

Alert to danger

EYE ON THE CITY

How highly advanced technology enables Dubai Civil Defence officials to respond to an emergency at the click of a mouse

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DUBAI Red alerts blink on some spots over a massive digital map of Dubai. The alerts, monitored by a dozen Dubai Civil Defence (DCD) staff, include a gas panel fault at Dubai Marina, a fire alert each in Karama, Deira and Jebel Ali, and a faulty lift in Deira.

With a few mouse clicks, a 20x2.5-metre screen lists details of each incident, sifted from hundreds of alarms. Within minutes, emergency teams nearest to the spot are sent to check and respond to these alarms.

Welcome to a routine day at the 24x7 Direct Alarm System (DAS) control room, the nerve centre of a multi-million dirham project that tracks fires, gas tanks, lifts and pump sensors in thousands of buildings across Dubai.

"The system allows us to monitor any life and safety alarms round the clock," said Major General Rashid Thani Al Matroushi, DCD director. "Early notification of an emergency allows civil defence to choose suitable equipment for every accident and allows us to respond more effectively."

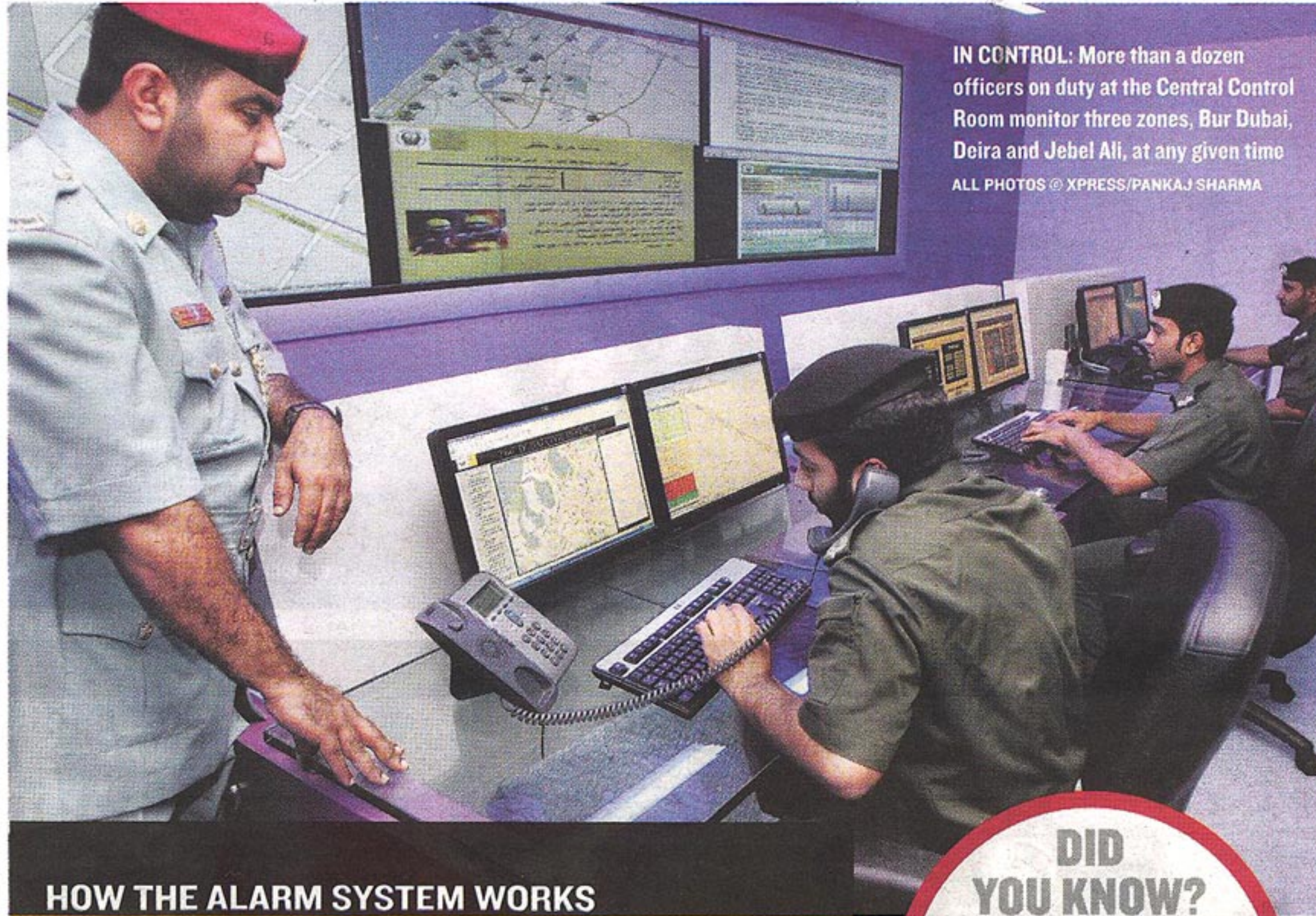
UMBRELLA NETWORK

As an umbrella network, DCD coordinates emergency services, including fire brigade, police and medical service, he said.

While the response time improves with accurate and timely alerts, the rapidly growing city does pose a challenge to 800 firefighters.

In 2009, DCD received around 2,000 reports of fire – an average of four a day and this has continued to rise in line with the city's growth. The number of buildings has risen by 42 per cent between 2000 and 2005 alone – many of them now among the tallest in the world, with Burj Khalifa the tallest.

