

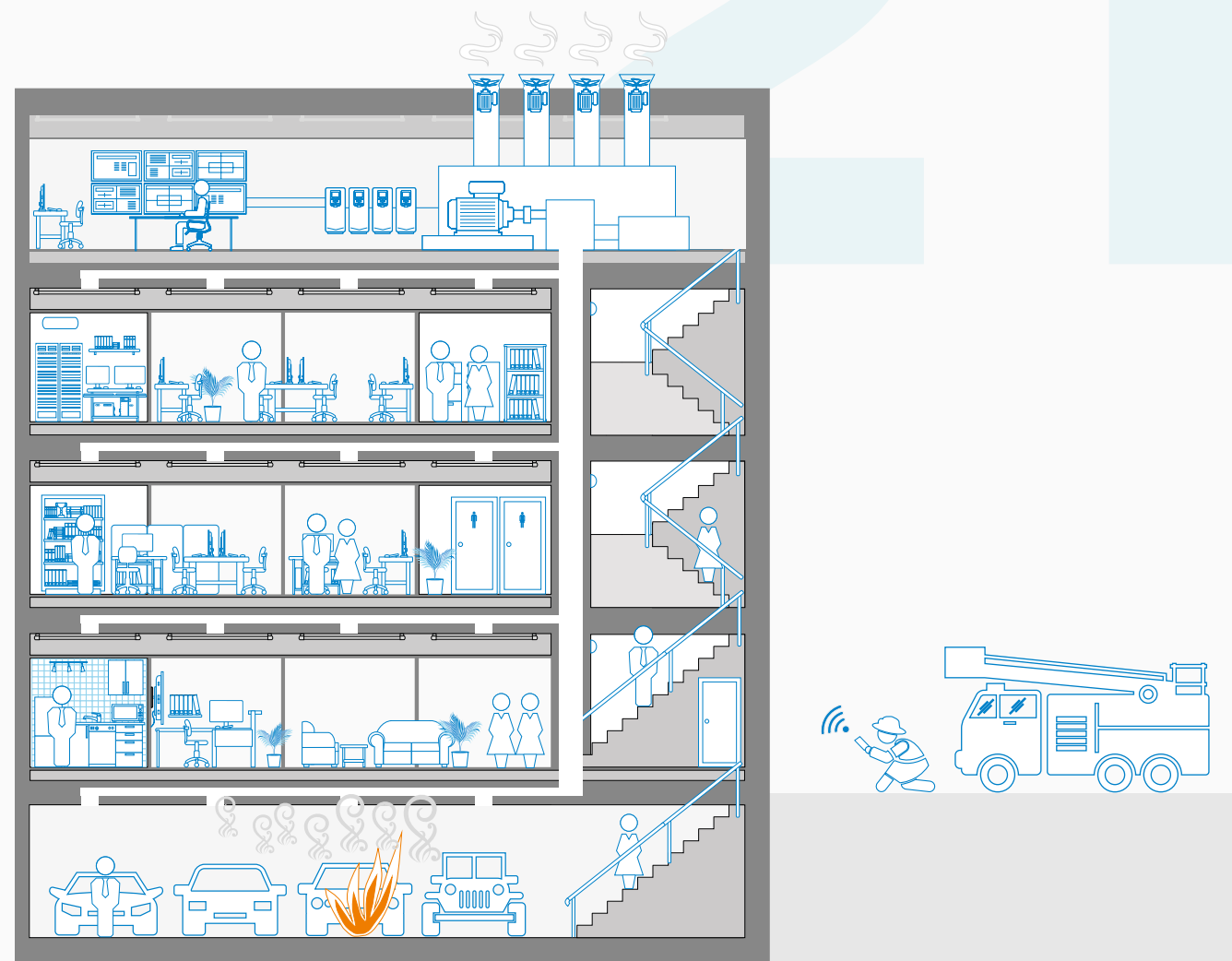
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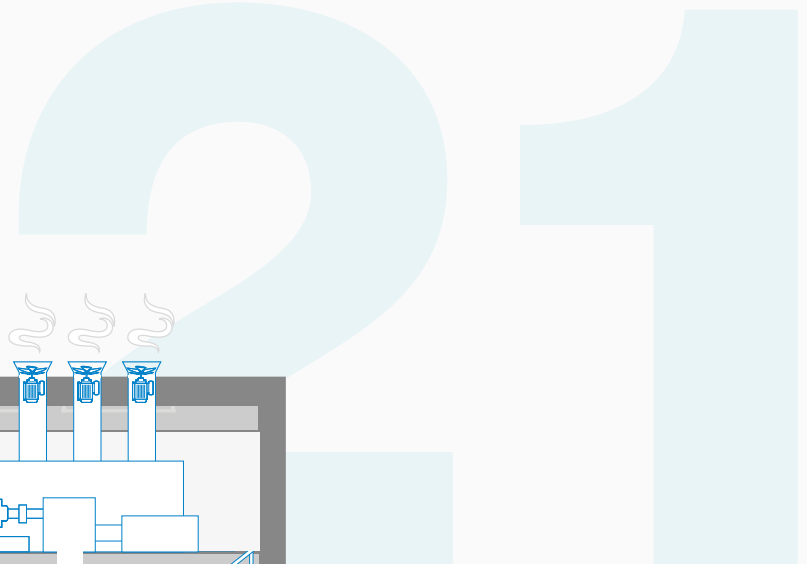
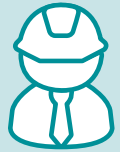
Fireman's override

