WAGES HUB

WAGES Hub devices deliver an enterprise-scale meter data collection system that gathers data from a range of disparate metering, building management and control systems, and integrates it with a central energy management system or data warehouse.

Built-in support to read and write metering data from leading Energy Management Systems like **CET PecStar, Schneider StruxureWare Power Monitoring Expert** and cloud based **Switch Smart Hub.**

If you operate a large collection of assets, chances are you will already have a significant investment in WAGES (Water, Air, Gas, Electricity, Steam) metering systems, often installed to service other needs:

- Electrical distribution systems often include electricity meters to monitor power and energy flows.
- Building management systems use water, electricity, gas and thermal meters to manage HVAC and other systems.
- Various plant packages and process control systems incorporate energy measurement to meet control or equipment protection requirements.

In addition, it's quite likely you already have a variety of unconnected energy meters installed in buildings, or even one or more standalone energy management systems already collecting data.

You might already have investigated options to implement a common, business-wide energy management solution. It all sounds great in theory until you get down to the details of how you're going to integrate your existing energy recording equipment and systems (or face the cost of installing parallel metering systems).

While most EMS vendors provide support for 3rd party devices, the range of devices supported are often limited, features may be restricted (e.g. no interval log data transfer), and in some cases the vendor even goes as far as charging a premium for 3rd party device licences. Truth is, many of the vendors would rather you just bought their meters.

These vendor limitations may not cause too many issues in a smaller green-field site where a system can be designed with compatible equipment from the outset, but when you're taking a business-wide perspective, it may not be practical to rip-and-replace to standardise on a vendor or model. It's not just the cost of the meters – you need to consider the cost of installation, the cost of additional cabling, the difficulty finding additional board space in already-cramped cabinets, and the possible disruption to your business to cut power for installation.

The WAGES Hub

In partnership with CETA, VRT Systems is offering a range of “WAGES Hub” devices, that can be used to deliver an enterprise-scale meter data collection system that aggregates large volumes of disparate metering data, stores it in a common format, and then (if required) pushes the data into centralised corporate reporting systems, or even a master energy management system.

The WAGES Hub is designed to address some of the challenges you face in trying to integrate energy from disparate metering equipment and systems:

- **Wired or wireless connectivity**: RS232, modem, RS485, Ethernet, WiFi, Wavenis™ wireless mesh, 3G/4G (HSPA) mobile networks and more...
- **All meter types**: Pulse meters, simple accumulators, or smart meters with on-board data logging.
- **Wide protocol support**: Open and proprietary, from the metering, BMS and automation/control worlds.
- **Open Access**: Data store uses indexing and compression to deliver efficiency and performance, but underneath is based on CSV files so you'll always be able to get at your data.
- **Enterprise application integration**: The WAGES Hub supports a number of “push-based” connectors that can upload the data into the Switch Smart Hub, CET's PecStar, Schneider's StruxureWare Power Monitoring Expert (ION Enterprise), RUMS, or any other relational database.
- **Adaptable**: The WAGES Enterprise Hub is built from a modular tool-set, with a wide range of options, enabling you to tailor functionality to your requirements.

Protocols

The speciality of the WAGES Hub is its multi-protocol capabilities:

- **Modbus**: Modbus RTU and TCP is built-in, and in addition to real-time capture (and logging) of energy consumption from virtually any Modbus meter, the unit can handshake with CET & SATEC meters to retrieve consumption data logged to the meter's on-board memory. (providing a back-fill capability after interruptions to communications).
- **BACnet**: Built-in support for BACnet (Ethernet, IP, and MS/TP) for direct communication with BMS-connected meters that support BACnet, or to extract energy data collected by BMS controllers.

- **EDMI**: Support for collection of real-time and load survey data (including back-filling) from EDMI Mk3, Mk6 (Genius) and Mk10 (Atlas) meters using their native protocol.

- **Wavenis**: The WAGES Hub supports pulse meters connected to via the Wavenis™ wireless mesh networking technology (http://www.wavenis-osa.org/)

- **Datacell**: The WAGES Hub supports collection of consumption data collected by the Aegis DataCell GSM/GPRS pulse meter data logger (http://www.aegis.net.au).

