

# ARTIQ<sup>COOL</sup> Remote monitoring of cooled containers

- with Local Radio and GPRS



## For off-site storage facilities

The ARTIQ<sup>COOL</sup> Remote Monitoring is a system that brings long distance control of your reefer containers. Through a combination of local radio communication and GPRS communication the ARTIQ<sup>COOL</sup> Remote Monitoring gives an efficient security and environmental control of off-site storage facilities.

The ARTIQ<sup>COOL</sup> is a tool to improve your business efficiency:

- Enhance quality assurance in off-site storage facilities
- Supervise environmental control in cooled containers
- Act urgently on needed changes in set points
- Remote diagnosis of reefer machinery in enabling fast and efficient repair in case of fault.



**The ARTIQ<sup>COOL</sup> Online System is a product to be used for remote control, monitoring and surveillance of sensitive goods in refrigerated containers. The system is prepared to monitor and store environmental data, position data as well as alarms and other important events. It is also easily customized on customers' request.**

By using the system you may improve the quality in your off-site storage facilities and customer service. It gives possibilities to increase your efficiency and will also give the personnel a tool for safer and more efficient management of container control.

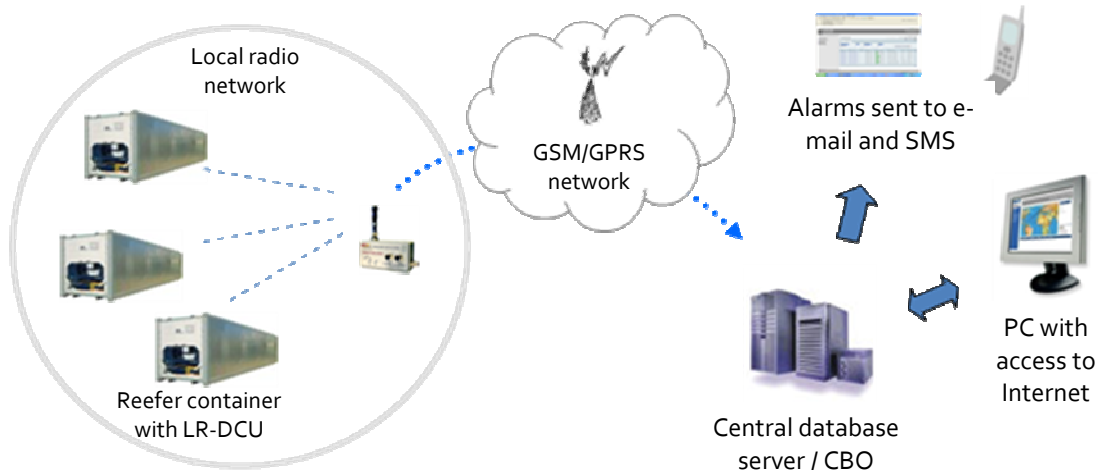
The system also improves your possibility to track your cargo and to implement security solutions in the containers.

Information of current and historical status is presented in a number of user-friendly web reports and is also easily exported to Excel for further analysis.

Since the Online System is web based, all information is easily accessed from any Internet connected computer with a web browser installed. By secure access and user right controls the system prevents intrusions and usage by non-authorized users.

Alarms and reports are sent as SMS or E-mail reports.

Business information may also be exchanged by direct data exchange with existing systems such as ERP systems.



The ARTIQ<sup>COOL</sup> remote monitoring system for reefer containers consists of the following subparts:



**Reefer Data Communication unit (LR-DCU)** – One LR-DCU is installed in each reefer container. The unit fits into a dedicated slot in the Carrier container (Microlink II and III) and collects data like supply temperature, return temperature and set points. In addition, the LR-DCU can be configured to receive information from external sensors (temperature, O<sup>2</sup>, CO<sup>2</sup>, relative humidity, door alarms, etc).

The DCU contains battery back-up enabling power loss detection and to collect and transmit data even after the power loss.

**Radio Master** – The Radio Master collects measurement data from all containers/LR-DCUs and forwards the information to the back office through the GSM network. In addition, the Radio Master contains a GPS module that detects the geographical position of the storage site. The positioning data is forwarded to the central back office system together with the measurement data.

**Communication Infrastructure – local radio network** The local radio network is based on the license free ISM band 433MHz. The radio network can cover a range of up to 2 kilometres, and is therefore well suited to cover an off-site storage area with several containers. One of the advantages of local radio network is that there is no associated traffic cost. By grouping all the containers together in a local radio network, the complete off-site storage area can be connected to the back office system through one single GSM subscription and SIM card (installed in the Radio Master).

**Communication Infrastructure – GPRS** The communication from the radio master to the central back office system is established through a GSM/GPRS, modem inside the Radio Master. The measurement data is sent on regular intervals (configurable).



**Back office system with data warehousing** – The ARTIQ<sup>COOL</sup> Online System is the systems data centre. It consists of a database with data warehousing functionality, communication gateway solutions, data processing and business logic parts as well as the software for user interfaces and data exchange with other systems.

Performance management:

- Container overview in table
- Container status in graphs
- Communication status
- Map presentation and tracking
- Alarm overview and details
- Administration

Alarm management:

- Temperature out of range
- Humidity out of range
- Door open
- DCU power loss
- Configuration of alarm threshold values
- Alarm log
- Forwarding of alarms as e-mails and SMS

Access management:

- Through any Internet browser
- Requires authorized id and password

Administration:

- Define users and user profiles
- Network administration
- Event log

**Data access** – The user has access to all the functionality provided by the back office through any PC with Internet connection, provided the user has an authorised access id and password.