Pulau Muara Besar (PMB) Bridge is monitored by Ecava IGX

How It Started

Pulau Muara Besar (PMB) is a 955 hectare island located in the Brunei Bay, northeast of Brunei. The island, which is located in a strategic area, is currently undergoing major infrastructure development. A cooperation between the Brunei government and China Harbour Engineering Company (CHEC) was formed after CHEC won the US$204 million Pulau Muara Besar Bridge, Road and Utilities project. This government planned to make the island an industrial zone for the oil and gas industry which was scheduled to complete early of 2019. The island is connected to the mainland via bridge with a two-way four-lane highway with a design speed of 100 km/h. The bridge which measures about 2,680 meters long and 23.6 meters wide is Brunei's first cross-sea bridge. The upper structure of the bridge is the largest single box single room box girder structure in Asia, the main bridge is a continuous rigid box girder bridge, and the leading bridge is a section box girder bridge with prefabricated sections and other sections.

Bridge Power Monitoring by Ecava IGX

The main target of this project is to provide a solution to monitor the status of 22 panels located along the bridge that controls the power, lighting and ventilation fans of the bridge.

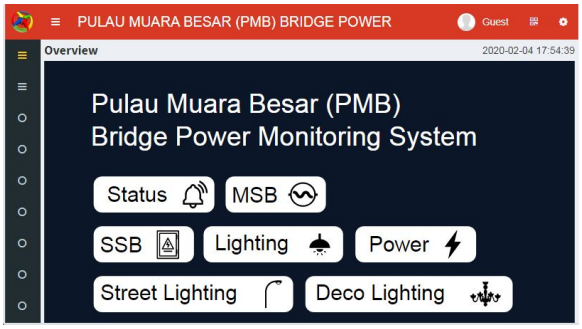
These 22 panels are located in the tunnel of the bridge and are accessible

from both ends of the bridge. Each panel consists of 2 distribution boards; each for power and lighting management and are connected to a PLC. A total of 44 units of PLC was used in this project. The status of all 22 panels can be monitored from the control room located on the island.

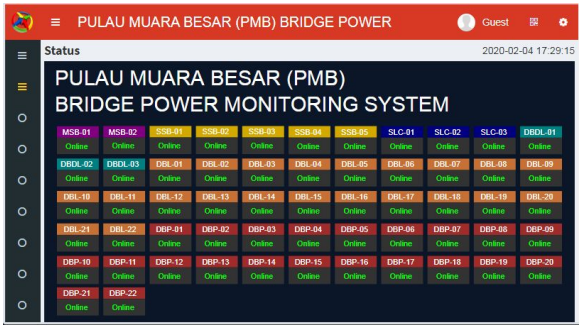
Inside view of the bridge.

Technician troubleshooting a lighting DB panel in the bridge.

The Overview screen is the main mimic screen. Operators can then navigate to any of the available pages by clicking on the icons or use the navigation bar located on the left. By clicking on the icons, it will open their respective mimic screen.

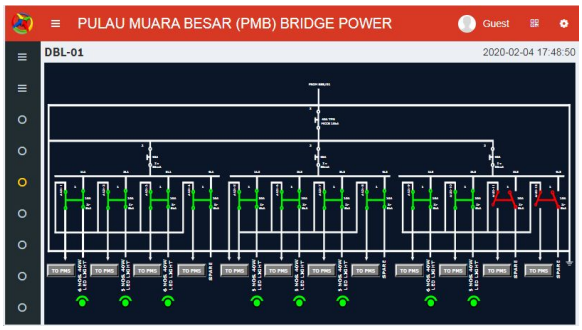


Overview mimic screen.



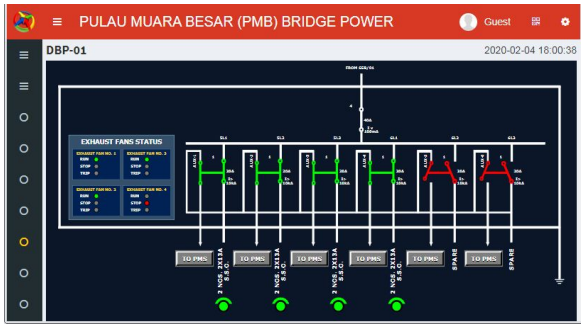
Status mimic screen.

From the Overall Status mimic screen, operators can monitor the status of individual PLCs. Status of each DB will change to “Offline” if any of the PLC is faulty, disconnected or offline. If it shows “Offline”, the operator will inform the maintenance team to perform a check in the bridge.



Mimic screen of a lighting DB.

Besides animated diagrams and mimics, essential data such as PLC online status and alarms are logged to a database. This information is crucial and is logged for future assessment. This information is also being generated as reports.



Mimic screen of a power DB.

Hardware / Software

Server Machine: HP EliteDesk 800 G3 Series Business Desktop
OS: Windows 10 Professional (64 bit)

PLC: Siemens Logo! 8
Protocol: Profinet

SCADA: Ecava IGX
IO Tags: 595 Tags

Database: PostgreSQL

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