

# HUMAN OPERATOR INTERFACE SYSTEMS

*Cavotec wants to contribute to a future world that is cleaner, safer and more efficient by providing innovative connection solutions for ships, aircraft and mobile equipment today.*

*Cavotec manufactures advanced Human Operator Interface (HOI) systems that enable remote controlled, tele-operation and semi-autonomous operation.*



Designed for the harshest of environments, our HOI video systems are used with a broad range of equipment including rock breakers, construction and demolition machines, underground scoops and continuous loaders, terminal cranes and at offshore applications.

## HOI benefits

### Enhanced safety

- Increased safety by removing operators from hazardous areas.
- Improved working environment for operators.
- Additional visual features to reduce risk of incidents.

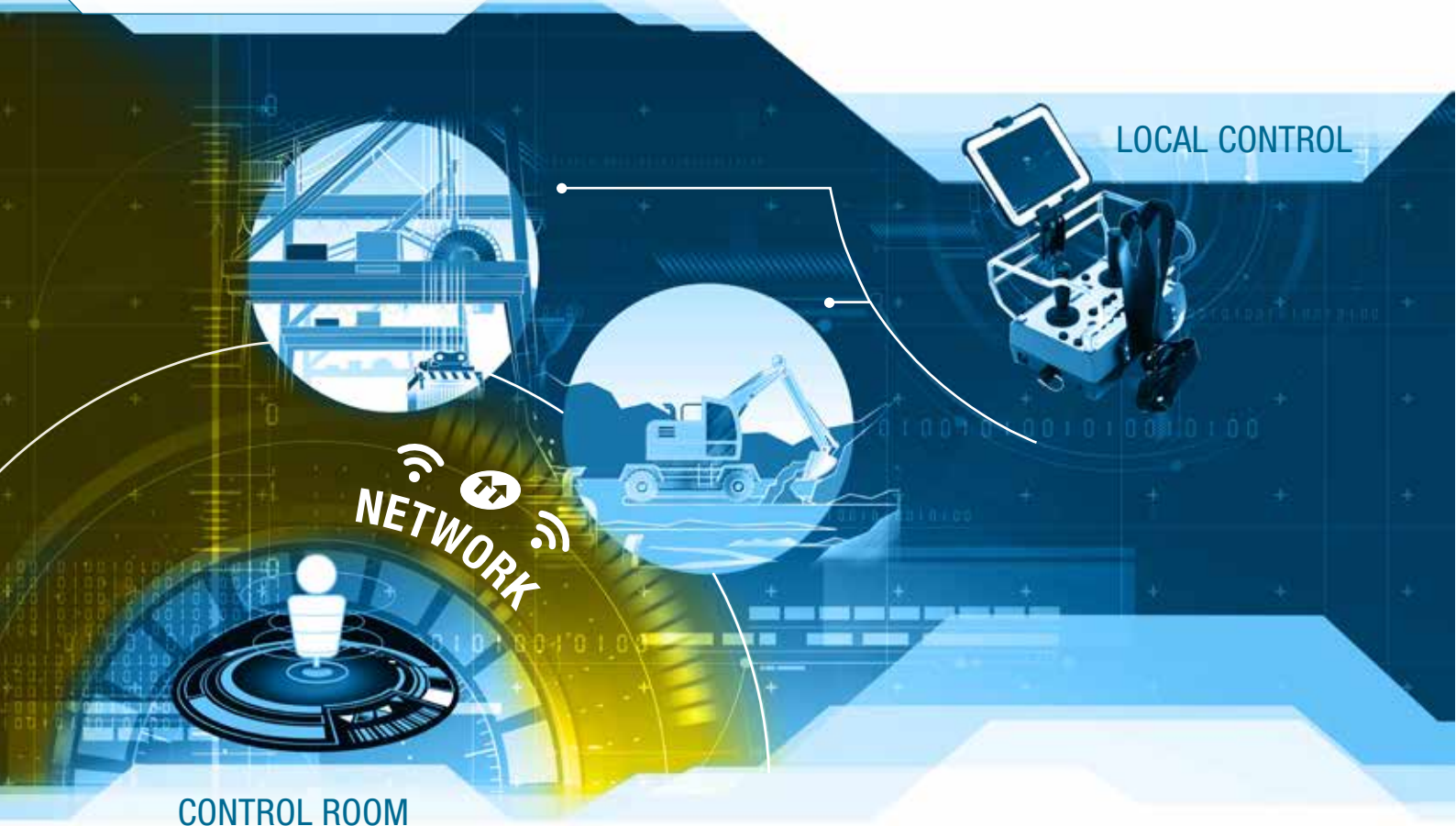
### Improved productivity

- Safer and faster movement of materials.
- Improved operations accuracy to reduce downtime and maintenance.

### Optimised operations

- Real-time process monitoring and data storage on remote displays and in control rooms.
- Visual and audio features supporting operators to react to problems in real time.

## HOI Overview



# HOI Devices

## Radio Remote Control (RRC)

Our RRC systems are available in a wide variety of terminal designs and receiver options, ranging from hand-held solutions, to full belly packs with colour display screens and receivers. These work as stand-alone mini-PLC to fully PLC-integrated solutions. Cavotec RRC comply with all relevant international standards, including IEC 61508, (SIL3) and EN13849, (Cat3 PI d and Ple).



## Fully integrated operating centres

We manufacture several types of operating centres:

- Ergonomic control desk and chair: pre-wired and equipped with monitors.
- Cabins: complete cabin with integration of the control chair, joysticks, RRC, monitors.
- Containerised office: complete container equipped with all control desks and chairs, video and air-conditioning.



## Visualisation devices

Our HOI systems are readily integrated with real-time video and audible feedback through the use of industrial tablets and monitors. These are sealed to IP66, and are fully HD1080P-compliant.



## Cameras

All our cameras are designed for use in industrial environments. They are available in analogue and digital versions, with long service life and high shock and vibration resistance.



## Communication protocols

Our systems include the following communication protocols specifications: Wireless LAN, Wireless Real-Time, Ethernet TCP/IP and fibre optics.



## Controllers

Industrial controllers and joysticks are used in a wide range of applications. From fingertip operation to full control chairs ready for PLC integration, our range of industrial controllers is unrivalled.



# References

## Ports & Maritime

Tenova Takraf, Mexico  
*HOI for bulk shiploader (2016)*

DP world, India and Turkey  
*HOI for automatic connection of ERTG crane (2016)*

Rolls-Royce, Norway  
*HOI for marine crane (2013)*

## Mining

Canadian Mines, Canada  
*HOI for underground loader (2017 and ongoing)*

Epiroc, Sweden  
*HOI for underground loader (2016 and ongoing)*

Sandvik Mining & Construction, Indonesia  
*HOI for rock breaker boom (2012 and ongoing)*

## Industry

Bergmann, Germany  
*HOI for material transporters (2017 and ongoing)*

Gjermundshaug, Norway  
*HOI for excavation and hauling equipment (2009)*

## We are present in:

Australia	Germany	New Zealand	Switzerland
China	Hong Kong	Norway	Turkey
Denmark	India	Singapore	UAE
Finland	Italy	Spain	UK
France	The Netherlands	Sweden	USA



[cavotec.com](http://cavotec.com)

*Disclaimer: specifications are subject to change without notice.*