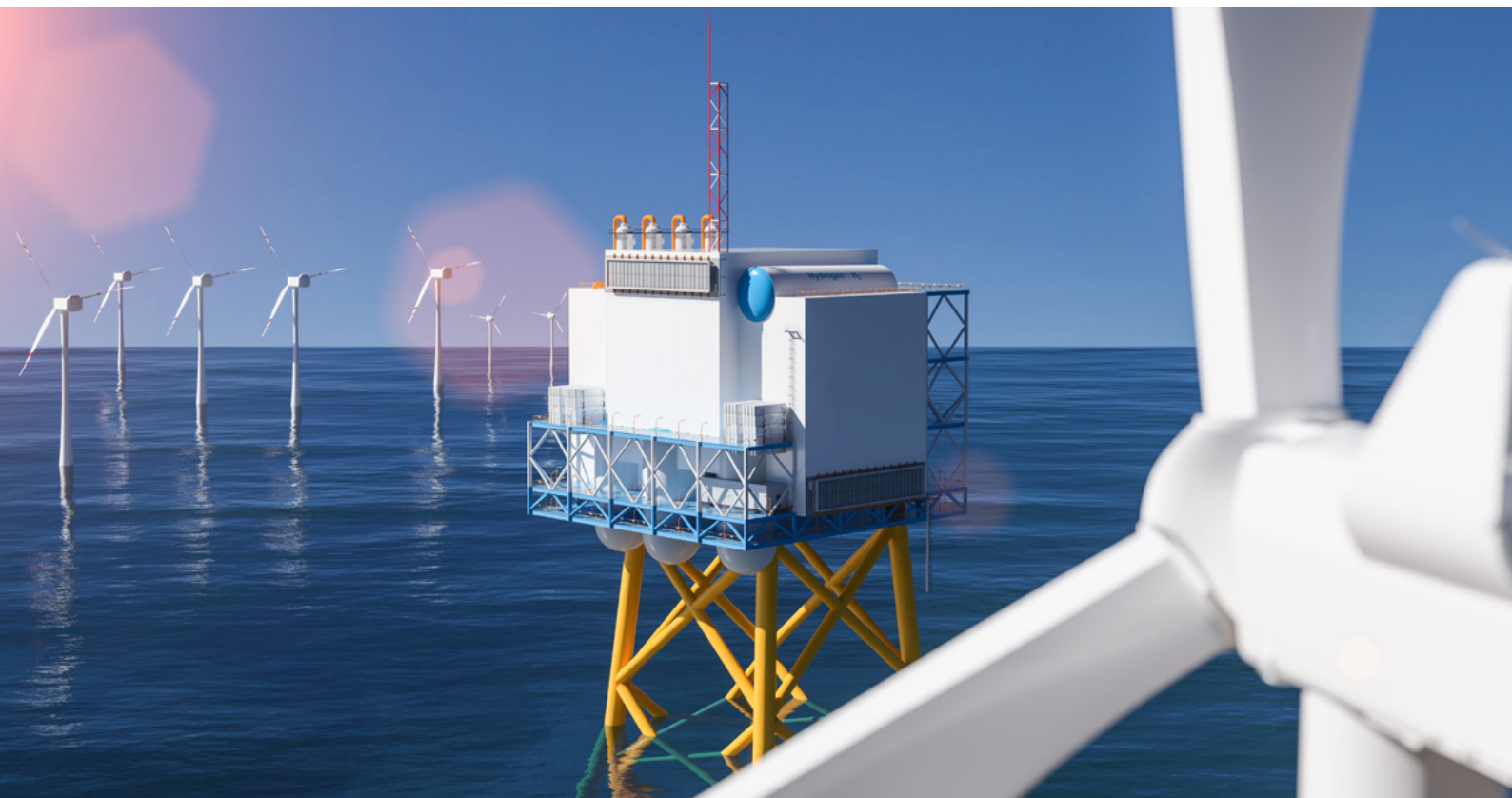


# Future-proofing your turbines and substations




Specialist support for the offshore wind and renewables industry

The power behind **your mission**

Johnson  
Controls 





We are the only supplier of multiple SIL2-compliant end-to-end configurations as standard

Johnson Controls supports a wide variety of projects in the emerging offshore wind industry for clients all over the world. We have a proven track record of industry-leading performance in the offshore oil and gas market. We work with operators, engineering procurement contractors and turbine manufacturers to design and deliver bespoke fire and gas solutions with products and support that include the following:



