance



# INDUSTRIAL POE ETHERNET SWITCH



Offer flexibility to deploy powered devices at almost any location

Simple to install, fully conform to IEEE 802.3af/at Ethernet standards for reliable performance

Less cost, less cabling, less maintenance

Allows power & data to be combined on the same Ethernet cable

Designed for demanding environments

# CAPTURING CONTINUOUS

# VIDEO FROM THE OCEAN BED



Subsea cables are crucial for inter-connectivity & carry vital telecommunication signals, including 99% of the world's internet traffic, across the globe. Therefore, it's vital that installed subsea cables are accurately mapped to carry the data

Brainboxes' Ethernet switches support the successful operation of mission-critical equipment. The switches reliably receive Ethernet data from video cameras & sensors. In more murky conditions, they receive data from sonar, allowing operators to monitor altitude, depth, live video & sonar





In the US, it's estimated that 400 people a year are killed as a result of head-on collisions from wrong-way drivers. Govcomm's wrong way vehicle detection systems are life safety devices that perform time sensitive video analytics at high frame rates

Brainboxes' Ethernet switches reliably maintain safety critical systems. If the switch fails, traffic managers will not be provided with any data, causing the whole operation to stop. This could lead to missed wrong-way detections which can cause deadly consequences for drivers.

# POWER OVER ETHERNET TO SERIAL



Convert your RS232 or RS422/485 port into a network PoE Ethernet port

Serial port tunnelling allows serial cable replacement over any distance, no software required

User friendly interface, simple to use, power in operation

Connect to power & a network through a single cable

Avoid cost of installing additional power sockets



# ETHERNET TO SERIAL DB9 CONNECTOR



Install Virtual Com ports, communicate over TCP or telnet or use the software APIs for Visual Basics, C# & more

Serial port tunnelling allows serial cable replacement over any distance, no software required

Send RS232 or RS422/485 serial data over the network

Connect to remote devices as if they were attached locally

# INDUSTRIAL ETHERNET TO SERIAL



Send RS232 or RS422/485 serial data over the network

Securely communicate serial data anywhere in the world

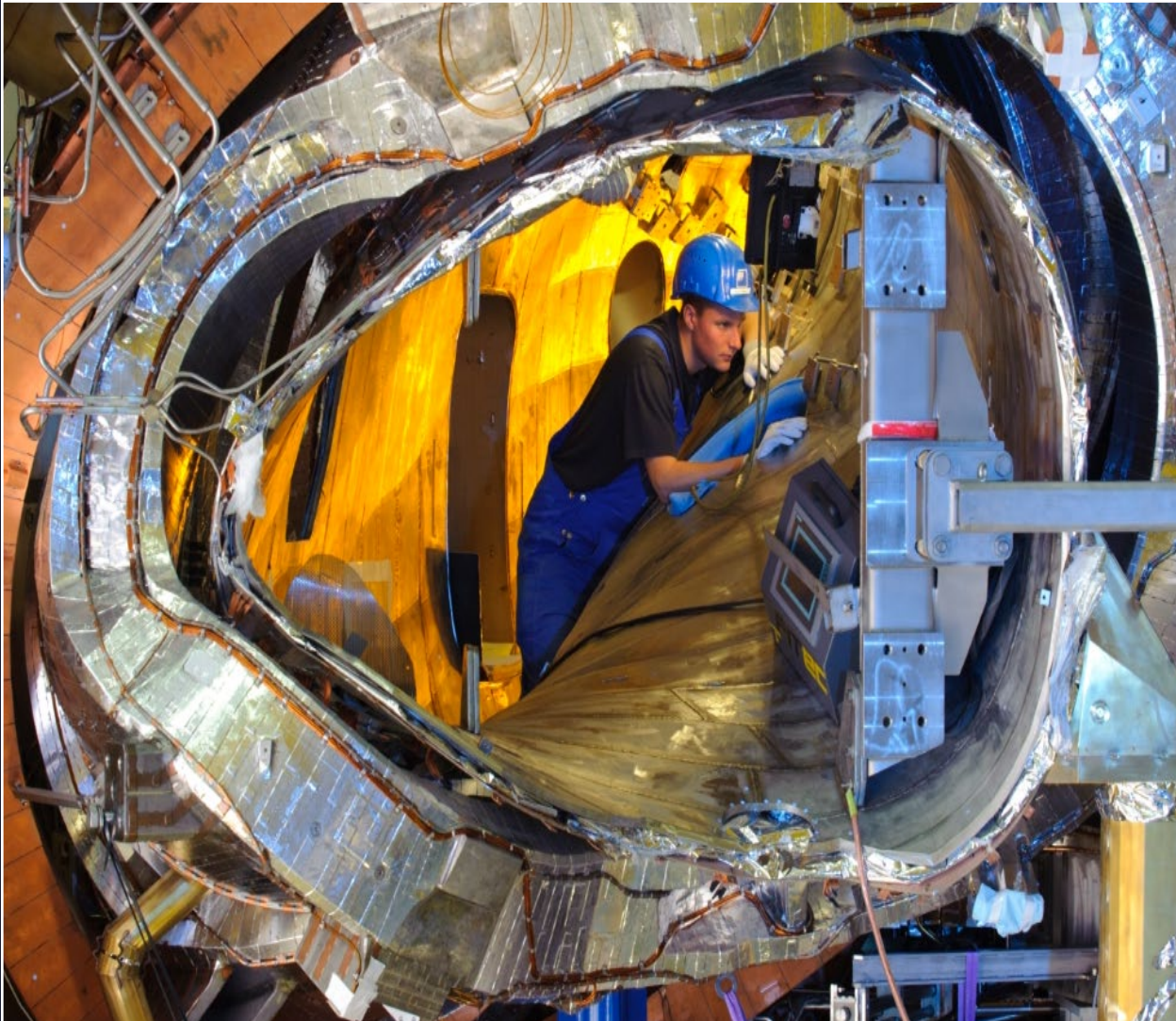
Quick & easy installation with removeable screw terminal blocks

