BRODERSEN

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Brodersen in Supply Chain Management

TELEMETRY

WHAT IS TELEMETRY ?

For most of us, our first experience of 'telemetry in action' may have been with the F1 racing events where it is extensively used by racing teams to gather real time performance data from the F1 racing cars via the radio telemetry link.

The racing engineers, located in the pits and equipped with the radio receiver and high performance PCs, use this data to analyse the health and performance of the engine and chassis in order to match the characteristics of the car against the demand of the circuit.

Unbeknown to us, however, telemetry equipment has been playing a very important role in our daily lives, helping utilities companies to monitor our water, gas and electricity supplies to ensure the level of service is met. In fact, over 10,000 Remote Terminal Units (RTUs) have been installed in eastern England alone, monitoring leakage, water and sewage pumps, water and sewage treatment works, and daily consumption of water.

CONCEPT

Like the F1 telemetry system, Brodersen telemetry equipment not only allows you to transfer status, control and measurement signals within the site but also from remote/isolated sites to a central control room using a variety of communication media such as radio, telephone (PSTN), or mobile telephone data network (GSM or GPRS).

In other words, the remote site could be just a few km away or in another country, or indeed another continent. Telemetry can span the globe and can be just as effective if the remote site is only a couple of hundred metres away, across a road, a river or railway.

PRINCIPLE

There are two key components in a telemetry system; Remote Terminal Unit (RTU) and Data Gatherer (DG)

Remote Terminal Unit

The RTU's basic tasks are to:

- scan the connected data inputs
- convert the input signals to binary representations
- hold the data for transmission
- transmit the converted data to the central computer
- receive commands from the central computer
- issue actions or setpoints to connected control outputs

Advanced RTUs are also capable of alarm processing and data logging.

Data Gatherer (DG)

The Data Gatherer's main functions are:

- poll the RTUs at user-defined intervals
- timestamp the data collected
- check data collected against alarm and event conditions
- alert users if alarms are discovered
- log the data collected, if required
- accept alarm dial-ins from RTUs and alert the users
- archive the data collected
- plant visualisation via Graphical User Interface
- report generation such as daily total, weekly average etc.

Dual redundant DGs, located at different sites, are deployed for mission critical systems.

VENDOR MANAGED INVENTORY

IT has completely changed the face of Supply Chain Management. Availability of real-time information to suppliers and customers is paramount in VMI operations.

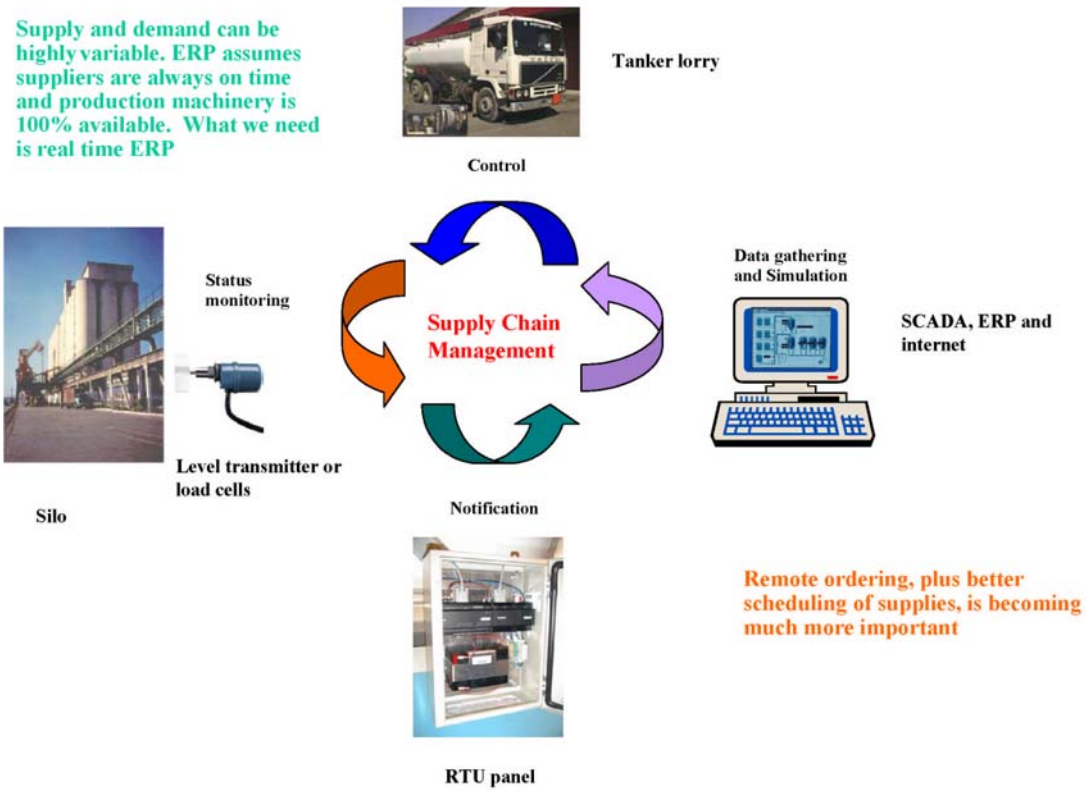
Indeed, the accessibility of real-time information has allowed many sectors to dramatically reduce the need for warehousing as IT applications can nowadays accurately match the supply and demand. With the introduction of Vendor Managed Inventory (VMI), whereby the manufacturer or supplier is responsible for all decisions regarding product inventories at the retailer, the purchase of an item from a retailer automatically triggers a reaction in the supply chain. Buffer stocks that were used to compensate for fluctuations in supply and demand have become a thing of the past.