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Not all variable-speed drives (VSDs) have a “fireman’s override”

Not all variable-speed drives (VSDs) have a “fireman’s override” simply because not all applications require such a feature. A fireman’s override is a switch or input that allows the fire service to take control of those VSDs controlling fans and turn them into smoke extraction units to maintain escape routes. It maintains the VSD’s operational availability whilst it is being used as part of the emergency fire control operations. As such this feature is most commonly found in VSDs designed for commercial or industrial buildings and tunnels.

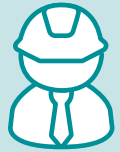




Fire mode

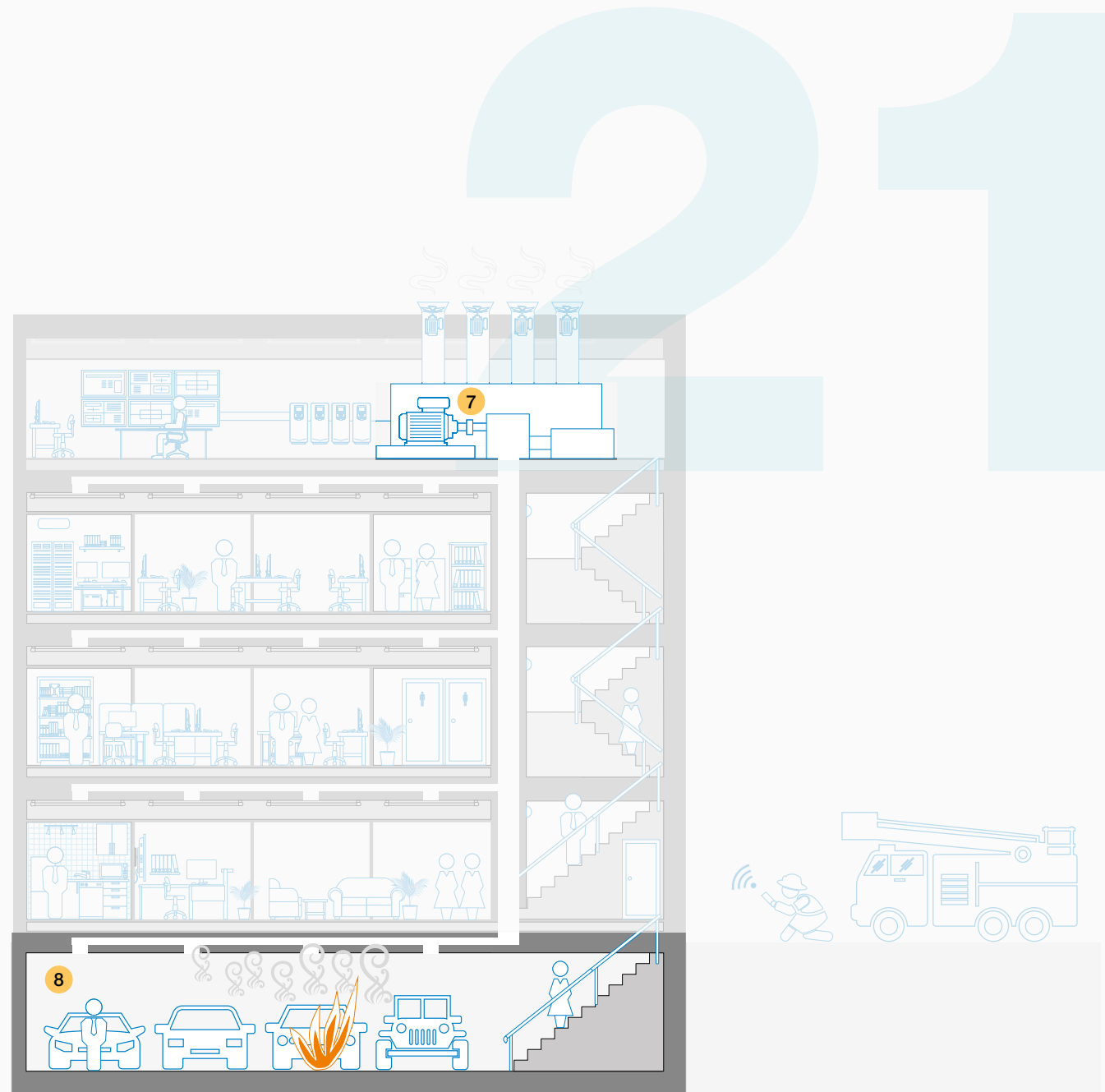
1. In the event of a fire, the mode is triggered with a special key at the fireman's control station.
2. A signal from the building's fire alarm system forces the VSD to enter fire mode and overrides all other inputs.
3. The VSD ignores reset faults and warnings to ensure a "run at all costs" operation and forces the motor to run at the adjustable, pre-set speed or PID controlled speed. Fire mode cannot be triggered by any other signal or manual option.
4. The VSD may have an "off" feature. When in fireman's override mode, this "off" function must be disabled to ensure no accidental stopping can occur.
5. Once the VSD enters fire mode it cannot exit this mode until the fire condition signal is reset.
6. Since the override function is safety related, changing any of the functions should require a password before changes can be made.





Fume extraction

7. VSDs operate the HVAC motors in reverse to remove smoke from the building, assisting with visibility and safety during firefighting.
8. For applications such as underground car parks, the fans providing the fresh air intake are often reversed in the event of a fire to provide smoke extraction.