- **PLC and DCS**: The WAGES Hub is built on field-proven data-acquisition software from the automation industry and consequently has driver support for a number of leading PLC and DCS controllers, including Rockwell (Allen-Bradley PLCs), Schneider Quantum and Momentum, GE Fanuc, Siemens and others.

- **Others**: The WAGES Hub uses a plug-in driver architecture, with a driver SDK available for integrators wishing to enable support for additional protocols.

Storage

A key feature of the WAGES Hub solution is its data store:

Robust: Data is stored in individual, self-contained, flat files. In the unlikely event a file is corrupted, the damage is contained to that file – you will never see a “database corruption” resulting in the wholesale loss of data.

Open: The file format is a variant of CSV, so you can read them with a spreadsheet or text editor – any application that supports CSV.

Fast: The file format uses “fixed-width” CSV files so that it can rapidly seek to specific records. This means that it performs as well as (in many cases better than) a SQL database.

Scalable: The data storage is organised hierarchically and broken down into file chunks optimised for large-scale and long-term storage. We have systems running with 600+ meters and a decade's worth of data (much of it collected at 1 minute intervals), with no signs of slowing down.

Enterprise Integration

For all WAGES Hub units you have the option to use the on-board web-based tools for query, analysis, reporting and export of data, or to add one of our “uplink” connectors to a specialist reporting or Energy Management System (PecStar, Struxureware Power Monitoring etc.), to a cloud-based analysis and reporting system like the Switch Smart Hub (http://switchautomation.com/), or Envizi (http://www.envizi.com/), or your own corporate data warehouse hosted on a wide range of RDBMS platforms (MS-SQL, Oracle, PostgreSQL, MySQL etc.).

The SQL uplink interface can be adapted to virtually any database schema, so if you have a specific application you'd like to integrate with, give us a call to discuss your requirements.

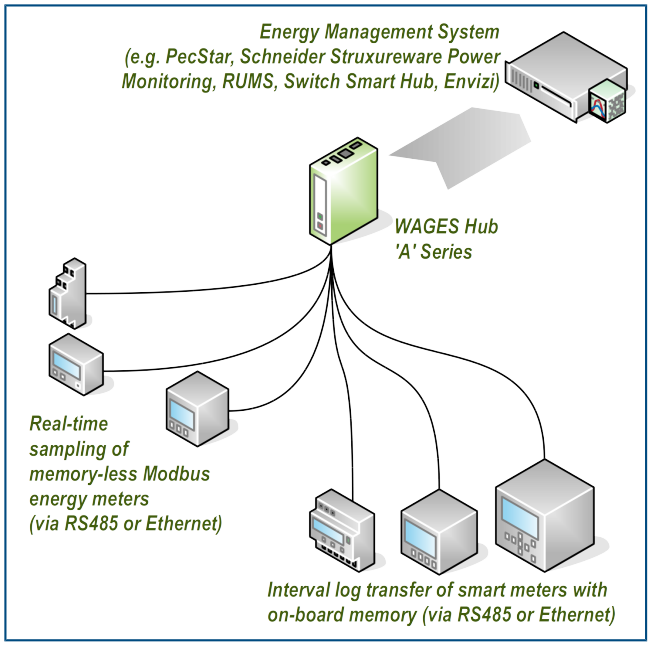
Deployment

Whether you needs are for a small industrial-grade unit to deploy in the field near your meters, or a large-scale data concentrator polling large populations of meters, we have a package to suit. WAGES Hubs can also be chained together in an n-tier architecture with small units in the field, reporting back to aggregating hubs.

'A' Series

The WAGES Hub 'A' series are based on energy efficient, high-temperature tolerant ARM-based devices that are DIN-rail-mountable and well suited to cabinet installation. We have units that tolerate up to 70°C or even 85°C on some units.

