



AN INTRODUCTION TO

REMOTE MONITORING

BY

**DATA ACQUISITION
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OUTLINE:

Data Acquisition Networks Pty Ltd (DAN) has developed a flexible remote monitoring system that provides the ability to gather data from remote sites and/or difficult to reach sites and make that data available conveniently on a central web site. Information can therefore be accessed from anywhere in the world where access to the internet is available, all that is required is a user name and password. In addition, the system may be extended to incorporate local control, with control variables being altered via the web site.

Instantaneous data can also be retrieved by dialling a specified mobile phone number from a nominated mobile telephone. Data will be made available via SMS message onto that phone within minutes. The system may also be configured to provide alarm messages to either an email address or via SMS to a mobile phone.

DAN SOLUTIONS:

DAN offer remote monitoring systems that consist typically of three components:

- 1. Probes/sensors:** located on site, probes and sensors specially selected for the application collect the input data for the system. Analogue input data can cover parameters such as (but not limited to) temperature, pressure, density, conductivity, pressure drop, flow, pH, ORP, speed, vibration, humidity, turbidity, dissolved oxygen etc while digital input data can cover on/off conditions and event counting such as rainfall etc. If a sensor is available to measure a parameter, the DAN system can utilise that input.
- 2. The Data Control Centre (located on-site):** All probes and sensors make measurements continually and send the data to the data control centre. Here, these readings are interpreted by a micro-processor into average, maximum and minimum readings over a period (the transfer interval) and stored in a data register. The data control centre may be powered by a power pack or solar energy and is supported by batteries should the power supply be interrupted.

An integral part of the data control centre is a communication modem. After each transfer interval has elapsed, an automatic communication is initiated with the DAN web site and stored information is downloaded. Should network problems cause no communication to be made, or an interruption to in progress communications, the on board register is able to store up to 30 such transmittable pieces of data and will transmit all stored data next time a communication link is established. This enables up to 30 periods of loss of communications without historical data loss.

During any communications process, relevant changes input via the web site are downloaded into the control and data centre.

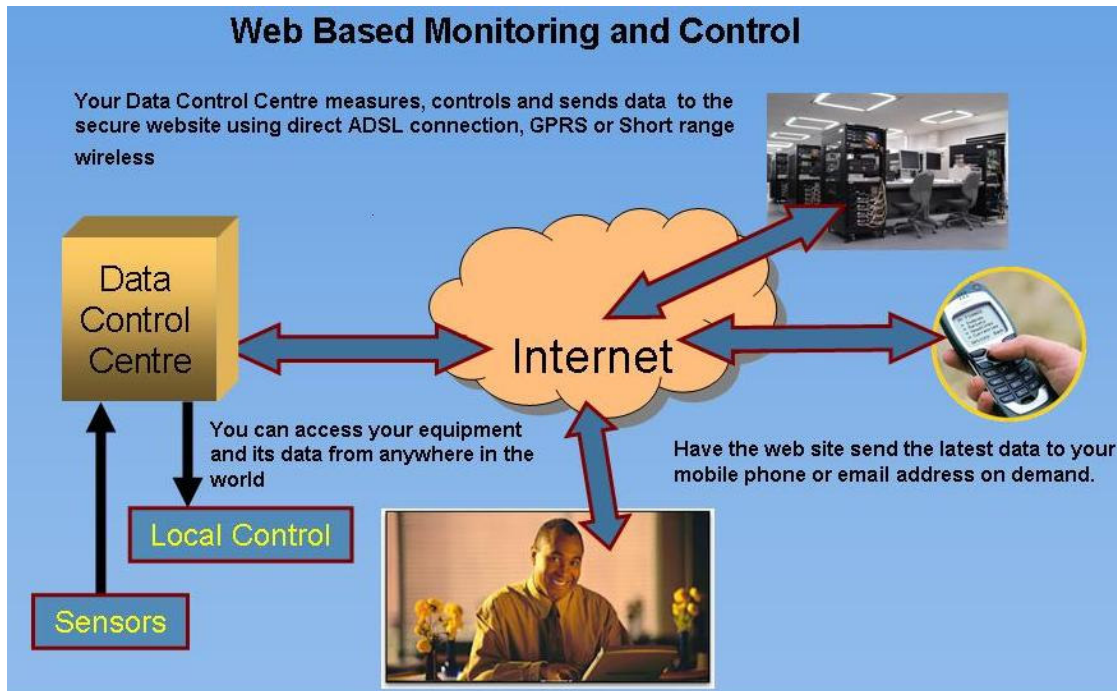
Communications may be via available commercial networks including GPRS, satellite, CDMA etc.

- 3. The DAN Website:** is accessed by the user with the use of a customer ID and security password. Initially a user will input contact details and set up their application. With the data gathering system being flexible, each user can independently determine and set parameters for each input and for alarms. Options for alarm notification are by email and/or SMS. In addition, derived information is also available. By selecting a formula that is available, and by noting which respective inputs are relevant to that formula, a derived set of data can be provided.

Data is displayed in an easy to read tabulated format and may be downloaded into spreadsheets for further analysis of or conversion into other optional display configurations. Numerous search options on data are available permitting the user to

display only the data required and within a number of sort options . All data is kept on the web site for a period of 90 days after which time it is progressively discarded.

Numerous variables are available for setting parameters via the web site. These include transfer interval, power conservation interval, definition of input parameters, alarm set-points, mobile numbers (2) and email address for alarm notification, message to be sent on alarm, calibration information and mobile number for instantaneous readings.



