VRT MultiRes Monitor

With an increasing focus on achieving Green Star and NABERS ratings for buildings, many building owners are looking at cost-effective ways to improve building performance and gain additional ratings points.

Providing comprehensive energy monitoring (water, electricity, gas, heat & cooling) to tenant units can deliver the ratings points, but are often a costly and complex proposition.

VRT MultiRes Monitor offers a comprehensive, integrated, flexible and economical solution to energy monitoring and reporting in residential building complexes.

This solution has been developed over recent years in response to multi-res industry feedback that existing systems (designed primarily for other markets) failed the more stringent "affordability" test for the multi-res market.

Green Star Credits

The Green Building Council of Australia defines six credit points available to encourage the design and installation of systems that facilitate effective metering and monitoring of water & energy consumption.

While there are specific requirements that need to be met for each of these points (refer to the Green Star Technical Manual) in summary, the six points are available for:

1. Base building water metering

2. Per-unit cold water metering

3. Base building energy sub-metering

4. Per-unit sub-metering of electricity, gas (if used for anything other than cooking) and hot water (if supplied to the unit).

5. Smart metering with in-unit display (real-time and summary, with financial costs & GHG) for **any** of electricity, water or gas.

6. Smart metering with in-unit display (as per #5) for **each** of electricity, water and gas.

VSUITE
ENERGY MANAGEMENT

The Problem

In simplified terms, Green star offers up to 2 points for base building water and energy sub-metering, up to a further 2 points for per-unit sub metering, and a further 2 points if that per-unit sub metering is accompanied by an easily accessible mechanism for tenants to access their consumption information.

The challenge for building owners, designers and consultants, is that each additional increase in functionality introduces cost and complexity. Unless this is managed properly, the additional risk and cost can make these options unattractive.

Our Solution

The VRT MultiRes Monitor solution is based on VRT's Vsuite for Energy Management. This is a modular approach to systems integration – we have a reference architecture that supports a range of different options, and we select the best fit for your requirements. We don't design from scratch for each project, and we don't take a punt on untested technologies.

We have identified a range products that offer cost-effective metering and data acquisition, as well as a number of options for in-unit tenant consumption displays (both "fixed" and "bring your own"). Our data acquisition systems support all of the different media types and protocols likely to be encountered in these environments, and we provide flexible options for the integration of these back to IP-based data concentrators on the building riser backbone.
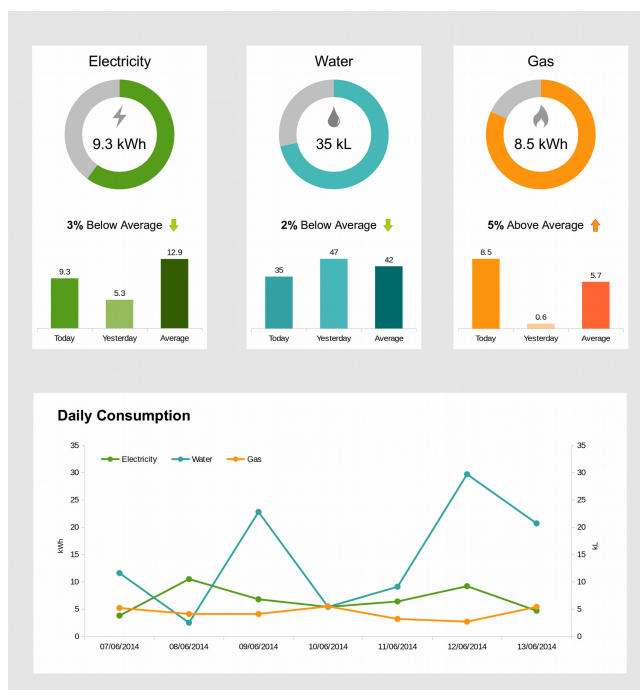
Tenant Metering