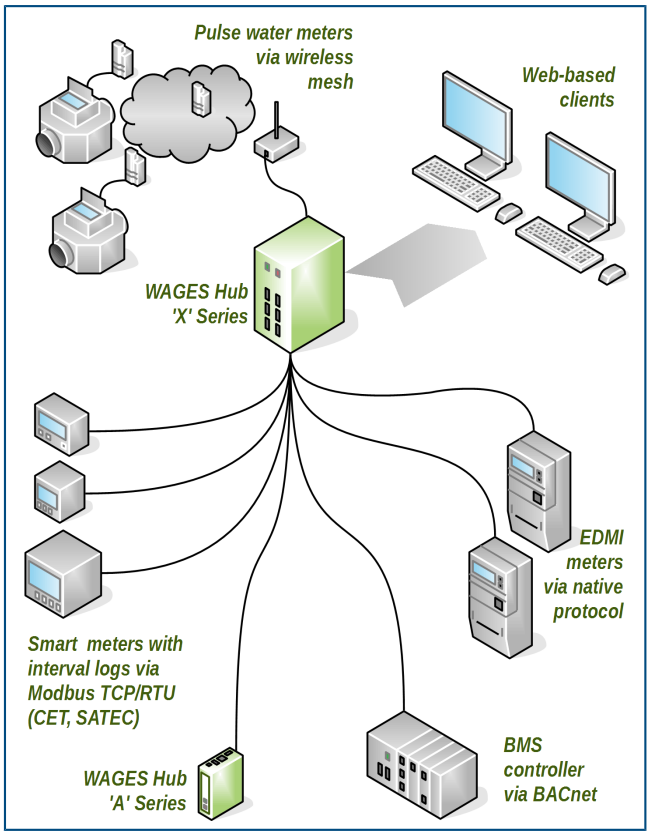
The 'A' series devices come standard with support for Modbus (TCP or RTU) meters, and have on-board RS-485 ports. Devices are available with support for 200-500 data points (each measured value is a data point, so 200 data points might be 20 values captured from each of 10 meters, or any other combination).



'X' Series

The WAGES Hub 'X' series units are the next step up in terms of performance, and as well as increasing I/O counts, add support for a wider range of protocols and mounting options.

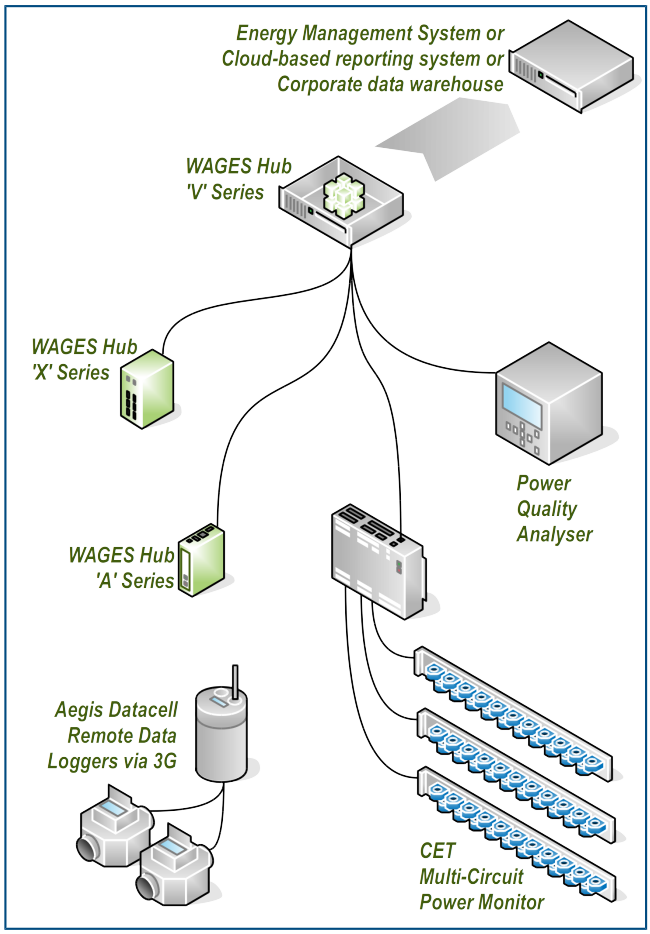
The 'X' series devices come standard with the same support for Modbus as the 'A" series, but also add options for BACnet, EDMI (native command line protocol), the Wavenis protocol and a range of PLC devices. Standard devices are available with support for 500-10,000 data points, but we can also purpose-build devices if you have particular requirements.