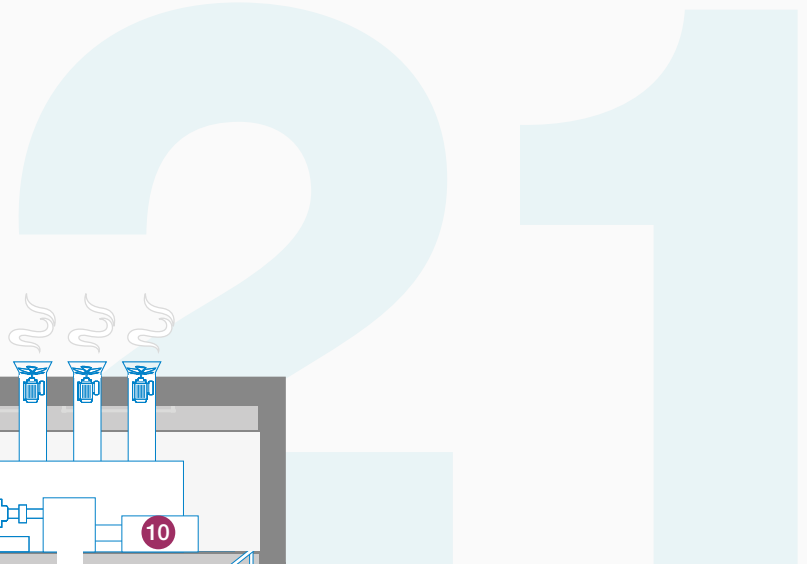
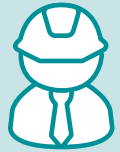
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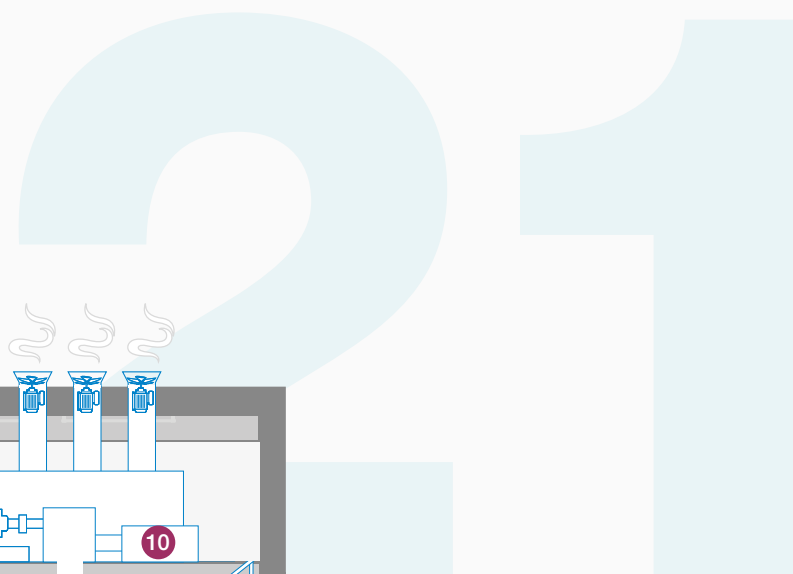
Stairwell pressurisation

- 9. Stairwell pressurisation ensures escape routes are accessible by using VSDs for positive pressure control.
- 10. The VSD's PID control maintains the pressure in a stairwell at constant value, thereby keeping the stairwell positively pressurised to keep smoke and fire out, unlike an uncontrolled direct-on-line (DOL) motor which runs the motors at full speed without any control.
- 11. If there is a sudden pressure change caused by doors opening or windows blowing out, the PID controller detects such changes and alters the motors speed to keep the correct pressure. DOL cannot do this as it is ON or OFF.
- 12. Careful use of speed control and the ability to reverse motors, or even run them at higher than synchronous speeds, makes VSDs ideal for inclusion in escape route management.
- 13. Being able to run at all speeds and in all directions means correct pressures can be controlled, in an ever changing building.