Although it has always been possible to operate VMI schemes in bulk raw materials supply (e.g. fuel, sugar, liquid yeast, cement, and plastic granules), it is only recently that these schemes have begun to prosper. This is partly due to:

- purchasers seeking to establish a closer relationship with their suppliers
- the need for real-time demand data to ensure a steady and timely supply of goods
- the dramatic fall in the pay back period for telemetry schemes in the last few years.

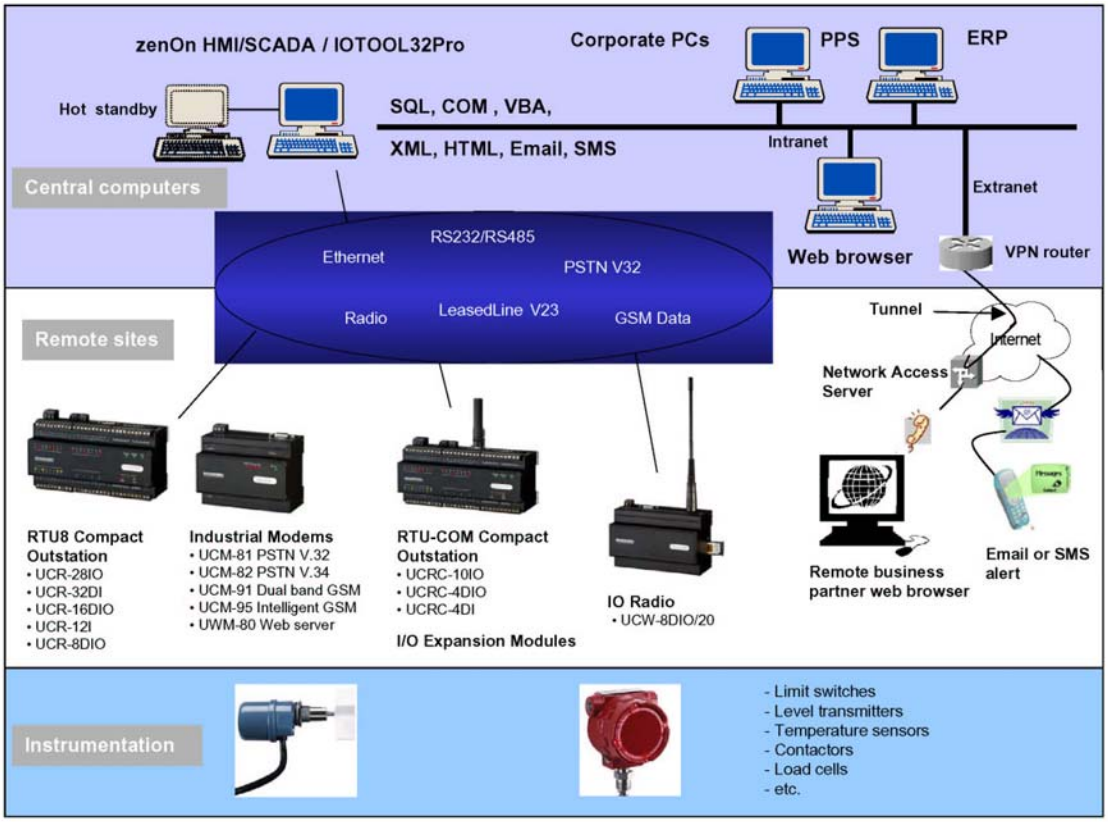
With the Brodersen telemetry system, the re-ordering level (or the level of safety inventory) can be set by the customer and used by the supplier to trigger an automatic JIT replenishment of stock. Suppliers benefit from having the real time consumption data that their Enterprise Resource Planning (ERP) system can use to plan their production. This not only ensures their customers never run out of stock, thus providing a service that is second to none, but also avoids costly overproduction.