Wide range input power supply +5VDC to +30VDC



# HARNESSING THE POWER

# OF THE SUN

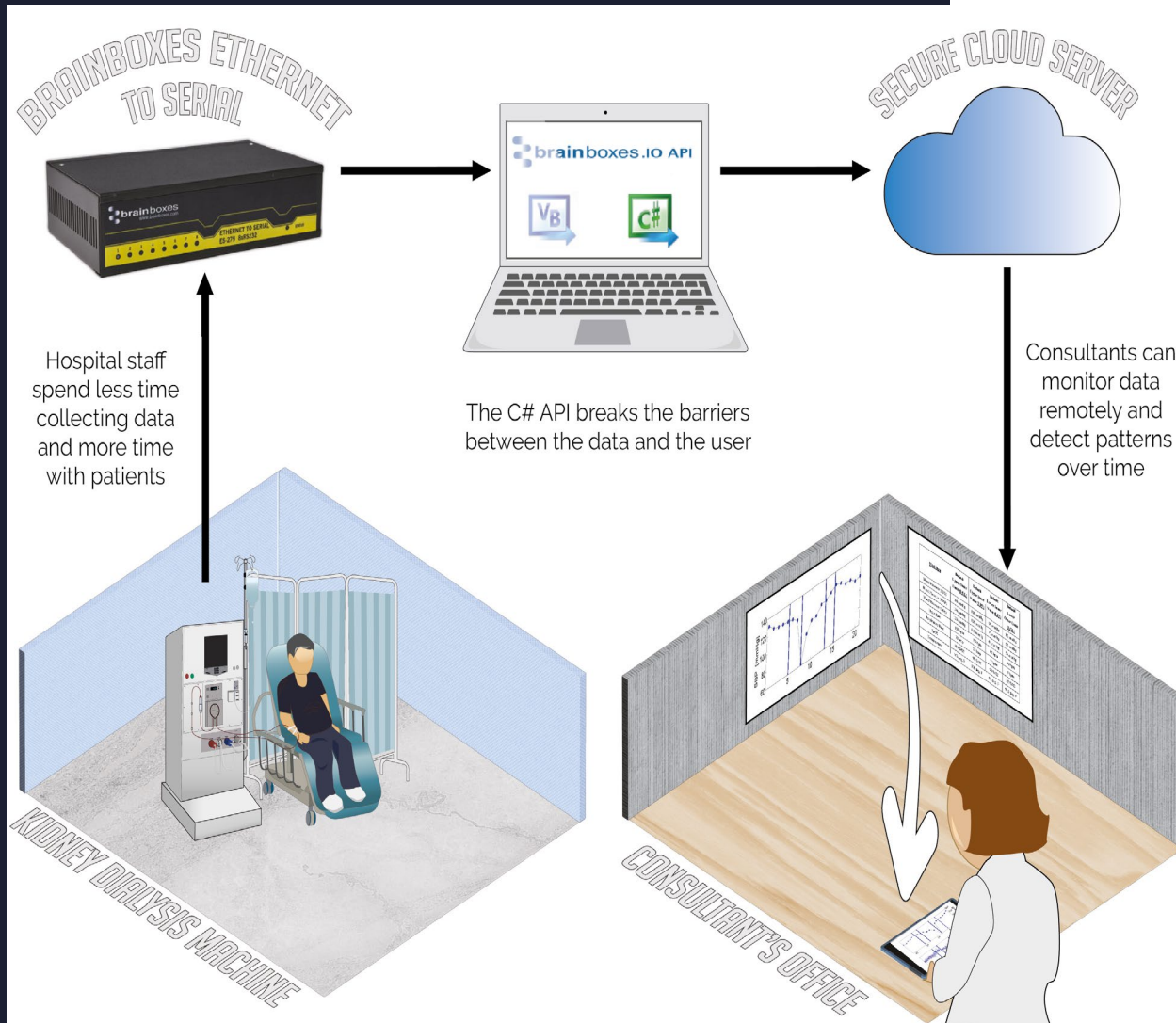


Research into nuclear fusion aims to develop power plants, that like the sun, can generate vast amounts of climate friendly energy: 1 gram of fusion fuel could generate 90,000 kWh, the equivalent combustion heat of 11 tonnes of coal

Brainboxes' Ethernet to Serial devices help The Max-Planck-Institute to measure parameters of plasma in extreme conditions, such as high temperatures of fusion fuel. Our Ethernet to Serial devices send critical data from sensors, installed in the diagnostic ports over the network

# SECURING DATA

# WITH SERIAL DEVICES



In the medical sector, information technology has advanced to drive a positive change concerning how doctors & nurses take care of their patients

Brainboxes' Ethernet to Serial devices ensure that medical professionals no longer have to manually enter data. Instead, accurate data readings can be taken from anywhere on the network. A web interface allows secure configuration & control of the serial ports over a local network of the internet using any browser



# UNDER THE

# GALACTIC TELESCOPE



Whether on the submillimetre radiation of the cold universe, or the manufacturing processes of the production line, Brainboxes Ethernet to Serial modules allow you to access your data remotely from anywhere on Earth

Serial connections ensure fast & secure transmission of data, whilst Brainboxes ES modules allow you to connect across your network to remote devices as if they were attached side by side. Our ES modules create a highly reliable interface & can be neatly integrated into custom rack modules