#### Fire detection and control

- Fire detection systems, such as MZX Technology, that use analogue and digital electronics
- Flame detection
- Oil mist detection
- Very Early Smoke Detection Apparatus (VESDA)
- Programmable Logic Controller (PLC) safety systems
- Safety Integrity Level (SIL) 2 solutions
- Wide-ranging detection solutions for a range of flammable environments
- R4 Fire Detection/Control Panel – SIL2 compliant, PLC based



#### Fire suppression systems

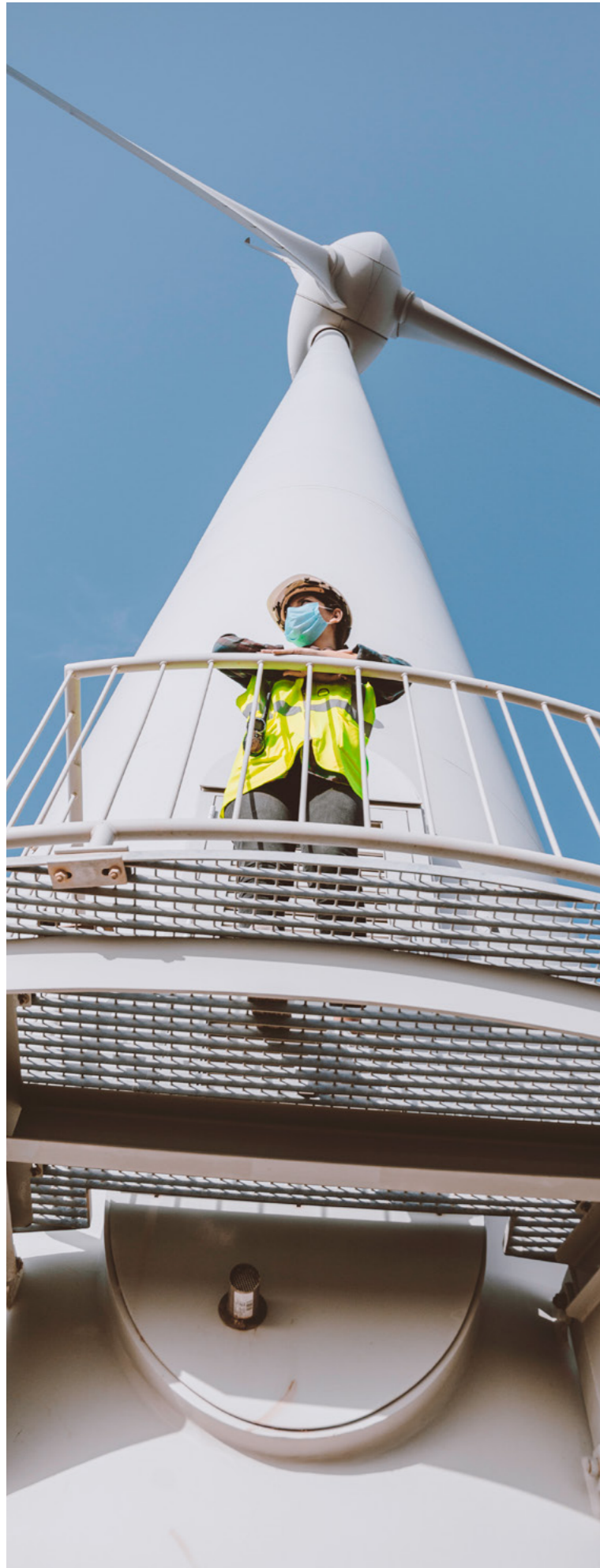
- Gaseous Suppression – INERGEN, Novec1230 (Inert), and CO<sub>2</sub> systems available
- Watermist Fire Fighting Systems – an atomised mist swiftly converts fire to steam, preventing additional oxygen while creating a cooling effect from the evaporation
- Waterspray Fire Fighting System – medium- and high-velocity water systems available
- Foam Fire Fighting System – this includes high- and low-expansion, foam-enhanced sprinklers, and hot foam systems
- Platinum Fire Foam tested and approved in accordance with EN1568 part 3
- Foam testing services
- Compressed Air Foam (CAF) systems provision



