

TELECOMMUNICATIONS & ENERGY

SYSTEMS DEVELOPMENT

COMPANY PROFILE

Telecommunications technology is not only complex, it is also expensive. The equipment used has to perform at the very edge of commercial feasibility and it has to do so consistently for decades. It's no wonder that the operators of high-performance networks want to protect their investments and squeeze the last drop of performance from them before being forced to move to the next quantum leap in technology.

But why develop bespoke systems? After all, the development costs are crippling and if it hasn't already been developed by the "big players", then it's most probably commercially unviable. Well it is - to them - but not to companies that see a need and have the knowhow and agility to respond rapidly. Inala Systems excels in this niche market by providing products not only with home-grown technology and inventiveness but with international appeal and recognition.

For example, each cell in a GSM network is a complex link in a very long communication chain. And the equipment in each cell also forms a chain of complex technologies. From the point of view of the network's users or customers, it's taken for granted that the network will always be fully operational whenever needed - and this is also the wish of service providers because operational networks mean sustained, paying traffic and the retaining of an uncomplaining customer base. That's why it's important to leave as little as possible to chance. Yet there are no "off-the-shelf" solutions for looking after expensive (and numerous) BTS assets and their hybrid energy requirements or for the holistic measurement of BTS performance. Nor was it found necessary to optimise 2.048 Mbps point-to-point dedicated land-line digital circuits – until now.

SAM RMS

Fuel Savings

Mobile Site Asset Management (SAM) and hybrid energy control

Sam Site Asset Management

Base Transceiver Stations are of strategic importance to the entire economies of countries and their dependability is crucial to the operation of most businesses – especially those that matter. But there's something about BTSs that is unknown by most of those who depend on them (but not by their operators): They are composed of costly, complex hybrid systems – and they are very numerous indeed. For example, South Africa's leading mobile network provider has nearly 8000 base stations in this region alone. This means that bad system management at one can be replicated thousands of times nationally to the detriment of the bottom line of their operators and network users alike.

Good BTS asset management results in improved service availability and significantly reduced operating costs through decreased energy consumption – after all, 80% of energy in a mobile network is used by the base stations and mainly because of this, there are currently, over 18 000 SAM systems being used by 18 network operators in 30 countries including Africa, Central America and the West Indies.

Hundreds of new BTSs are being installed every year to cope with increasing traffic. The traffic density for the same network provider increased by nearly 320% between 2008 and 2010 while the company cut its energy consumption by 57% through the effective management of its resources and the implementation of initiatives such as SAM.

Looking after BTS assets

SAM is a highly cost-effective cellular BTS asset management system designed to help customers maximise revenue from their network assets. Real-time alarm events help them rectify malfunctions before they become service-affecting and alarm status reporting allows them to respond to emergencies as they occur.

In a nutshell, the SAM system achieves OPEX savings by automatically taking control of generator and commercial utility grid supply in order to reduce fuel usage and power costs. This is done by using the backup batteries until such a point where their threshold limits are reached and then switching back to a power supply source. This is known as Effective Power Conservation Control or Hybrid Energy Control Complex BTS

When we say a "suitable working environment" we mean a secure, temperature-controlled location with an uninterrupted supply of clean power. SAM's job is to help ensure that this is a reality rather than a specification. Air conditioners, for example, are there to maintain an ideal working temperature but if they fail, they can do more harm than good. The same holds true for utility grid power and standby generators. They all exist to provide a working infrastructure – until they fail. Last but not least is the question of responsibility and responsiveness. Given that every key aspect of every BTS will be monitored and reported on, who will be responsible for actually doing something about the thousands of "alarm" conditions that can (and will) arise from normal operation? And then there's the aspect of perimeter and shelter security.

What's needed is an intelligent approach to BTS alarm and equipment status monitoring that takes into account the key factors that contribute to an effective BTS supportive infrastructure and that can do something about rectifying problems without recourse to human intervention until absolutely necessary. In this way, problems can be addressed timeously and without imposing an unrealistic workload on human supervisors. Looking after BTS assets properly results in some important benefits:

Improved revenue

- Maximised income from sustained traffic density
- Satisfied and therefore retained customer base through reduced network downtime
- Better competitive position and improved confidence in selling of services

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Reduced maintenance costs

- The more routine the maintenance, the more cost-effective it becomes.
- Early detection of malfunctions contributes to controlled rather than emergency situations
- Early detection of performance trends provides for the addressing of problems before they become service-affecting.