Though the DAS set-up may look simple on the surface, the spaghetti of codes and procedures that bring it all together is quite complex. Inside the control room, which resembles a space flight centre, more than a dozen officers on duty monitor three



IN CONTROL: More than a dozen officers on duty at the Central Control Room monitor three zones, Bur Dubai, Deira and Jebel Ali, at any given time
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HOW THE ALARM SYSTEM WORKS

What makes it work is a machine-to-machine (M2M) networking linked together by redundant back-up link. It contains a massive database, that allows the DAS to pinpoint the problem, the building location, evacuation plan details, different routes to the building and the nearest fire station. In each building, fire and emergency panels are connected by a controller that sends signals to the DCD (Dubai Civil Defence) central control room through a GPRS (general packet radio service) link, the same link mobile phones or PDAs use to connect

to the internet. A fire, lift, pump or emergency breakdown triggers a critical alarm sent to the command control centre automatically. Staff at the control room then pull up at least five telephone numbers of people (usually security) connected to the building. Dubai Civil Defence has published guidelines and specifications about the new system sent out to building owners and designers to integrate buildings with the DAS currently available. In old buildings, a retrofit must be done based on the type of the fire alarm system.



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The room is housed inside the Pacific Control Systems building in Jebel Ali. There are over 13,352 buildings linked to DAS as of end-October 2010.

Since it commenced operations in August 2008, the system has helped prevent dozens of fires from getting worse, said Pradipta Mukherjee, manager for technical services at Pacific

Control Systems. According to him, four people, including a child, trapped in a lift in Deira were rescued after the DAS alerted them. Between 100 and 150 new buildings are coming into the system on a daily basis.

Ebrahim Yahya, a supervisor on duty, explained that when an alarm rings, control room staff pull up a list containing the shortest route to the building, number of levels, emergency

DID YOU KNOW?
BY LAW, EACH OF THE ESTIMATED 60,000 PRIVATE AND GOVERNMENT BUILDINGS IN DUBAI MUST BE CONNECTED TO THE CONTROL ROOM.

entrances and exits, surrounding buildings, hazardous materials inside the building and nearest water supply point. "We call the building owner or security to check the alert. If no one picks up [the phone] within a minute or two, then we call the appropriate response team," he said.

Ebrahim Mohammad Al Haway, Acting Head of Operations Rooms Section at DCD, said alarms sent via the system to civil defence include fire alarms, elevator alarms, emergency alarms, equipment malfunction, power interruption, low water level in reservoirs and water pump malfunction.

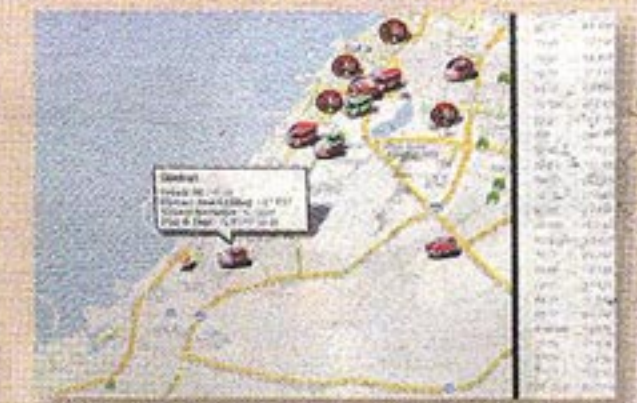
Firefighters and emergency workers in Dubai face enormous challenges, said Al Haway.

During each shift, a dozen staff receive up to 300 alerts at the central control room (up to 600 alerts per day), said Al Haway, who explained that 90 per cent of such alerts are either small incidents or false alarms.

"Sometimes, it's just small children playing with fire or elevator alarms. Our job is to know for sure whether it's real or not."

WHAT IS DAS?

- Direct Alarm System (DAS) monitors buildings in real time for alarms, using machine-to-machine communications linked by wireless networks.
- Installation of DAS in all private and public buildings and establishments in Dubai is required by law.
- The system monitors every building in Dubai for fire, lift, gas leak or emergency alarm using machine-to-machine (M2M) computing technology, a revolutionary wireless system that involves networking physical, chemical, biological and neurological objects, systems and environments.
- Signal from protected premises are transmitted through wireless network. The network consists of hardware servers, backup databases and generators with battery back up at a command and control centre to ensure continuity of service.
- Following verification, alarm signals are delivered to the DCD centre over a dedicated internet link.



BUILDINGS THAT MUST BE CONNECTED TO DAS:

Buildings are classified into five groups based on the possible dangers, nature, size and location. The following types of buildings must be registered:

- Office buildings
- Factories
- Hotels
- Shopping malls
- Hospitals
- Financial buildings
- Warehouses
- Private homes/villas (optional)

COST OF CONNECTING A BUILDING TO DAS

- Dh2,375 for a small building
- Dh9,500 for a medium-sized building
- Dh19,000 for a large building

(VERY LARGE BUILDINGS ARE SURVEYED AND, BASED ON THE COMPLEXITY OF THE DESIGN AND INSTALLATION, THE COST IS DETERMINED)

13,352

BUILDINGS ARE LINKED TO THE 24/7 DIRECT ALARM SYSTEM AS OF OCTOBER