Because the choice of metering equipment in each apartment can drastically alter requirements for the communications network, we start by matching tenancy metering and display options to your requirements:
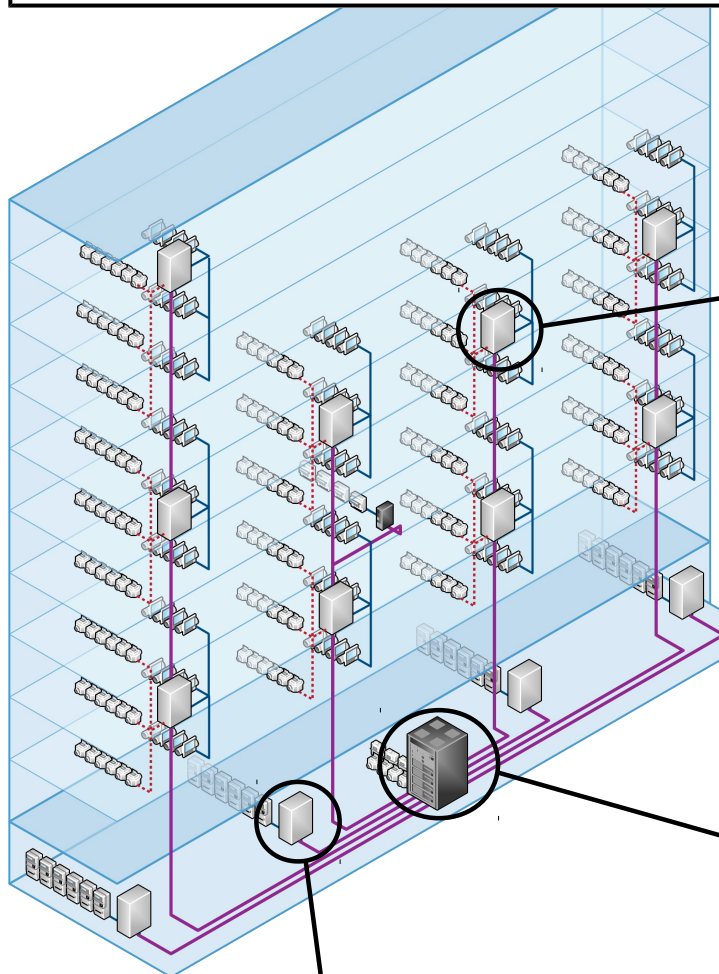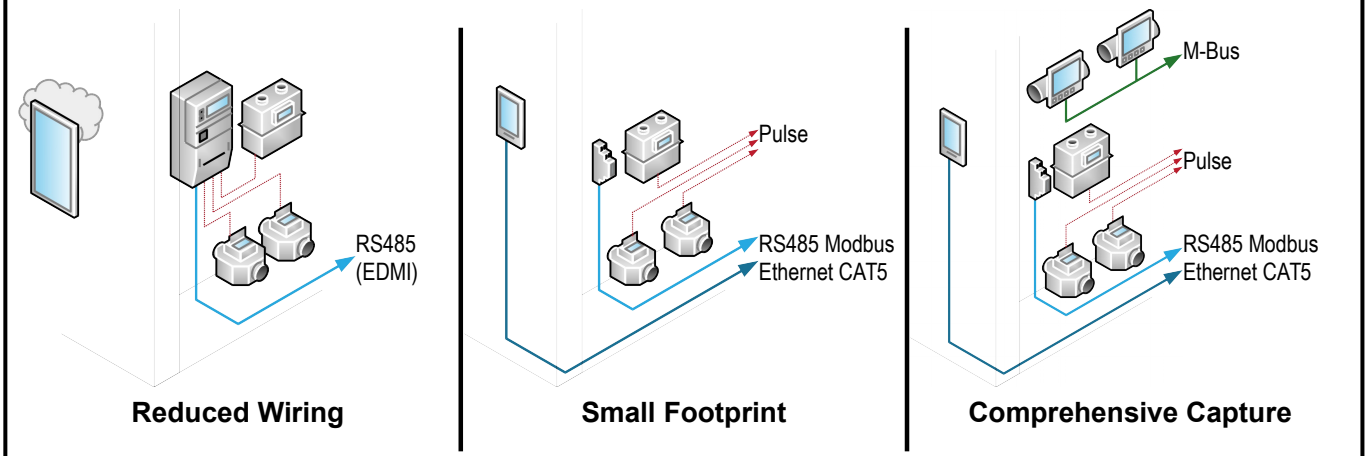
- **Electrical Energy Metering**: we can offer a range of "pattern approved" (NMI certified) meters, from EDMI connected via their

proprietary command line protocol, or any of the wide variety of Modbus meters. In particular, we have meters that provide for a number of pulse inputs on-board (which localises pulse collection wiring to the tenant board & reduces costs for separate pulse accumulators), as well as meters with a compact form factor (2-DIN) to reduce board space requirements.
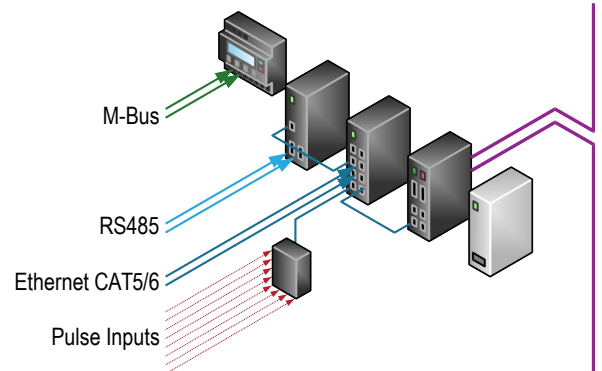
- **Pulse Metering**: In addition to any pulse input capacity on tenant energy meters, our solution accommodates the collection of any number of pulse inputs per tenancy for additional gas and water meters.