# REMOTE IO: ANALOG



Wide operating temperature range: -40°C to +80°C

Deliver industrial data exactly when & where you need it

Monitor inputs & control outputs instantly from any web browser

Interact with real-world data & applications



# REMOTE IO: DIGITAL



Connect digital sensors & transducers to bring data onto the network

Monitor inputs & control outputs of your factory floor machinery from anywhere

Deliver industrial data exactly when & where you need it

Wide operating temperature range: -40°C to +80°C

# REMOTE IO: TEMPERATURE



Temperature measurement range: -200°C to +600°C

Supports simple ASCII TCP Protocol or ASCII over virtual COM port

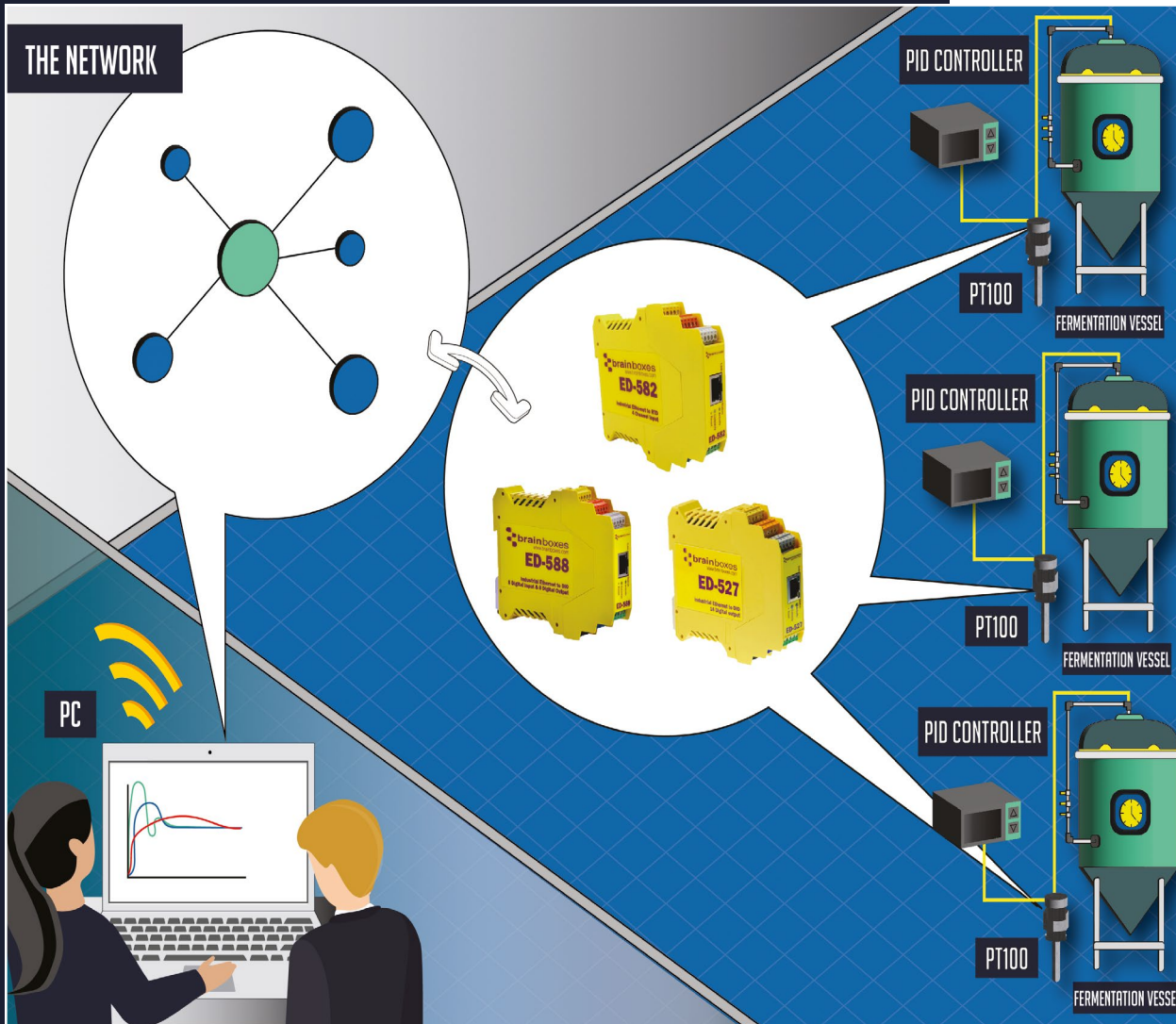
Open/short detection ensures readings are accurate

