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SCADA Software for Bangkok Flood Control System

The new Flood Management System in Bangkok has yielded zero loss of life and property during the last monsoon season.

The city of Bangkok, Thailand's principle city, has long been known for its susceptibility to flooding. In many parts of the city, large buildings are slowly sinking as the water table progressively rises. Many are unaware that the majority of Bangkok's large area is below sea level, with high points in some regions still being 2-3m below sea level. It is no wonder then that in a tropical climate with a monsoon season lasting for months, that the city is prone to rapid and unexpected flooding. In past monsoon seasons hundreds of people have died as a result of this flooding, with authorities being powerless to control the situation.

Now Australian technology has been harnessed in the form of SCADA software. This incorporates Perth developed software product, MacroView, combined with the power and flexibility of the Motorola MOSCAD range of RTUs and the local knowledge of Bangkok based system integration company TNC Trading. This combination was brought together to develop what is now recognised as one of the most powerful and flexible Flood Management Systems in the world.

Working with the Bangkok Metropolitan Authority (BMA), TNC and Vector International (the Australian developers of the MacroView software) have deployed a system consisting of 52 MOSCAD RTUs monitoring rainfall, water levels, water quality, gateway level and pump status for rivers and open waterways at all 52 operational sites in the city. Information from the MOSCAD system is collected by the software on a regular basis through its polling of the MOSCAD gateway. The intelligence of the RTU has been used to detect rapid changes in water levels and rainfall, automatically triggering a burst of data from the RTU to the MacroView.

The RTUs will also monitor the frequency of the "data burst", so that in periods of heavy rainfall, the RTU will increase the frequency of the "data bursts" thereby ensuring critical information is passed to the software for rapid analysis. As a part of this implementation, Vector's development team added additional functionality to the MacroView/MOSCAD MDLC driver to allow a dual redundant MacroView to communicate with dual redundant MOSCAD MDLC gateways in a crossover pattern, ensuring the system is almost indestructible, whilst at the same

panel designed and commissioned locally, is that unlike traditional systems which generally show simple data, this one is completely driven by the metascript results from the predictive modelling algorithms, making it a truly "intelligent" display mechanism.

The system continues to grow, with phase two of the installation being to increase the number of monitored locations to 120 from the present 52 and to network the MacroView system throughout the BMA offices.



time allowing acceptance of the "data burst" to interrupt regular polling. Predictive modelling algorithms, developed in conjunction with the Bangkok based Asian Institute of Technology, have been implemented through MacroView's powerful metascripting language. The predictive modelling algorithms allow Flood Control Centre operators to rapidly identify areas that are likely to be in danger and to take corrective action through the starting and stopping of pumps and the opening and closing of open waterway gate systems.

All information is updated in real time on a pair of PCs in the Flood Control Centre, as well as on a giant mimic panel overview of the entire city. A feature of the mimic

Thailand continues to look forward in the development and management of its waterways. TNC have commenced similar installations at provincial Sewerage Treatment Plants, with the MacroView being used as a key element in the overall management of water quality. Testimony to the effectiveness of this solution is the zero loss of life and property during the last monsoon season. As a community service, the Flood Control Centre is also able to (on request), close gates on open waterways to intentionally "flood" local paddy fields, a bonus to the local rice growers.