

I.3: Installation, commissioning and testing of synoptic panels of fire detection and alarm system at Indus accelerator complex

The fire detection and alarm system (FDAS) is intended to detect fire at an early stage so that people who are at risk can be made safe either by providing escape, or by extinguishing the fire. The effectiveness of the fire detection and alarm system depends on the stage of fire at which the rescue response starts.

Few years back, the second generation FDAS at the Indus accelerator complex (IAC) was upgraded to the fourth generation. It is necessary that any information about fire and its location must reach concerned persons in minimum time so that they have sufficient time to take necessary action. For this purpose, following devices have been installed in Indus accelerator complex and fire station of RRCAT:

- *Fire Alarm Control Panel (FACP/04 Nos.)*
Locations: Entrance of Indus-1 hall, Indus-2 hall, Users' building, and Indus-2 PCS hall
- *Graphical User Interface of all devices*
Location: Indus Control Room
- *Virtual map representation*
Location: Room No. 13 of Indus-2 complex
- *Repeater panel*
Location: Fire Station, and
- *Synoptic panels (05 Nos.)*
Locations: Various places in Indus complex

The synoptic mimic panels are integral part of FACP for continuous monitoring of the FDAS. They contain a simplified layout in the form of drawing of the buildings, which are to be monitored. The indications on the mimic panel are driven through hard-wired signals from the FACP. The locations of the detectors are pictorially displayed on the front panel, as shown in Figure I.3.1, by means of coloured and super-bright LEDs with a viewing range of about 30 meters. The mimic signage has been installed at convenient locations to make it easier for the staff working in Indus building to observe.

The synoptic panel at Indus-2 security post covers information of the FDAS installed at Indus-2 complex. The entire Indus-2 complex is divided in 34 zones, where various types of devices have been installed. An LED corresponding to one of these zones or more would glow in response to occurrence of fire/smoke in that area. The synoptic panel at Indus-1 security post covers the FDAS installed in entire Indus-1 complex including Indus substation, Indus-2 PCS building and Indus control room. The fire devices of these areas cover 24 zones. The synoptic panel at Indus-2 MPS hall covers the FDAS of MPS hall including all trenches and power supply cabinets, which have been divided into 59 zones.

Each power supply cabinet has a detector and its information is indicated by an individual LED on the map. The synoptic panel at Indus-2 RF hall covers the FDAS of RF hall including RF corridor, rectifier and transformer area, which have been divided into 10 zones.



Fig. I.3.1: Synoptic (mimic) panels installed at various locations of Indus accelerator complex.

The synoptic panel at users building covers FDAS at Indus-2 users building and Indus-2 beamlines. The area was divided into 49 zones (22 in the users building and 27 for beamlines) to cover the response of each detector in case of fire.

In the event of fire, an LED specific to the area where fire is detected will glow on the corresponding mimic panel along with an LED on the Indus-2 mimic panel. For example, if a detector in power supply cabinet number 45 is activated, then the corresponding LEDs on the panel of Indus-2 MPS hall, and also Indus-2 mimic panel will glow. The person who attends the fire incident would first check the LEDs of Indus-2 mimic panel, and then go to the area specific mimic panel to reach to the location of incident. These panels would help reach a person to the spot in minimum time.

All of these synoptic panels were installed in May 2022 and their functionality was tested and verified during commissioning. They also undergo periodic health testing. Since commissioning, these panels have been working satisfactorily in round the clock mode.

Reported by:
Anil Kumar (anilkumar@rrcat.gov.in)