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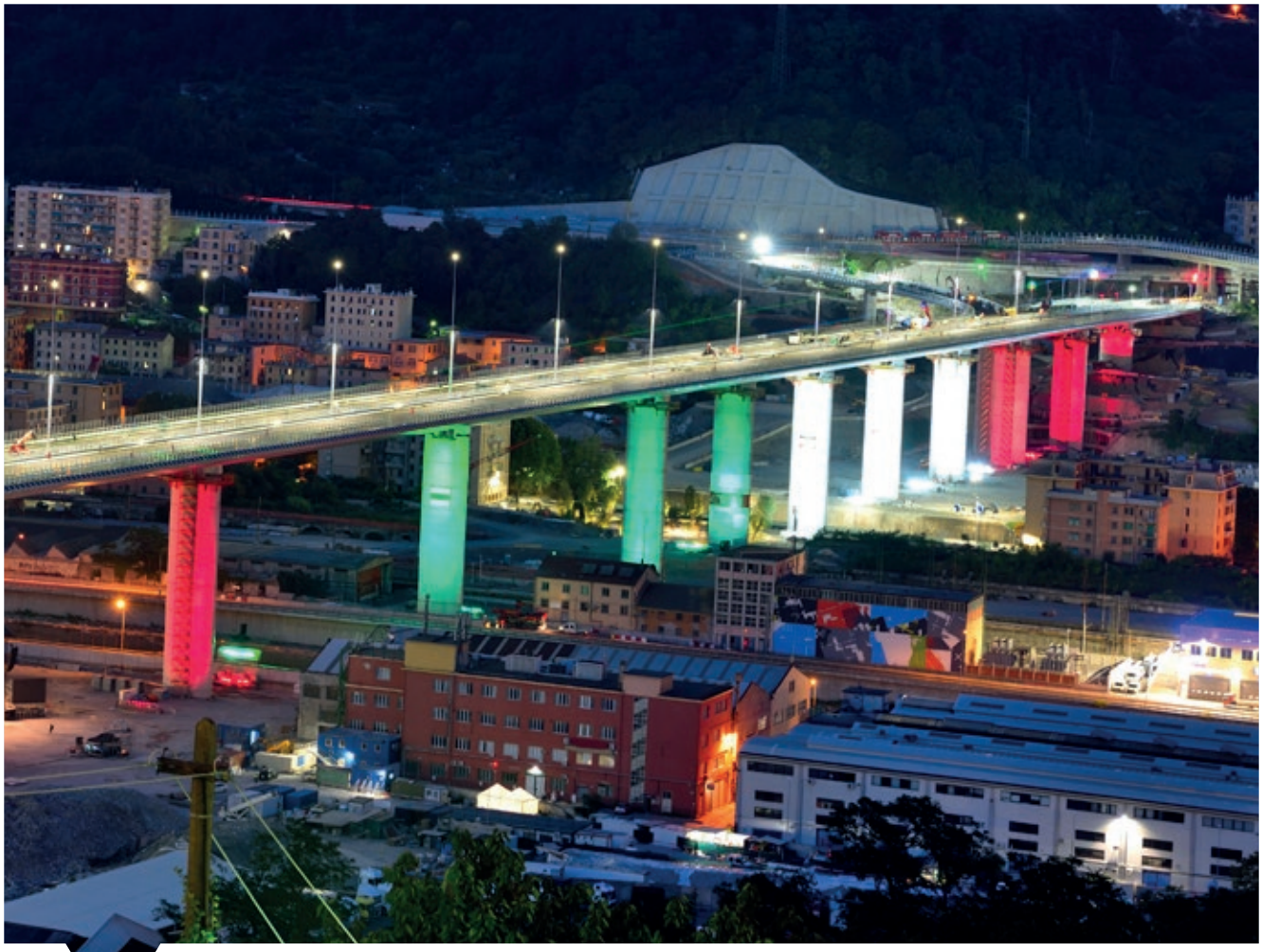


CASE STUDY | TRANSPORT & INFRASTRUCTURE

SAN GIORGIO IN GENOA

Communication and Public Address system for the new San Giorgio viaduct in Genoa (formerly “Morandi”)

COMMEND ITALY

BRIEF PROFILE

The Italcem Group Consortium was born out of the need to propose a complete product to serve the needs of civil and industrial plant engineering, including electro-technical, mechanical, thermal-hydraulic and air-conditioning works. Italcem operates in the following sectors:

- Electrical (high, low and medium voltage)
- Automation, Technical Instrumentation and Operation
- Informatics, Mechanical Engineering
- Thermo-hydraulic, Air conditioning
- Forced ventilation
- Firefighting, Intrusion Protection
- Planning, Construction Supervision

The Italcem Group also provides comprehensive customer support, maintenance planning and scheduling to ensure efficient operation. They also conduct feasibility studies for new plants or modifications of existing ones by upgrading them to advanced technologies. The goal is to improve productivity and ensure savings in terms of energy and management resources.

