Project Profile

# ‘Driving Fire Safety and Ventilation at Jaguar Land Rover’

**Application:** Smoke & Environmental **Location:** Europe **Sector:** Commercial 52.1948977 - 1.4763805

## BACKGROUND

The Gaydon site, situated in Warwickshire serves as a key engineering hub for Jaguar Land Rover, (JLR) and is the location of the headquarters of Land Rover.

The site is commonly referred to as the Gaydon Triangle, a nod to its previous use as an RAF airfield with intersecting runways that formed a triangle.

The facility is the result of a £600m investment, 5 years of planning, and 3 years of construction that culminated with its opening in 2019.

Today, the four million square metre facility accommodates JLR’s Design, Engineering, and Production Planning teams, as well as test areas where their iconic vehicles undergo rigorous testing.

A crucial aspect of the facility’s design was the establishment of a natural environment that promotes employee health and well-being.

This is where the team from SE Controls played a significant role in enhancing the project, providing expertise in the design, supply, delivery, installation, testing, and commissioning of a comprehensive smoke and natural ventilation control system.

The system was designed around our OS2 SHEVTEC Controller, which was seamlessly integrated with the facility’s Building Management System (BMS).

## AT A GLANCE

### Product Focus

**BACnet**

BACnet facilitates seamless integration of SE Controls products and components in smoke and environmental control systems.

**OS2 SHEVTEC Controller**

The OS2 SHEVTEC Controller is EN12101-10 compliant, delivering 8 A to drive 24 V motorised actuators and catches.

Watch OS2 SHEVTEC overview video

**SECO Ni 24 40 Chain Actuator Single Twin**

SECO Ni 24 40 Single and Twin Actuators are certified and compliant chain actuators, designed for precise operation in smoke and environmental ventilation applications.

**Rain Sensor**

The Rain Sensor is a sophisticated automatic detection system that detects rain or snowfall and promptly alerts the ventilation control system to close vents.

**PIR Sensor**

The PIR sensor uses Passive Infrared (PIR) technology to detect movement within its coverage area.

**Key Switch**

The Key Switch Assembly is specifically designed for use with either a key or paddle switch, primarily in smoke ventilation applications.

Image courtesy of Jaguar Land Rover Press Office

## CHALLENGE

The challenge was to provide, install, and commission the cabling and controls for an automated window control system that would be integrated into the smoke and natural ventilation system in key zones of the building.

The automated vents are controlled by signals from the Building Management System (BMS) for natural ventilation and/or the fire alarm system for smoke ventilation.

## SOLUTION

The design brief focused on incorporating natural ventilation into the building’s design to manage carbon dioxide levels and temperature effectively ensuring a comfortable environment for occupants.

Additionally, all components used in the installation had to match the building’s overall colour scheme which was a specific requirement during the project design process.

The resulting system was based on twenty-eight zones covering four floors and the roof of the building, split into key zones for monitoring purposes.

Each zone is controlled by an OS2 SHEVTEC control panel, which is networked into the site’s BMS via a BACnet Gateway. The system controls energy management and individual device operation. The inclusion of BACnet allows data from SE Controls products to be downloaded and interrogated by the site’s Building Manager.

## SOLUTION

70 Roof Louvres are controlled via multi-zoned OS2 Panels

The multizone smoke and natural ventilation system utilises a range of EN12101-2 compliant chain actuators, specifically the SECO Ni 24 40, with a total of 387 single and twin actuators (212 singles and 175 twins) utilised throughout the installation. These intelligent actuators are controlled by the BMS.

In addition the installation also utilises 70 louvres located on the roof to allow for the exhaust of smoke and hot gases.

While each zone provides natural ventilation via signals from the BMS and, in some cases the wind/rain sensor, other zones form part of the building's smoke ventilation system, operated via signals from the fire alarm system. In the event of a fire alarm activation the vents within the zone open fully to vent smoke out of the building and are then auto-reset.

In instances where an automatic opening vent (AOV) is situated less than 2.5m above floor level and automatically closes in areas accessible to employees or visitors, PIR sensors were installed to comply with health and safety regulations.

The infrared technology within the sensor detects movement within the coverage zone and if triggered, the control system halts the AOV's closing action to prevent injury.

