

Mitsubishi Electric drives achieve iFLY high

When iFLY, the leading operator of indoor skydiving tunnels worldwide, needed new drives to continue delivering its unique experience at the company's facility in Milton Keynes, it chose a powerful and highly reliable solution from Mitsubishi Electric.



The upgrade, implemented in record-time, avoided unplanned downtime and offered improved system control for maximum customer enjoyment.

Every day, up to 300 people flock to the permanent indoor skydiving facility in Milton Keynes, one of the three iFLY sites in the country. There, flyers of all abilities can experience the thrill of wind speeds up to 165 mph (265.5 km/h), as strong as a Category 5 hurricane, or indeed jumping out of an aeroplane.

When experiencing the excitement of true free-fall conditions in indoor skydiving centres, it is easy to forget about the apparatus required to suspend flyers in the airstream. It is created by a 12ft (3.66m) diameter wind channel linked to four large fans, which generate an upward airflow that makes skydivers feel like they are free-falling. The speed of the fans – and subsequently wind speed – is regulated by four inverters or variable speed drives (VSDs).

Ensuring the reliability of indoor skydiving's 'digital parachutes'

The responsiveness and accuracy of these pieces of equipment is fundamental for the instructors to achieve effective teaching conditions. They need to adjust the skydiving conditions with a high level of accuracy to meet specific requirements, e.g. weight of the flyer and experience level. In addition, near-real-time response is crucial to ensure maximum safety for anyone in the wind chamber.



The reliability of the VSDs is also key for iFLY to maximise the facility's uptime. Sean Freeman, Milton Keynes Assistant General Manager at iFLY explains: *"To accommodate our many visitors, we require a minimum of ten hours of flying time in a day, every day of the week. Therefore, any unplanned downtime affects us commercially, as well as making it harder to maintain our typically very high level of customer satisfaction."*

While iFLY's centre in Milton Keynes has been running smoothly for many years, a timely upgrade of the drives was deemed essential when the existing system could no longer be guaranteed to ensure the same level of reliability. Sean Freeman comments: *"The original inverters featured an old analogue control system which, after many years of operation, was becoming harder to maintain, leaving us exposed to the risk of unplanned downtime events."*

The indoor skydiving business contacted its preferred system integrator Rion Designs to upgrade the system who in turn got in touch with Mitsubishi Electric to source the new VSDs. The team had already collaborated in the past to build a spare system using Mitsubishi Electric's 355 kW FR-F800 drives. This was used across the three indoor skydiving facilities in the UK when maintenance of the old equipment was required.

Phil Cutcliffe Managing Director at Rion Designs, says: *"We are used to working with Mitsubishi Electric's range of automation products. They have proven to be robust and highly reliable for us which made them an ideal choice for this application. Also, the cost versus performance of their systems is very good. From a specification and commissioning perspective we appreciate the technical support and assistance offered by the company throughout any integration project."*

Land safely with a high-performance digitally controlled solution

For the permanent replacement project, iFLY and Rion Designs again chose Mitsubishi Electric's 355 kW FR-F800 series drives. The FR-F800 is designed specifically to work with fans and pumps providing advanced excitation control within the motor. This not only provides smooth ramp-up but fast response and high electrical efficiency too. During operation the auto adjust routines then optimise energy efficiency.



"Even with the original motors in place, these new drives will simultaneously reduce energy costs, improve system response times and look after the motors." explains Wayne Turtill, Product Manager for Drives and Servos at Mitsubishi Electric.

The main installation requirement during the upgrade was ensuring minimal downtime for iFLY. *"To do so, the team agreed on replacing the inverters at night, when the facility is closed to the public. More precisely, every night one VSD would be removed and replaced with a new one, for a total of four days,"* explains Wayne.



Other challenges included accessing the room where the inverters were located and storing the new products prior to their installation. Phil Cutcliffe adds: *"There wasn't much space to move around and position the equipment; so, we set up a rig to lift the legacy drives out and replace them with the new ones. The FR-F800s were considerably smaller than the existing VSDs, so they fitted perfectly into the room available."*

The new drives have addressed any system reliability concerns as well as offering iFLY a transition from analogue to digital control. Instructors now have precision control over airflow from a more responsive system.

Sean Freeman concludes: *"We are extremely satisfied with the work done by this collaboration of Mitsubishi Electric and Rion Designs. I'd go so far as to say that working with them was quite inspiring, thanks to their expertise and project management skills. The upgrade was conducted smoothly and without impacting the availability of our flying times. More importantly, we now have a highly reliable and efficient system that will contribute to delivering the unique, exciting free-falling experience for years to come."*

Image captions:

Images 1+2: At iFLY's Milton Keynes location the wind speed of the indoor skydiving tunnels is regulated by four powerful and reliable variable speed drives from Mitsubishi Electric.
[Source: iFLY]

Image 3: Mitsubishi Electric's FR-F800 series of VSDs is designed specifically to work with fans and pumps to deliver smooth ramp-up, fast response and high electrical efficiency.
[Source: Mitsubishi Electric Europe B.V.]

Image 4: The new Mitsubishi Electric inverters helped the company to create a robust, reliable and accurate system that would support indoor skydiving activities at iFLY's facility in Milton Keynes.
[Source: Rion Designs]

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Note to Editor: if you would like the text in another language please contact Carolin Heel at DMA Europa – carolin@dmaeuropa.com.

About Mitsubishi Electric

With nearly 100 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Embracing the spirit of its corporate statement, Changes for the Better, and its environmental statement, Eco Changes, Mitsubishi Electric endeavors to be a global, leading green company, enriching society with technology. The company recorded consolidated group sales of approximately 40.7 billion dollars* in the fiscal year that ended on March 31, 2019.

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The role of Industrial Automation – UK Branch is to manage sales, service and support across its network of local branches and distributors throughout the United Kingdom.

**At an exchange rate of 111 Yen = 1 US Dollars, last updated 31.03.2019 (Source: Tokyo Foreign Exchange Market)*

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