PROJECT DETAILS

Cliente
Italcem s.r.l. Terni

Technical Data
- 2 × Intercom Server S3 in redundant configuration
- 1 × Intercom Terminal EE980 per operating station
- 1 × Intercom Client Licence with video management (PC SCADA)
- 9 × Vandal-resistant Intercom Station WS211VI
- 9 × IP Horn Loudspeakers AFLS10HHG

THE CHALLENGE

The motorway viaduct over the Polcevera river in Genoa is an important traffic and transportation junction in Genoa, Liguria and the Italian system, being the final section of the A10 motorway limited, on the east side, by the A7 interchange (called Genova Ovest) and, on the west side, by the mouths of the tunnels leading to the airport junction.

Following the tragic event of the collapse of the "Morandi Bridge" in August 2018, ITALFERR S.p.A. (Gruppo Ferrovie dello Stato Italiane) was entrusted with the executive design of the new "San Giorgio" viaduct – a new infrastructure based on the architectural idea developed by the Renzo Piano Building Workshop.

The viaduct has been equipped with crucial technical equipment in order to enable the sustainability of the construction in terms of energy consumption while ensuring road safety maximum durability of the structures and systems themselves.

Specifically, the emergency communication and public address system had to meet precise technical and functional requirements:

System architecture and features
- IP technology
- Hardware architecture based on redundant servers
- High energy efficiency
- High availability of all relevant functions
- Interface with centralised SCADA system monitoring, including management and diagnostics
- Efficient MS Windows-based audio/video communication client for managing all hands-free communication and announcements

Characteristics of Intercom stations and speakers
- PoE power supply
- Operating temperature: -20°C to +70°C
- Relative humidity: 20 to 95%, non-condensing
- Degree of protection: at least IP65
- High-quality hands-free communication in any situation (including conditions involving high ambient noise levels)
- Internal microphone (also in horn speaker)
- for two-way hands-free communication
- Signal input/output lines on Intercom terminals and speakers

Commend Italia's direct project contact was Gruppo Italcem s.r.l., which was contracted for the technological systems.

THE SOLUTION

Thanks to its comprehensive product portfolio, Commend Italia was able to provide a solution based on standard products. The result meets all the specific requirements, both in terms of function and construction.

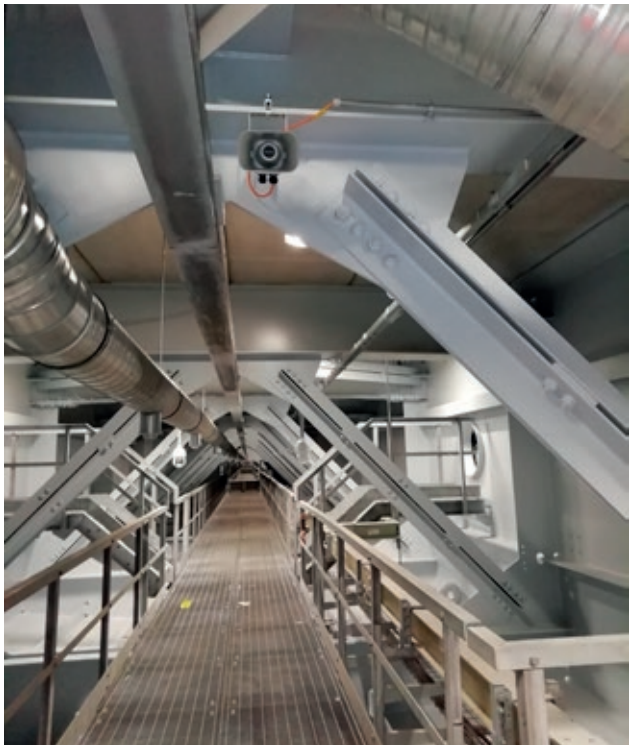
A dedicated **Commend S3 Intercom Server** running a VirtuoSIS - the first Intercom Server Software in the world - was installed in tandem with a second (backup) **S3** to ensure operational continuity in the event of a primary system failure. **S3** is a compact, energy-efficient solution that is flexibly scalable in terms of function and integration and supports the full range of Commend Intercom functions.
The S3 is connected to the SCADA surveillance system. This way, it enables diagnostic system monitoring and the playback of pre-recorded messages over the loudspeakers and IP terminals in case of an alarm.

Moreover, an **Intercom Client** is installed on the SCADA PC. If required, Commend application can turn the Windows-based PC into a fully functional intercom terminal for making and receiving calls. Integration with a video module also allows the operator to view video streams from the on-site cameras.

The main operator station has been equipped with an **EE980 Control Desk** with a large 7-inch display, which provides OpenDuplex® audio in eHD quality for natural hands-free communication at high volume levels. The touch screen display can be customised as needed, e.g. by adding specific function keys or direct call buttons. The display can be used for viewing video streams from the context cameras.