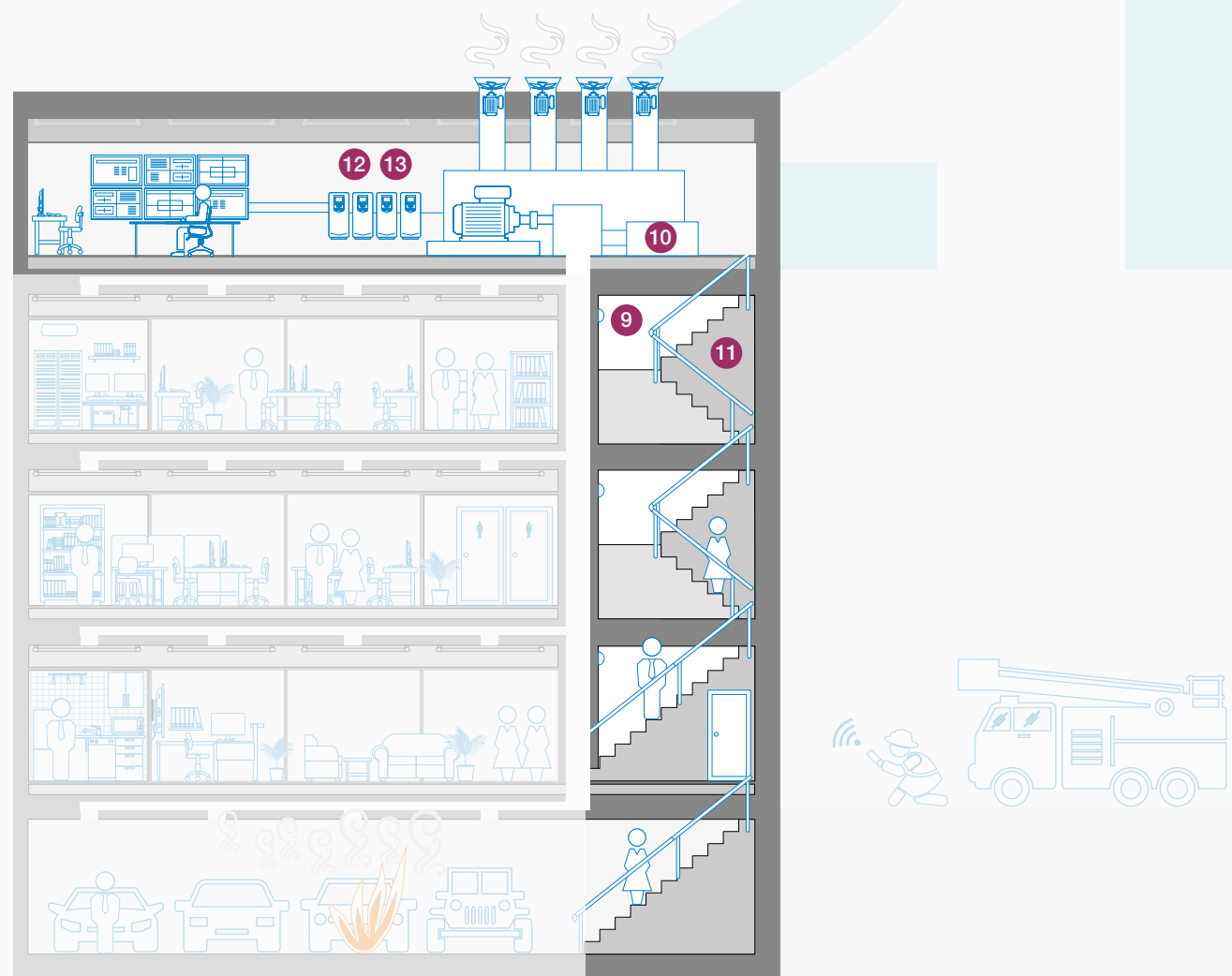


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Stairwell pressurisation

A fireman's override helps consultants to design functioning escape routes and escape strategies within a building by employing areas of positive pressure that hold stairwells open. It allows emergency services to easily trigger these essential functions to help in the evacuation of personnel or whilst fighting fires.





Choosing the right motor

For smoke ventilation, smoke rated motors must be used when the VSD's fireman's override is activated. Therefore, it is essential that motors suitable for use with VSDs are selected at the outset. Modern VSDs, with their ability to control speed, can enable a more elegant and adaptive smoke control strategy than traditional DOL approaches.

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Adhering to the regulation

EN12101-3 allows the use of smoke rated motors, together with safety margins. In addition, the regulation demands that VSDs have suitable output filters, as the motor insulation, being used in high temperatures, may require further protection.

VSDs are proven to be more reliable than contactors and the new regulation allows them to be part of the safety systems in machinery, hence it is recommended to use the latest technology to bring the best safety system with the simplest design, and higher safety integrity.

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Frequently Asked Questions

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How does the fireman's override work?

The override function forces the drive to a pre-defined set of running conditions stored in the override menu, including pre-set speeds or pre-set control locations. The function is password protected for security. The VSD is programmed to ignore most of its trips and warnings that would normally stop it if the application was at fault, ensuring maximum availability during the emergency.

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Frequently Asked Questions

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What is the benefit of selecting a drive with fireman's override?

Without fireman's override built into the product, the function would have to be handled by the building BMS systems, making programming and installation more complex. Also, since the drive has to locally control the motor so that it runs to destruction (ignoring all faults), this function could not be performed by the BMS on its own, as the drive needs a special mode to ignore these issues internally. Simpler DOL systems would have to be employed which would be less elegant at control, and modern high rise buildings would be harder to protect.

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