

## The Mount Ovit Tunnel, Turkey



Opened in 2018, the Ovit Tunnel in the eastern Black Sea area of Turkey has, for the first time in history, allowed year-round road transport between the ancient regions of Erzurum and Rize. Mitsubishi Electric allows operators to manage every aspect of the tunnel's operations.(BRI) – the modern incarnation of the historic Silk Road connecting China and Eurasia – and so is of great long-term economic significance to Turkey.

### PROJECT LOCATION

Turkey

### CUSTOMER

Directorate of Highways

### APPLICATIONS

Tunnel Management

### PRODUCTS USED

16 x 70HE120

4Diamond Grid DG-X9K7

### INSTALLATION

Gentis Teknoloji A.Ş.

### FURTHER INFORMATION

Mitsubishi Electric Europe B.V.

Nijverheidsweg 23a,

3641RP Mijdrecht

The Netherlands

Tel: +31 (0)297 282461

Fax: +31 (0)297 283936

E. [info@mitsubishielectric.nl](mailto:info@mitsubishielectric.nl)



## BACKGROUND

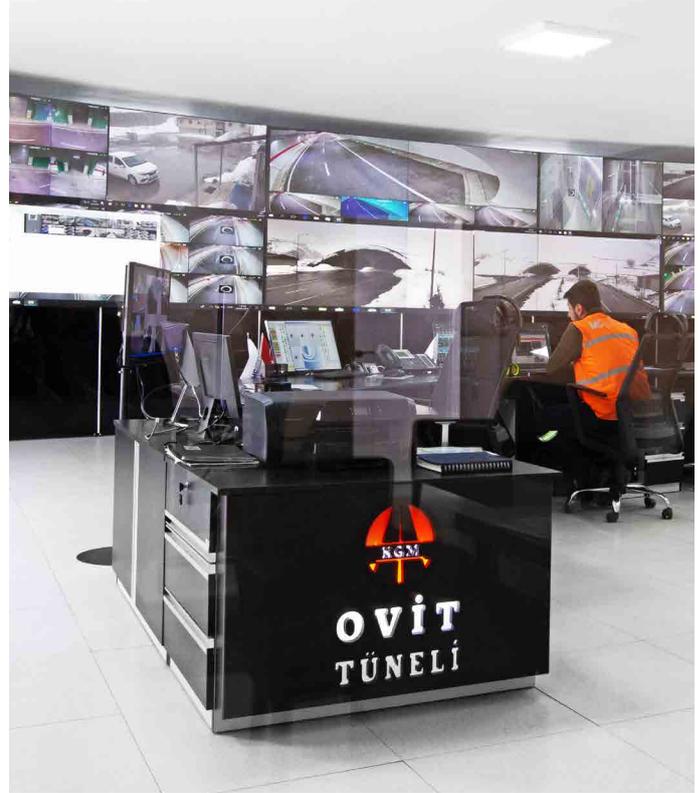
At 14km long the Ovit Tunnel is the longest tunnel in Turkey and the third longest double tube tunnel in the world. First conceived 138 years before, the tunnel bypasses the old Mount Ovit highway between Erzurum and Rize that was often impassable in winter, allowing goods and people to flow freely all year round. Longer term, the tunnel is a key component in the proposed Belt and Road Initiative (BRI) – the modern incarnation of the historic Silk Road connecting China and Eurasia – and so is of great long-term economic significance to Turkey.

## PROBLEM & SOLUTION

The main control room of the Ovit Tunnel provides the essential oversight of the many factors affecting the operations of the tunnel, from weather conditions to air quality and vital statistics such as traffic density and flow speeds. The operation of essential services, such as ventilation, fire alarms and suppression, and driver signage, all need to be closely monitored with performance data instantly available to operations personnel.

The tunnel's infrastructure is comprised of a complex network of sensors, cameras and electro-mechanical devices, such as ventilation controls and driver signage, all linked via a common SCADA network, and visualised on a 12.4m by 1.7m Mitsubishi Electric video wall, enabling personnel to monitor every aspect of the tunnel's operations. Advanced technology such as fire sensors, real time video analysis and traffic flow telemetry greatly assist the management of such a long tunnel, but it is the well-informed decision-making abilities of human operators that are the ultimate safety feature. Visualisation enables operators to react swiftly and appropriately to any situation.

Video wall reliability is therefore critical to the safe operation of the tunnel. The ability to operate continuously, 24/7 with no routine maintenance required was a major factor behind the decision to use Mitsubishi Electric 120 Series DLP video wall in the Ovit Tunnel control room. 16 x 70HE120 70" Full HD resolution DLP cubes are installed in a 5 degree arc. The system is rated for 100,000 hours of continuous operation, and its unique self-management features, multi-redundant LED light sources and industrial air-cooled projector technology means it requires no routine maintenance during that period.