Improved asset management

- Better use of costly BTS assets (high return to expenditure ratio)
- Performance tracking assists with equipment screening and selection
- Reduced number of weak links in the service delivery chain

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B-MON

VSRW MONITOR

B-MON Bay level auto-calibrator and VSWR monitor for 900 MHz and 1800 MHz systems

While manufacturers make every effort to improve the reliability of BTS equipment, effective monitoring is the only way of minimising malfunctions. And the best place to monitor the overall performance of a BTS is at its input and at its output. That way, operators can be sure to detect trends so that they can do something about them pre-emptively rather than reactively. The B-MON range of units is designed to help them do just that.

B-MON is a multi-port 900/1800MHz Tx and Rx VSWR monitor and BTS calibrator designed to monitor the complete cellular feeder and antenna system in order to maximise income through sustained traffic density. It is installed in the Tx and Rx RF cabling between the BTS and the antenna. B-MON continuously measures transmission power and return loss while providing calibration signals to the BTS and providing important operational and business benefits:

Operational benefits

- **Rapid BTS calibration at any time:** Because no disconnection/reconnection is necessary and also because no external test equipment is required, a BTS can be calibrated in minutes rather than hours. This minimises non-revenue-making off-air time as well as client dissatisfaction.
- **No sharing of test equipment resources:** Since each BTS has its own B-MON permanent test and calibration facility, there's no need to source expensive test equipment that may be in use elsewhere - especially at critical times.
- **No physical damage to connections:** Apart from being expensive to replace, microwave connectors don't take kindly to being repeatedly connected and disconnected. The permanent nature of B-MON's installation ensures that this won't happen for calibration purposes and that measurement accuracy will be maintained.
- **No opportunity for human error:** Since no connections are changed, there's no risk of their being re-connected wrongly with the possibility of causing expensive damage to the BTS.

All this contributes to a far more efficient, effective and low-cost network maintenance scenario than would otherwise be possible.

Business benefits

Improved revenue

- Maximised income from sustained traffic density
- Satisfied and therefore retained customer base through reduced network downtime
- Better competitive position and improved confidence in selling of services

Reduced maintenance costs

- The more routine the maintenance, the more cost-effective it becomes

GROOMING MULTIPLEXER

E1 Equipment Performance optimisation and timeslot grooming

The business of telecommunications service provision is becoming increasingly competitive and complex for telephone network operators. To be profitable, they need to have a finger on the pulse of their networks in order to maximise their efficiency through the early detection of malfunctions or performance degradations.

These networks aren't buried somewhere in a machine shop where their failure would go unnoticed by customers. It's right out there for the world to see - and to use. These networks ARE the business and the health of both is directly related to satisfying customer needs.

The E1 Grooming Multiplexer has been designed to provide cost-effective utilisation of 2.048 Mbps point-to-point dedicated digital circuits (E1) provided by telephone companies. This is done through the mapping of various timeslots from remote Base Stations (BTS) to dedicated E1 circuits at the Mobile Switching Centre (MSC). The result is fewer, but totally utilised and fully managed, E1 circuits between the MSC and BSC. The E1 Grooming Multiplexer will contribute to your business health in the following ways:

Improved revenue

- **Maximised income from sustained traffic density**: Inoperative links are simply an expensive overhead.
- **Satisfied and therefore retained customer base through reduced network downtime**: This is especially relevant in the case of hard-earned, high-volume clients such as banks and corporates who insist on guaranteed up-time and rapid rectification of errors.
- **Better competitive position**: Improved confidence in selling of services

Reduced maintenance costs

Rigorous monitoring and the early detection of trends contribute to significantly reduced operating costs:

- **Standard operating procedure:** The more routine the maintenance, the more cost-effective it becomes
- **Proactive rather than reactive maintenance**: Early detection of malfunctions contributes to controlled rather than emergency situations and provides for the addressing of problems before they become service-affecting.
- **Pinpointing of exact failure point:** The rapid and exact location of network failures drastically reduces trouble-shooting times and costs.

Improved asset management

- **Cost-effective care of costly transmission assets:** This solution represents a high return to expenditure ratio when considering the cost of the equipment in its care.
- **Improved procurement:** Performance tracking assists with equipment screening and selection for procurement purposes.
- **Improving the odds**: By helping to pinpoint the source of problems, the E1 Grooming Multiplexer also helps to reduce the number of weak links in the service delivery chain