## PRODUCT IMAGES

Click to enlarge


OS2 SHEVTEC Control Panel

SECO Ni 24 20 Actuator
Single and Twin

Rain Sensor

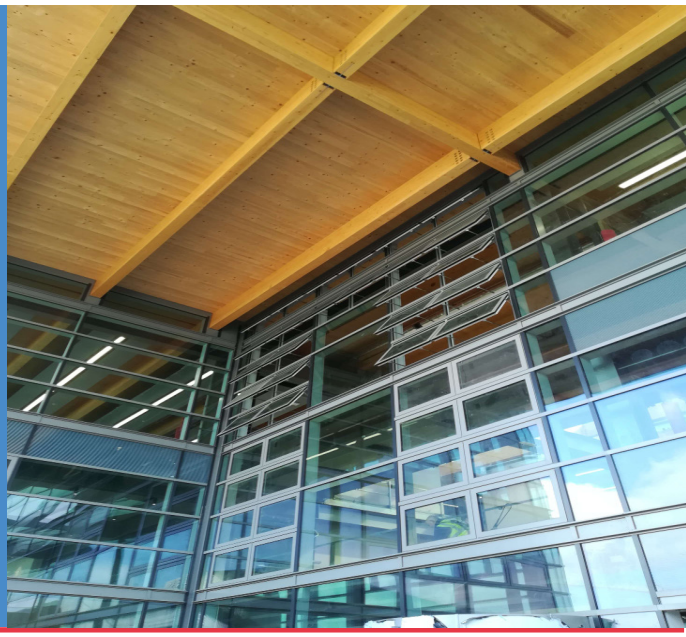
PIR Sensor

## THE RESULT

The establishment of the Product Creation Centre, a multi-million-pound facility, consolidates the key functions involved in the development of JLR's iconic automotive brands.

Housed within this facility is a state-of-the-art smoke and environmental control system, which offers three significant advantages in terms of building management:

- The system ensures a well-ventilated working environment, benefitting both the occupants and the overall structure of the building.
- In the event of a fire outbreak in any of the designated zones this fully compliant system effectively removes smoke from the interior enabling safe evacuation for all occupants.
- By venting the smoke from the building allows emergency services improved access to locate and combat the fire more efficiently.



SE CONTROLS

For over four decades, SE Controls has been a pioneer in the development of innovative control systems that harness sustainable natural elements resulting in safer and healthier indoor environments.

Our product range undergoes rigorous testing in accordance with the relevant EN12101 harmonised suite of standards for smoke control compliance. Furthermore, our designs adhere to the guidelines outlined in the BS7346-8 Code of Practice ensuring comprehensive planning, design, installation, commissioning, and maintenance of Smoke Control Systems.

The Impressive Exterior of the Facility

Image courtesy of Jaguar Land Rover Press Office

## COMMUNICATION

Each project team at SE Controls is contains dedicated administration, coordination, and installation resources.

This approach ensures that our clients receive consistent and high levels of customer service and delivery management throughout the project.

Through a strong collaboration with key contractors, SE Controls successfully fulfilled their contractual obligations with Prater Limited for the supply of actuators and with Crown House Technologies for the installation of cabling - supply, installation, and commissioning of controls.

This close working relationship resulted in a smooth and efficient installation and commissioning process for the smoke and natural ventilation system.

## BENEFITS OF THE SYSTEM

A well-ventilated working environment offers numerous benefits, including:

- **Removal of Impurities:**

  Compared to a closed environment a well-ventilated space has fewer airborne impurities.

- **Improved Room Temperature Management:**

  Ventilation allows for the intake of cold air from the outside, effectively regulating the room temperature.

- **Increased Productivity:**

  Good ventilation creates a comfortable working environment enabling employees to make better decisions that positively impact the business.

- **Healthier Building:**

  Insufficient internal air circulation can lead to moisture build-up and the growth of mold, resulting in the so-called “sick building syndrome.”

  Natural ventilation helps reduce this risk.

- **Green Credentials:**

  Relying on natural elements for ventilation can have a positive impact on both the environment and Building Management budgets.

## THE FINAL WORD

**Billy Baines, Project Manager** at SE Controls said of the project: ‘This was a major turn-key project for SE Controls who were the principle contractor for the smoke and environmental ventilation system.

Working on such a high-value project for a prestigious organisation meant we had to deliver the very best at every stage of the project. This even included ensuring the colour of the actuators matched that of the windows, something working with our partners on the project we were able to achieve.’

He went on to add: ‘Looking back this was the opportunity to not only showcase the quality of our Made In Britain products but also that of our installations, so much so we were awarded the maintenance contract for the installation post-handover.’

Further information on SE Controls products, bespoke solutions, and projects may be found via e-mailing sales@secontrols.com or by calling (0)1543 443060.

SE Controls has NBS clauses and BIM Objects available on NBS Plus, BIM Object, and at http://secontrols.com/BIM