

# Etihad Rail: National Railway Network, *United Arab Emirates*



## At a Glance

This case study details the ongoing Etihad Rail National Railway Network Project in the United Arab Emirates (U.A.E.) requiring Intelligent Fire Protection. Mircom's FleX-Net and Open Graphic Navigator (OpenGN) have been installed throughout phase one and will continue to be installed in upcoming phases as the construction progresses from Abu Dhabi through to Kuwait, Saudi Arabia, the rest of the U.A.E. and Oman. Mircom is very excited to be playing a role in the expansion of trade and transportation networks throughout the U.A.E.



## Project Background

The Etihad Rail National Railway Network is being built in phases to link the principal centres of population and industry of the U.A.E. It will also form a vital part of the planned Gulf Cooperation Council (GCC) Railway Network linking the six countries of the GCC: The Kingdom of Bahrain, The State of Kuwait, Oman, Qatar, The Kingdom of Saudi Arabia and the U.A.E. The 1,200 km line, planned to be completed in 2018, will link major industrial zones, cities and ports in the U.A.E., eventually connecting with the GCC railway.

Built to international standards, Etihad Rail's state-of-the-art network will act as a catalyst for economic growth and sustained social development. The completed railway network is expected to serve about 16 million passengers and 50 million tonnes of freight. The United Arab Emirates were previously only connected by highways.

The Etihad Rail project is one piece of the larger program being coordinated by GCC Rail. Etihad Rail (previously Union Railway Company) was established in June 2009 to develop, build and operate a section of the railway infrastructure. The government of Abu Dhabi owns the Etihad Rail project jointly with federal government of the U.A.E.

Mircom has been tasked with the job of installing Intelligent Fire Protection systems in each of the stations throughout the U.A.E. When phase two begins, Mircom is looking forward to installing its flagship Flex-Net system within each of the stations throughout the GCC countries. As it stands today,

phase one of the Etihad Railway is operational. Services between Habshan and Ruwais have been operational since 2013, with services from Shah to Habshan to follow shortly. In the 14 buildings already constructed and operational, Flex-Net and OpenGN are working smoothly.

## Challenge

Since this was a new construction, the few challenges that arose were addressed immediately. However, Etihad Rail had pre-existing Modbus communication systems set up between the substations all over the country, prior to enlisting Mircom's services. The substation used the Modbus language and coding to operate, while Flex-Net operates using BACnet.

## The Mircom Solution

Mircom tested and provided BACnet to Modbus converters to synchronize with Modbus protocol networks; this helped create a functioning, communicating network. Furthermore, any issues that had the potential to arise in the future have been circumvented, since Mircom is providing comprehensive training for distributors. Training is focused on how to properly use BACnet protocols and OpenGN, to ensure successful management of the technology.

## Benefits and Value Added

Mircom products were chosen over those of the competition because the FleX-Net solution is able to support an Arabic display. FleX-Net also supports a variety of other languages, including standard English and French. Technical considerations, which placed Mircom above the competition, include the fact that Mircom's FleX-Net system uses native BACnet technology and houses a BACnet Ethernet port. This results in standardized coding language. The Ethernet port eliminates the need for additional hardware, as opposed to competitor systems which require external gateway boxes to operate BACnet.

FleX-Net has various component parts including the collateral software package developed by Mircom, called "OpenGN." The software offers a 3-Dimensional view of the premises, which was an advantage for the client. Furthermore, FleX-Net is a fully-integrated UL-listed fire alarm and voice evacuation mass notification system. Our systems are 100% manufactured in Canada and satisfy the UL product safety requirements.

In order to ensure that the system continues to operate without issue, Mircom created an innovative fan/damper display, which is integrated into the system online with the UL's UKL standard. This damper display can act automatically; however, it was installed to allow for manual override control of the smoke control system or the damper and pressurization fans.

For increased security, FleX-Net can support up to three levels of password protection. This unique feature allows the installer to determine what functions are accessible at each password level. If a mistake occurs during programming or during new configuration set-up, FleX-Net's "hot swap" support allows the user to immediately return to a stored version of the previous configuration.

It is crucial for our client that security is constantly in operation. The FleX-Net system is a perfect fit for the product requirements, since FleX-Net panels remain online even while loading new configurations. This means that the buildings remain protected even during periods when changes are being implemented. In summary, Mircom products were chosen for their high level of sophistication, control, and customization, which set them apart from the competition.

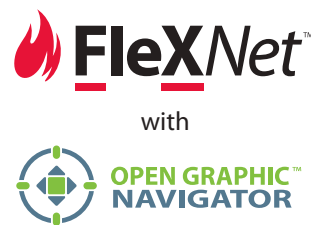
## The System

The FleX-Net base panel consists of one intelligent loop controller capable of supporting 99 Analog sensors and 99 addressable Modules which can be wired in Class A (style 6 or 7) or Class B (Style 4). The system can be expanded through the use of additional analog Loop Controller Modules.

The system is equipped with a back-lit alphanumeric LCD display and utilizes a simple Menu system, complete with directional keypad, common control switches and LED's, Alarm Queue switches, and two configurable input switches.

Mircom's FleX-Net is a very flexible system which supports both internal and external annunciation modules. The internal annunciation modules consist of the RAX-programmable zone LED annunciator, the IPS-2424DS programmable input switches module, the FDX-008 Fan Damper Module and the AGD-048 Adder Graphic Module.

All input circuits can be configured for non-verified alarm, verified alarm, water-flow, latching/non-latching supervisory, monitor, trouble only, or remote switch inputs. FleX-Net supports the UDACT-300A Digital Communicator Module and the PR-300 Polarity Reversal/City Tie Module. FleX-Net also supports an RS-485 interface to the QX-5000 Emergency Zoned Audio System.





## System Summary

- FX-2003-12NDS/ UB-1024DS
- ALCN-792M/ ALCN-792D/ FOM-2000-SP/  
UDACT-300A/ RAX-1048TZ/ IPS-2424/  
MGD-32/ AGD-048
- INX-10A/ OpenGN/ MGC-LIC-BACNET
- MIX-2000 Series field devices
- MIX-M500 Series field devices
- MS-710ADU



## Installation and Team

The installation of the project began in 2012 and is scheduled to continue until 2018, until all GCC countries are protected. The success of this contract so far is a result of the cooperation between Mircom and Concorde Trading Company, a part of Concorde-Corodex Group. The Engineered Solutions Distributor (ESD) team is composed of 10 engineers and 20 technicians; there is also installation and technical support assistance from the Mircom Global Head Office. Because of this support and expertise, to date, there have been no significant issues or delays during installation.

## Conclusion

Mircom's vision is to deliver solutions that make buildings worldwide safer, smarter, and more livable. To date, the Etihad Railway project has been an immense success. Mircom FleX-Net systems have been installed throughout phase one and will continue to be installed in upcoming phases as the construction progresses from Abu Dhabi through to Kuwait, Saudi Arabia, and the rest of the U.A.E. and Oman. We look forward to continuing to play a leading role in the expansion of trade and transportation networks throughout the Middle East and in other parts of the world.

### About Mircom

Founded in 1991, Mircom is a global designer, manufacturer and distributor of Intelligent Building Solutions. Reaching customers in over 100 countries worldwide, Mircom's portfolio includes: fire detection & alarm, communications & security, mass notification, nurse call, and building automation & smart technologies. Mircom's vision is to make buildings worldwide safer, smarter, and more livable.



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