RTD IO module updates quickly



# REMOTE TEMPERATURE

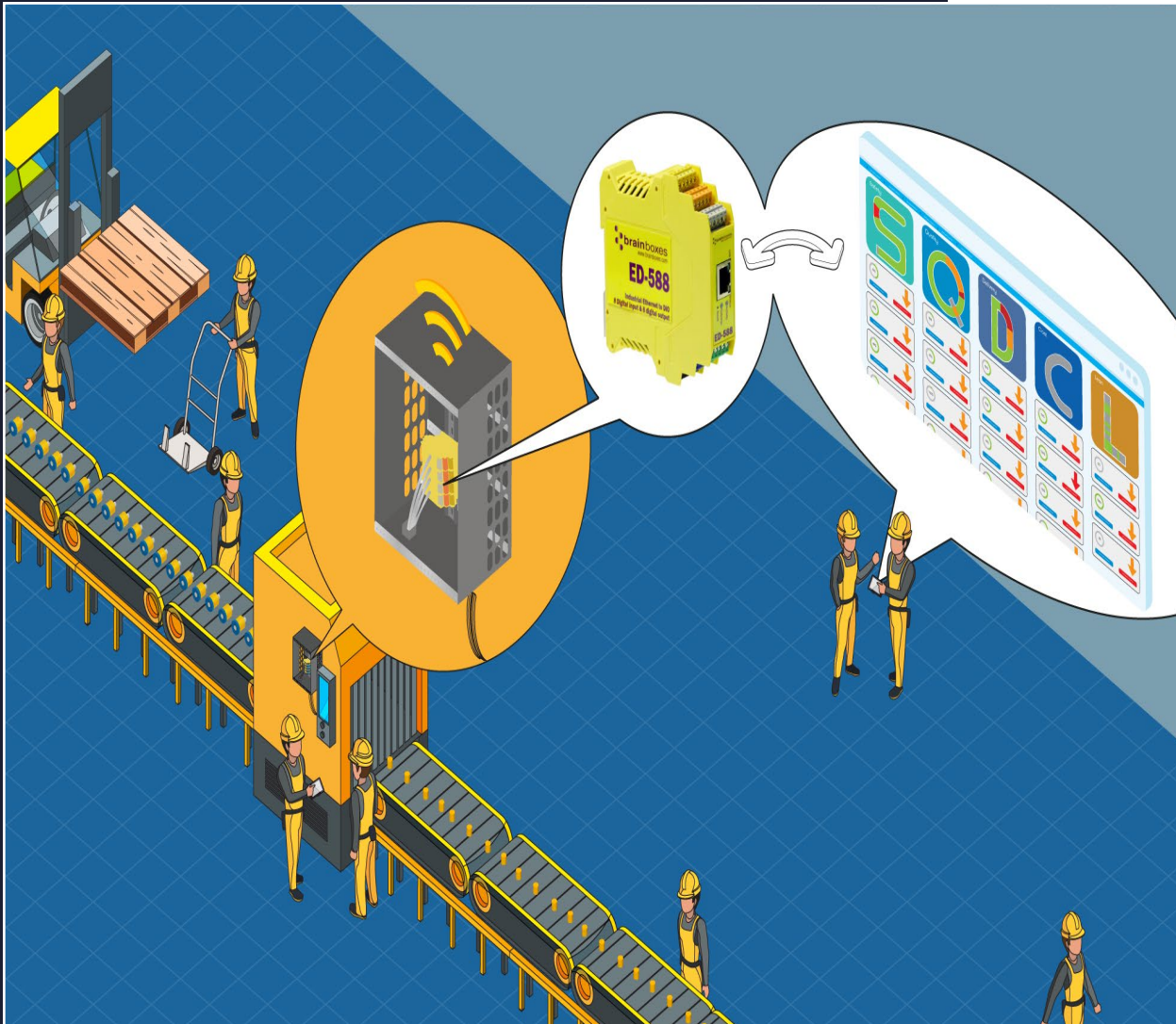
# MONITORING IN BREWERIES



Building an effective system for fermenting beer can be challenging, especially when it comes to monitoring & controlling the temperature of fermentation vessels

Brainboxes Remote IO devices allow users to monitor inputs & control outputs from any location. The Brainboxes can connect to sensors in different locations within the vessel to ensure data reflects the average temperature across the whole vessel