- **Thermal Metering**: we can capture thermal energy via pulse inputs, or in cases where additional data capture is required (temperature differential) we can accommodate M-Bus or Modbus protocol options.

- **Tenant Displays**: We can provide support for tenant information displays via a "Bring Your Own" approach (tenant's own tablet, smart phone or television) or permanently wired wall displays that are unobtrusive (standard wall plate size), cost effective, and yet elegant (colour, touch interface).

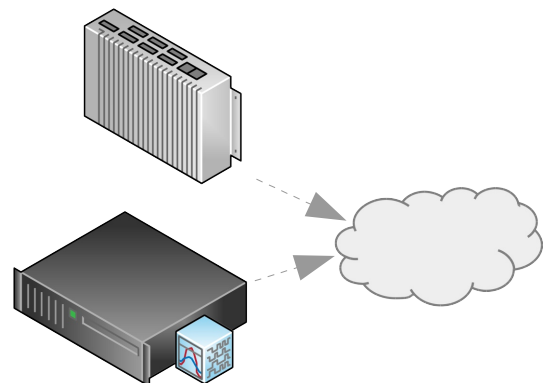## Flexible Options for Tenant Metering and Information Display

RS485
(EDMI)

Reduced Wiring

Pulse

RS485 Modbus
Ethernet CAT5

Small Footprint

M-Bus

Pulse

RS485 Modbus
Ethernet CAT5

Comprehensive Capture

Data Gathering Panels

M-Bus

RS485

Ethernet CAT5/6

Pulse Inputs

**Scalable
Fibre or Ethernet Backbone
UPS Option**

Building Server

**Compact & economical, or optional full EMS.
Additional option for streaming to cloud (BYO
Tenant Devices, or Portfolio management)**

Base Building Metering

**Same support for cable media and protocol
options as DGP**

Support for connection to BMS via BACnet

Data Gathering Panels

Our data gathering panel design is geared around an elegant and cost-effective solution that captures pulse, RS485 Modbus, M-Bus and other RS-485 serial protocols (and others if you have any specific requirements, but we generally find this covers it) and converts this to an IP-based Ethernet connection. We also have options to support connection to a fibre backbone, and provision for UPS supply to ensure that metering data is still collected when the power goes off.

Base Building Metering

Base building metering can be captured via a variation on our riser data gathering panels, or via direct connections. Note that in smaller buildings, a single DGP per riser (or even for the whole building) can be located in the basement, and cover both tenant and base building metering.

For buildings with a BMS installed, we can connect direct to BMS controllers via BACnet or provide a high level interface via OPC.

Building Server

Our standard "VRT MultiRes Monitor" solution uses a cost-effective and compact data acquisition and storage solution based on VRT's WAGES Hub technology. This provides scalable energy data storage and on board web-based reporting to cater for consumption-oriented reporting.

Where there is a requirement for power monitoring and control (PMCS), power quality (waveform capture) or complex reporting, we can offer a more comprehensive Energy Management System like CET's PecStar.

In either case, we can also stream data to cloud-based services providing in-tenancy displays (for "Bring Your Own" devices) or portfolio management and reporting solutions (such as the Switch Smart Hub).

Features & Benefits

- **Integrates all meter types**, whether pulse input, serial (RS485) or IP Based. Open protocols (Modbus, BACnet, M-Bus) or proprietary (e.g. EDMI command line).

- Options to integrate tenant pulse meter inputs at the apartment board, **drastically reducing cabling runs**.

- Options for compact (DIN) pattern-approved energy metering to **save board space**.

- **Multiple options for tenant information displays** – both fixed (wall mount) and mobile wireless (BYOD).

- **Choice of riser backbone communications** – fibre, Ethernet (CAT6) or (in smaller buildings) RS485.

- **Tenant displays provide real-time values**, trend displays, alerts etc. for power, water & gas.

- **Options for control** – local or via the Internet.

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