'V' Series

The WAGES Hub 'V' series are available as virtual machine images for deployment on your own infrastructure. They feature larger I/O point counts and and scale as far as your server capacity will allow – ideally suited for data centre installation.

The 'V' series devices support all the same protocols as the 'X' series for direct polling of meters, and also accept data feeds from 'A' and 'X' series field devices. Data point counts for the 'V' series range from 2,000 to 50,000 points in standard configurations. For larger systems, please call to discuss your requirements so that we can assist with system architecture options.



Applications

On top of all the data communications options, our WAGES Hubs also support the installation of applications. These range from simple reporting capabilities to meet NABERS or other legislative requirements, to SMS alerting, Foyer Display systems or per-tenant dashboards for multi-residential complexes. We can also create custom applications, so if you have a specific requirement, contact us to discuss your options.

Training

For smaller installations, configuration of a WAGES Hub is a straightforward exercise, using the on-board web management interface. For some of our protocol options, or in larger tiered architecture systems, with so many connectivity options implementing a WAGES Hub data collection system requires specialist expertise. To ensure you deal with someone that knows the product, CETA offers “Certified WAGES Hub Integrator” training.

Reference Sites

- **Australian Department of Defence**, 6 sites across southern Queensland (3 x V Series, 3 x X Series Appliances) collecting data from 600+ meters, including CET, SATEC, EDMI, Schneider, and a range of Pulse meters via Aegis Datacell data loggers. Uplink to RUMS.
- **Broad Construction / Leighton FM**, Aspire Schools – 4 sites with WAGES Hub (Industrial) each collecting data from 30+ SATEC PM130 meters over RS485 and 12 water meters over Wavenis wireless mesh network. Local web-based UI.
- **John Paul College** – WAGES Hub (Virtual) collecting water metering data from 12 water meters over Wavenis wireless mesh network. Local web-based UI, email alerting on water leak detection, uplink to CET PecStar.
- **Gladstone Ports Corporation** – WAGES Hub (Industrial) collecting log data from SATEC branch feeder monitors, with uplink to ION Enterprise.
- **University of Queensland** – WAGES Hub (Virtual) collecting data from a wide range of Schneider, EDMI and CET meters, with plans for the addition of over 30 X&A Series WAGES Hubs uplinked to CET PecStar.
- **Lend Lease Barangaroo R8 & R9 Residential Towers** – 2 x WAGES Hub V Series units (one in each building basement) fed by 17 WAGES Hub A Series in the risers.
- **Q Energy Solutions** – 1 x WAGES Hub A Series

Selection Guide

Feature	A Series	X Series	V Series
Platform	ARM	x86/x64 Intel/AMD/other 32/64 bit	Virtual appliance
Form Factor	DIN Rail	DIN Rail / Surface Mount / 19" Rack Mount	OVF / VMware / KVM
Operating Temperature	-40°C to 85° C	From (5°C – 50°C) to (10°C – 35°C) depending on model	-
Serial meter support (RS232/422/485) - RS232 - RS232/422/485	✔ 1-2 1-2	✔ 0-2 0-2	✔ (requires serial device server)
Ethernet meter support	✔	✔	✔
Modbus Support	✔	✔	✔
Additional Protocol Support (BACnet, EDMI, Wavenis, PLCs)	✘	✔	✔
Support for "uplink" connectors (CET PecStar, Schneider Struxureware Power Monitoring, Switch Smart Hub, Envizi)	✔	✔	✔
Storage medium	Solid-state	Solid State Disk or Hard Disk	Virtual Disk
Meter data storage capacity	1-8 GB	8GB-3TB	User supplied
Data point count	200-500	500-10,000	2,000-50,000
Web based configuration	✔	✔	✔
Web server + standard dashboard widgets, charts and reports	✘	✔	✔
Support for lower series distributed WAGES hubs	✘	✔	✔
Optional Inclusions: NABERS Reports, SMS alerting, Foyer Display	✘	✔	✔

VRT SYSTEMS

SOLUTIONS ENGINEERED FROM EXPERIENCE

38b Douglas St
Milton QLD 4064

T +61 7 3535 9696
F +61 7 3535 9699
E sales@vrt.com.au

www.vrt.com.au