We believe telemetry will continue to play a very important part in the evolution of Supply Chain Technologies and our range of innovative telemetry products is ideally suited for this application.



ZENON AND IOTOOL32 PRO

At the central monitoring station, the PC is equipped with communication software IOTOOL32 Pro, which handles the communication to the Brodersen RTU modules. The zenOn HMI/SCADA with Brodersen driver is also installed on the same PC to provide the graphical user interface and the Data Gatherer functions such as polling, alarm processing and logging of data from the RTUs. The zenOn software package not only gives you a detailed overview of your operation, but also, with the vertical integration of dataflow to SQL database, integration with Enterprise Resource Planning (ERP) systems or Production Planning Systems (PPS). Other software interfaces include VBA, COM, Web Server and OPC server which offer the flexibility of an open system.
Remote Business Partners could view the plant through the standard web browser and internet if the corporate network is equipped with extranet (Virtual Private Network) connectivity. SMS messaging or emails are other possibilities.



REMOTE TERMINAL UNITS AND COMMUNICATION MODULES

Brodersen can offer two types of RTU modules, with or without in-built modems. The RTU8 is ideal for schemes that require a mixture of communication media and I/O expansion capability, whereas the RTU-COM is an RTU with limited I/O capacity so it is more suited to cost sensitive, low I/O count telemetry schemes.

Modems suitable for Public Switched Telephone Network (PSTN), mobile telephone network (GSM) or private radio network are available.

INSTRUMENTATION INTERFACE

Both RTU8 and RTU-COM are provided with industry standard interfaces to digital input (status or indicator), digital output (control relays) and analogue input (current loop or voltage).

BRODERSEN TELEMETRY SYSTEM DESCRIPTION

RTU8

The **RTU8** is a compact telemetry unit with data logging facilities designed for use in the industrial environment. The RTU8 has a number of integral sensor inputs and outputs and further I/Os can be added via the expansion bus provided as standard.
The unit has a number of ac or dc power options, including a battery charger option to provide battery back-up when mains supply fails. The unit can be programmed to perform control sequences using the industry standard **IEC 1131-3 programming language.** Wide area communication is achieved by connecting external **PSTN (UCM-81/82), GSM (UCM-91/92) or radio modems (UCW-11/50)** to the RTU. A version of RTU8 provides an additional serial communications port for connection to intelligent devices.