OPERATION:

When the equipment has been mounted and wired, and power turned on, the micro-computer will automatically progress through a commissioning phase and commence delivering information to the web site. It is necessary then to enter the web site and define all parameters being measured.

Following commissioning, DAN will provide a security access code that will permit the authorised user to access the data held on the website.

All probes make measurements continually. These readings are interpreted into average, maximum and minimum readings and stored in a data register by the on board micro-computer. At every transfer interval the DAN equipment communicates with the web site and downloads the readings gathered during that period. Should network problems cause no communication to be made, the on board system is able to store up to 30 such transmittable pieces of data and will transmit all stored data next time a communication link is established. This enables up to 30 periods of loss of communications without historical data loss.

Under circumstances where less than reliable power sources are used (eg solar power), the system may be arranged via the web site to power down between measurement cycles thus conserving energy.

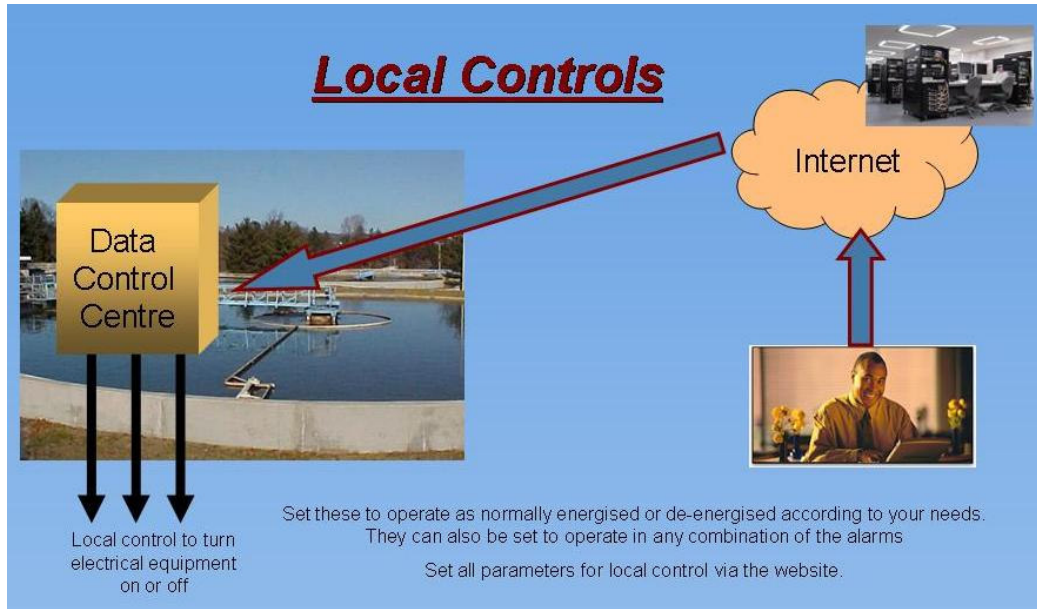
Data is transmitted to the web site and stored in a data base. Authorised users are able to access the data, including historical information at any time. Authorised users are also able to input upper and lower limits which may generate both emails and text messages once exceeded.

A number of capabilities have been inbuilt into the hardware and software which allow us as the system supervisors to interrogate certain system parameters and processes thus ensuring the

highest possible level of information integrity and reliability.

While we have incorporated in the design and operation parameters the maximum level of safeguards consistent with the provision of accurate information, users should always be aware that consistent with any remote system, the equipment relies heavily on site parameters and the mobile telephone network.

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SERVICE:

Supervision of the overall system performance will remain under the control of DAN. Our staff will continually monitor and maintain all systems at optimum efficiency. Component maintenance must, however, be carried out by the purchaser at regular intervals.

All probes and/or sensors should be maintained in accordance with the instruction manual. Cleanliness of these items is fundamental to the correct operation of the system as a whole. If maintained properly, probes and/or sensors should continue to operate effectively for extended periods of time.

Should probes or any other component require replacement, DAN is able to provide parts, usually ex stock. Components should only be replaced with those supplied by DAN, as all our replacement parts are calibrated to match the site equipment.

PERFORMANCE CRITERIA:

All DAN systems as described operate utilising the GSM network. As a prerequisite for satisfactory performance it is necessary that the remote monitoring devices are located within an area serviced by that network. Prior to any order being accepted by DAN, a network availability check will be undertaken to confirm coverage. Should a DAN unit supplied against a previous order be moved without a further coverage check for the new location, DAN is unable to accept responsibility for any failure or degradation in service.

WARRANTIES:

The system manufactured by DAN is covered by a warranty of twelve months from the date of purchase.

DAN has also carefully selected suppliers who extend twelve months warranty on their products. Items supplied as part of the system, but procured from others, have express warranties in accordance with the warranties extended by the manufacturer of that component.

Please refer to the attached 'warranty statement' for detailed warranty information.

PRICING:

To cover the cost of supply and ongoing provision of communications and web site maintenance, prices are quoted for:

- Initial equipment purchase
- Information access fee

Unless specifically quoted, installation of equipment on site is not covered by DAN. We are happy to provide an estimate of installation costs, and assist with the arrangement of installation if required.

All prices are quoted in accordance with our "Terms and Conditions of Sale" a copy of which is available for your reference.

DELIVERY:

Normal delivery time is four to six weeks from placement of order.

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