# TRANSFORM TO INDUSTRY 4.0 & AUTOMATED DATA CAPTURE



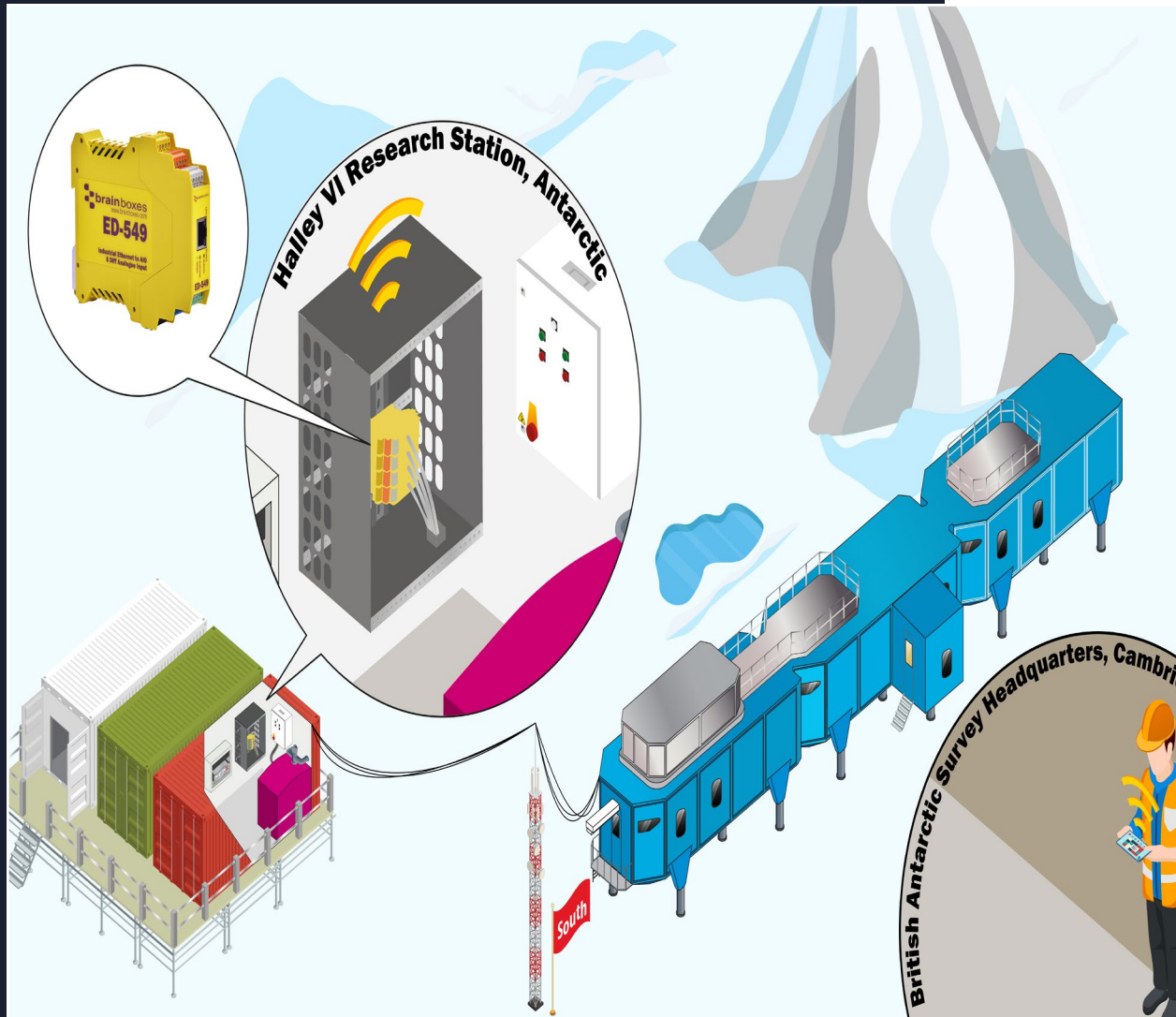
Sensors & transducers capture data from mechanical devices without the need for a PLC unit. The actions captured are sent to the Brainboxes' Remote IO device & the data is pushed to the cloud server for processing

The data generated can be used to predict behaviour & provide real-time insights. It then becomes possible to control a machine's parameters: maintaining high production & efficiency levels with the lowest possible energy consumption



# AUTOMATION IN

# THE ANTARCTIC



Thanks to an innovative autonomous power system developed by British Antarctic Survey's engineers using Brainboxes' Remote IO Analog modules, the station is able to remotely collect measurements all year-round

Brainboxes IO modules are used to monitor the fuel tank level sensors, current sensors on the pumps, pump pressure sensors & also to measure the fuel flow. Fuel data, levels, pressure & valve positions are all then logged in InfluxDB - an open-source database

# USB TO SERIAL



Stylish design combined with a spec rugged enough to withstand industrial environments

Send RS232 or RS422/435 serial data over the network

Proven functionality & performance in even the most demanding applications

Robust software for excellent application compatibility



# USB TO SERIAL: USB-C TO SERIAL



Convert your RS232 or RS422/48 port into a network PoE Ethernet port

Transmit both data & power on a single cable

Convenience of multiple power options

Quick, safe & simple to install

# ACCESSORIES



Available separately with no minimum order quantity

Power supplies: multi-country adapters & alternative power supplies

Cables: alternative multiport, USB & ribbon options

Application specific add-ons



# FACTORY MONITORING GAMEPLAN

Create your personal gameplan for  
Digital Transformation

Get your **FREE**  
factory monitoring  
playbook  
here!





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