RTU-COM

The **RTU-COM** telemetry unit is a compact RTU with built-in communication options (**PSTN** or **GSM**. Short Message Service (**SMS**) is provided as standard in the GSM version. It is also possible to tag an analogue value with the SMS message. Like the RTU8, the RTU-COM has data logging facilities and is designed for use in the industrial environment.
The RTU-COM can be fitted with up to 10 integral I/O - 4DI, 4DI/4DO or 4DI/4DO/2 AI (process signal or temperature sensor input).
The RTU-COM can be delivered with a range of different power supply configurations including a battery/solar panel option. The unit can be programmed to perform control sequences using the industry standard IEC 1131-3 programming language.

I/O EXPANSION

A suite of I/O modules is available for the RTU8 to expand the number of I/Os, if required. The I/O modules are powered via the Local Bus I/O expansion port provided as standard on the RTU8. However, owing to the size of the data packet, the maximum number of I/O expansion modules will depend on the number of analogue I/O modules attached to the RTU8. Expansion modules available are as follows:

No. of I/O	DI	DO	CI	AI	AO	DI/DO
4					v	
8				v		v
16	v	v	v			v
32	v	v				

COMMUNICATIONS

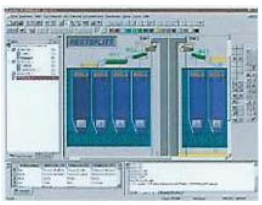
We currently offer communications modules for three different media:

PSTN - **UCM-81 (V.32) and UCM-82 (V.34).** Both modems can be configured for other modem standards such as **V.32 bis, V.22 bis, V.22 A/B, V.23, V.21, Bell 212A and Bell 103**. Hayes compatible **AT command set** is supported.

GSM - **UCM-91** (900/1800) and **UCM-92** (900/1900). Both modems act as a terminal for data transmission and Short Message Service (**SMS**). Both modems are network independent as a SIM cardholder is fitted to every module. The **UCM-91/92** is fully approved for GSM Phase 2 specifications. **AT command set** based on **V.25ter and GSM 07.05 & 07.07** is supported.

Radio - **UCW-11 (10 mW, 433 MHz) and UCW-50 (500 mW, 458 MHz).** Both modems operate in the licence-exempt telemetry bands in the UK. The **UCW-11** is ideally suited for on-site wireless communications whereas the **UCW-50** is a better choice for wide area radio networks (up to 10 km).

DATA GATHERER



IOTOOL32 Pro is a powerful low-cost 32 bit software tool that enables you to communicate with distributed input and output points from RTUs and transfer the data into WIN 2000, XP or NT environment. **IOTOOL32 Pro** includes a complete set of tools to configure, programme, monitor and control RTUs, all that is necessary for a professional Data Gatherer system.
Visualisation of the entire telemetry system, if required, can be achieved via **zenOn HMI/SCADA** package, a powerful and easy-to-handle software package for industrial automation. **Industry standard interfaces** such as **SQL, OPC and Web Server** can be added to **zenOn** to provide upward connectivity to corporate ERP or PPS systems. **zenOn** also provides optional add-on 'productivity' software modules such as **Archiving, Report Generator, Recipe Group Manager, Message Control, Process Control Engine, and Production and Facility Scheduler** to further enhance your operation's efficiency.

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About Brodersen

The Group

The BRODERSEN group's principal activity is the supply of advanced industrial automation products for the process and automation industry. This includes Remote Terminal Units, data loggers, communication modules, signal conditioning units, display panels and HMI/ SCADA software.

Our Heritage

Founded 1970 in Denmark the company has grown from a small trading business to one of Europe's leading designers and manufacturers of Process IT components. With 30 years' experience to our credit, we understand the logistics involved in integrating process IT systems and we strive to offer simplicity in a complex world.

Our Market

Through our headquarters in Denmark and our subsidiaries in the UK and Germany we have been delivering our Scandinavian brand of expertise in the following sectors:

- water
- oil & gas,
- electricity
- food
- chemical
- logistics
- transport
- telecommunications
- manufacturing

Our customers in these sectors mainly comprise systems integrators, engineering companies, OEMs and utilities - both public and private. We continue to intensify our presence, with partners and agents throughout the world.

Applications

Our products have been employed in diverse application areas that include:

- asset management
- facilities management
- supply chain management
- automatic meter reading
- traffic signalling
- factory automation
- energy management

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