SOS **WS211VI terminals** installed, along the maintenance tunnel under the bridge, enable direct calls from maintenance teams to the operator station and the reception of live and pre-recorded voice announcements. The IK09 and IP66 rated Commend terminals are extremely robust and protected against impact, dust and moisture. They provide excellent 16 kHz speech quality even in noisy environments, thanks to specific features such as background noise suppression and echo cancellation.
With specially developed functions such as DSP, IVC and OpenDuplex®, Commend Intercom station ensure excellent speech intelligibility (STI - Speech Transmission Index 0.96 on a scale of 0.00 to 1.00, as measured in the laboratory).

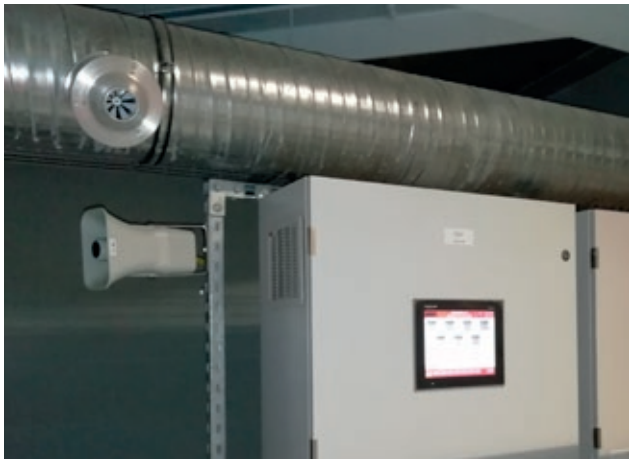
The installed IP **AFLS10HHG** horn loudspeakers are also very robust (IK10 and IP66 rated) and equipped with a microphone. They are also fully functional Intercom terminals for bi-directional hands-free communication. Furthermore, they come equipped with powerful 10W class ‘D’ amplifiers.
Both the SOS terminals and IP horn loudspeakers are equipped with freely programmable I/O ports.

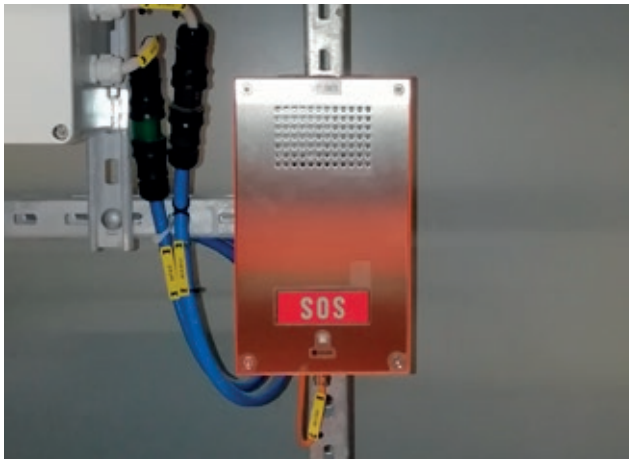


The customer’s demands far exceeded standard requirements. The solution provided by Commend Italia was able to meet them to the customer’s full satisfaction. All the Commend products provided are tested and certified for **extremely high MTBF** values (MTBF stands for Mean Time Between Failures, a reliability parameter for mechanical, electrical and electronic devices).
Some special functions that are unique to Commend systems were particularly appreciated, including:

- Loudspeaker/Microphone Monitoring – ensures operational continuity of the Intercom terminal and reduces the need for technical inspections;
- Monitoring of network connections of individual Intercom stations;
- Audio Monitoring – programmable security function for automating system actions (e.g. triggering an emergency call) based on predefined noise levels;
- Dynamic Background Noise Suppression – eliminates virtually all ambient noise;
- IVC (Intelligent Volume Control) adjusts the volume level to changes in ambient noise

The experience and professionalism of the Commend Italia team is a further success factor. Even the best product in the world is not enough if you don’t have the expertise to configure, manage and make optimum use of it.





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EMANUELE GAGGIA
Technical Manager
Italcem s.r.l. Terni

The new “Genova San Giorgio” Bridge, a viaduct over the Polcevera stream built after the tragic collapse of the Morandi Bridge on 14 August 2018, was a particularly challenging construction, both under technical and emotional aspects. From the outset, it was clear how important the project was, not only because of the emotional impact of the tragedy, or the high-sounding names of the actors involved in its development: certainly the size of the system - around 20 communication terminals - is not particularly noteworthy.

The real challenge was to come up with a communication and PA system that not only lived up to the expectations of the designers, but actually delivered in terms of technical performance.
The solution not only meets all the high quality and performance standards, it went beyond the stringent requirements with innovative, durable, high performing, high-quality products in every single component. It is fast, efficient, functional and flexible. Commend products were the right choice and just what was needed to meet the requirements of a prestigious project like this.

SECURE COMMUNICATION SYSTEMS BY COMMEND

Can you imagine a system that millions of people rely on every day, where every word has to count? This is the world of Commend! Secure, reliable communication is our passion.

As global market leader with over 45 years’ experience in developing voice technology, we have integrated video and interfaces to third-party equipment that complies with international norms and standards. Commend is the natural choice for hands-free voice communication systems all over the world.

One of our employees will be happy to provide further information.

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