#### Portable equipment and services

- Fire extinguisher maintenance
- Cylinder servicing/refurbishment
- Breathing apparatus maintenance/refurbishment
- Portable gas detection repairs/servicing
- Lifejackets
- Survival suits
- Working at height and rescue equipment
- Firefighting clothing
- Portable gas detection
- Breathing apparatus
- Fixed system spares
- Self-retracting lines
- Handheld tools





### Industry leading protection for your turbines - onshore and offshore substations

Fire represents the second-highest risk to wind turbines after blade failure. Familiar ignition sources include lightning strikes, electrical equipment failure or malfunction, hot surfaces such as overheated bearings, gearboxes and mechanical brakes, or hot work maintenance.

The risk of fire in wind turbines is mainly due to highly flammable materials used in construction. Wind turbine nacelles made from fibreglass reinforced plastic (FRP) are flammable and difficult to extinguish because of epoxy resins. Other materials, such as insulation, gearbox oil, transformer oil, hydraulic fluids and other lubricants, add significantly to the fire load. The location of a fire determines its oxygen supply and growth. Losing a turbine results in a severe loss in return on investment for owners from capital replacement costs and service interruptions that remove essential revenue streams.

Offshore substations transformers can also contain substantial amounts of oil. The substations may also have cranes, backup generators, helidecks and helicopter fuel storage to protect from fire. Likewise, onshore substations have transformers and other fire risks that need to be handled.

The causes of substation fires are similar to those of turbines. Yet, if a central substation suffers fire damage, all connected plants are simultaneously disconnected from the power supply system. Thus, the loss of revenue for operators increases directly in proportion to the number of turbines disconnected from the grid.

Limiting fire risks and the losses that can result from fires in both turbines and substations requires:

- Automatic fire detection/alarm systems
- Automatic fire extinguishing systems
- Manual emergency firefighting equipment



### This is where Johnson Controls comes in: to provide the expertise you need to protect your assets

Johnson Controls offers further support in areas that include:

#### Heating, Ventilation and Air Conditioning (HVAC)

- HVAC design consultancy
- Spare parts and consumables
- Installation and commissioning
- Monitoring and testing
- Noise abatement control
- Local exhaust ventilation assessments
- Ductwork cleaning and air quality
- Safe refuge integrity testing
- Equipment overhaul and exchange
- Defect investigation and root cause analysis
- Air quality monitoring
- Breakdown callouts
- F-gas servicing and management
- Door services
- Reinstatement and recommissioning

#### Public Address/General Alarm (PAGA)


A PAGA system is installed to enable efficient transfer of information to persons working or resident on the site. Make use of Adaptable Communications Engines (ACE) systems, which are self-monitoring, highly reliable and flexible.


- Highest intelligibility and clarity of speech and audibility of critical lifesaving alarm tones
- Fully reconfigurable either remotely or locally
- Embedded automatic surveillance routines
- Distributed processing architecture
- Access to the public address system via site telephones
- No acoustic feedback by delaying 'live' broadcasts



# Renewable energy solutions





 Offshore wind turbines


 Green hydrogen and electrolysis


 Battery storage


 HVDC converter stations


 HVAC substations


 LPG and hydrogen storage

 Biomass and gas power generation

 Alternative fuel production

 Blue hydrogen and carbon capture storage (CCS)

 Hydroelectric

 LPG and hydrogen refuelling stations

### About Johnson Controls

At Johnson Controls (NYSE:JCI), we transform the environments where people live, work, learn and play. As the global leader in smart, healthy and sustainable buildings, our mission is to reimagine the performance of buildings to serve people, places and the planet.

Building on a proud history of more than 135 years of innovation, we deliver the blueprint of the future for industries such as healthcare, schools, data centers, airports, stadiums, manufacturing and beyond through OpenBlue, our comprehensive digital offering.

Today, with a global team of 100,000 experts in more than 150 countries, Johnson Controls offers the world's largest portfolio of building technology and software as well as service solutions from some of the most trusted names in the industry.

For more information, contact our dedicated renewables team at [renewables@jci.com](mailto:renewables@jci.com) or visit [www.johnsoncontrols.co.uk](http://www.johnsoncontrols.co.uk). You can also keep up to date with our latest news by following [Johnson Controls Oil, Gas and Marine](#) on [LinkedIn](#).

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