### Specifications

<b>Model</b>	VS-70HE120
<b>Technology</b>	LED video wall cube
<b>Overall Size</b>	21 m <sup>2</sup>
<b>No. of Modules</b>	16
<b>Cooling system</b>	Air cooling system with efficient cooling pipe and aluminum plate (No liquid)
<b>Type</b>	DLP™ technology (0.65" DLP™ 1 chip), DarkChip3™, BrilliantColor™
<b>Resolution</b>	Full HD, 1920 x 1080 pixels (per module)
<b>Light Source</b>	Redundant LED (RGB)
<b>Light Source Service Life</b>	≤ 100,000 hrs.
<b>Brightness</b>	580 cd/m <sup>2</sup> bright mode 460 cd/m <sup>2</sup> normal mode 340 cd/m <sup>2</sup> eco mode 140 cd/m <sup>2</sup> advanced eco mode
<b>Contrast Ratio</b>	1500: 1
<b>Power Consumption</b>	80 W in advanced eco mode 95 W in eco mode 131 W in normal mode 172 W in bright mode

DLP™ and Digital Light Processing are trademarks of Texas Instruments.

## INSTALLATION RESULTS

Due to its remote location, high in the foothills of Mt Ovit, access to the site and the sometimes harsh weather conditions made installation of the video wall unusually difficult, and further underlined the need for total reliability. Moreover, the control room's location at over 2,600m above sea level with the resulting 20% reduction in air density, coupled with rapid changes in temperature and humidity, present real challenges for electronic equipment. However the exceptional build quality of Mitsubishi Electric video wall systems enable them to operate completely normally in a wide range of environments – another reason why Mitsubishi products are widely used in remote, mission-critical locations such as oil fields and dispatch centres.

Controlling the video wall is Mitsubishi Electric's 4Diamond Grid DG-X9K7 video wall controller, equipped with a 7th generation Intel® Corei7 processor, 16GB memory, dual 240GB SDD drives and an optional UPS. The 4U chassis has been specially designed to maximise airflow and so is ideal for the reduced air density at high elevations.

The 4 Diamond Grid range of controllers is fully compatible with Mitsubishi Electric's D-Wall and Diamond Grid 10 software. Both applications allow users to quickly and easily place video sources anywhere on the video wall. Common configurations can be saved as layouts for recall at any time and any section of the wall can contain "carousels" of videos playing one after the other at user-definable intervals.

## ECONOMIC IMPACT

President Recep Tayyip Erdoğan made the first complete passage of the Ovit Tunnel in Summer 2018, some six years after he had attended the ground-breaking ceremony at the start of the project. During the opening ceremony, the President highlighted the feat of engineering skill that had finally realised a project that had first been proposed in 1880 during the Ottoman Empire. The project, said the President, echoed the progress being made across the country's economy.

As well as being open all year round, the Ovit Tunnel shortens the length of Rize-Erzurum highway by 50 km. As a result, the historical average of 1135 vehicles transits daily between Iklizdere and Ispir is expected to increase significantly, bringing with it dramatic economic benefits to the region. Rize Chamber of Commerce and Industry (RTSO) Chairman Şaban Aziz Karamehmetoğlu highlighted the positive impact of the Organized Industrial Zone, recently built in the vicinity of the Ovit Tunnel, the Rize-Artvin Airport which is currently under construction and other logistical projects underway that will see the creation of vital strategic transfer hubs in the eastern Black Sea region. As well as significantly enhancing the lives of local people, Karamehmetoğlu also pointed out that the Ovit Tunnel will provide major tourism returns in addition to its contribution to trade in the Black Sea and eastern regions of Turkey.



## **4DIAMOND GRID CONTROLLERS FROM MITSUBISHI ELECTRIC**

The DG range of video wall controllers have been designed for large video wall installations and control rooms, where top performance and solid reliability are paramount. Suitable for operation centres, critical facilities, process control services, traffic management and security applications, the DGX-11 and DG-X9 controllers offer the perfect balance between video capture and image display. Providing seamless compatibility with world-class vision capture, image graphics and ActiveSQX decoding cards. This allows physical and IP video sources to be displayed on medium and large scale video walls. Operators have the freedom to see any source on single screen or multiple screen layouts. Each system DG-X is available with Windows 10 to ensure the highest performance available. The switched fabric technology provides high bandwidth Gen3 PCIe slots. Each slot is capable of delivering high resolution bandwidth from a range of capture cards to multiple outputs.

The DG-X range is highly customisable. Systems contain either a 7th generation Intel® Corei7 up to high performance dual E5 Xeon processor. Systems are available with either 240GB or 480GB SSD drives and up to 128GB of memory. In order to maximise airflow, the 4U chassis has been custom designed to allow more air into the system. This keeps temperatures low and reduces fan noise.



## **DG-X11/DG-X9 Series Video Wall Controller**

Advanced Graphics Display Technology

19" 4U Industrial Server

[Request more information](#)