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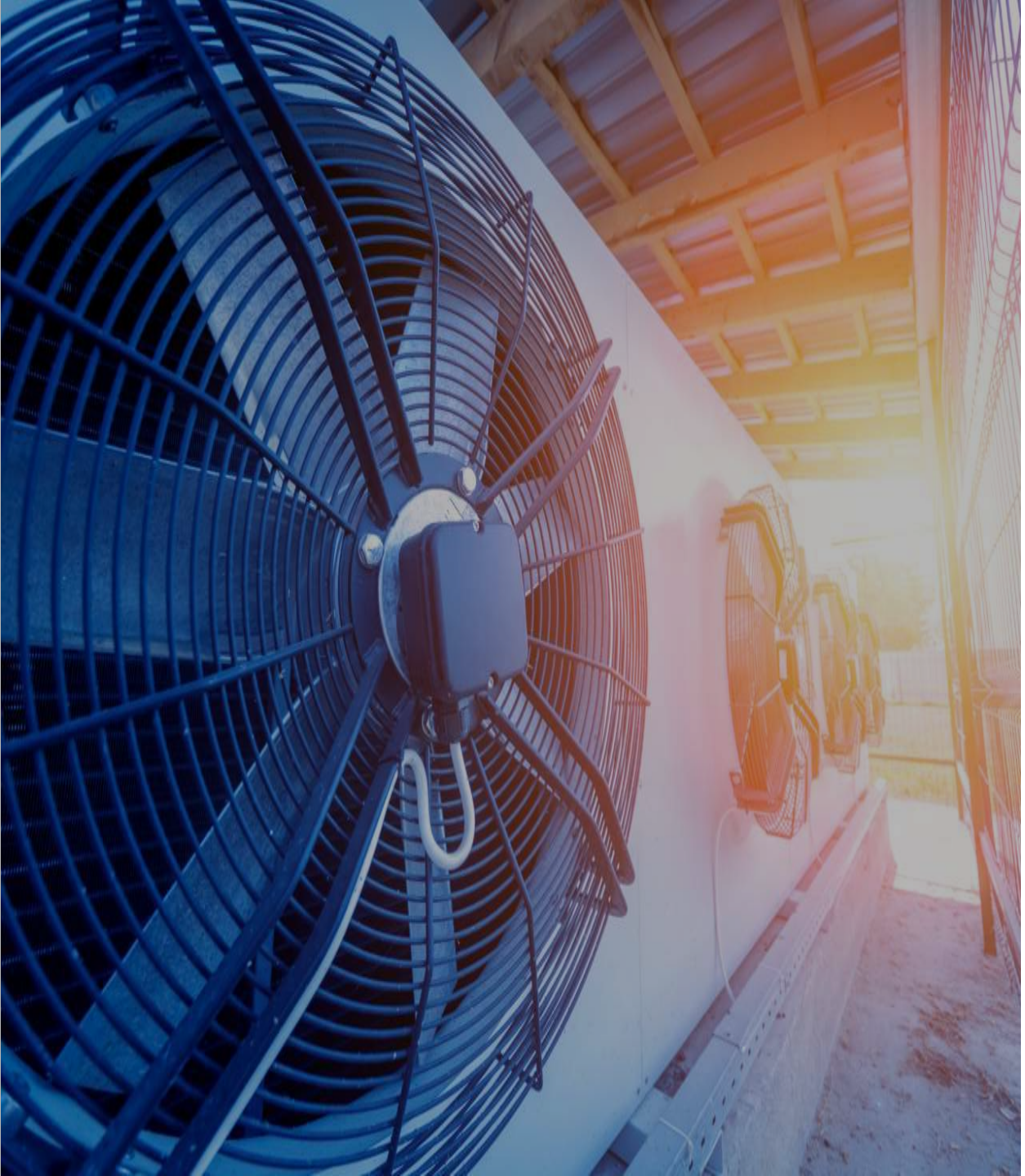
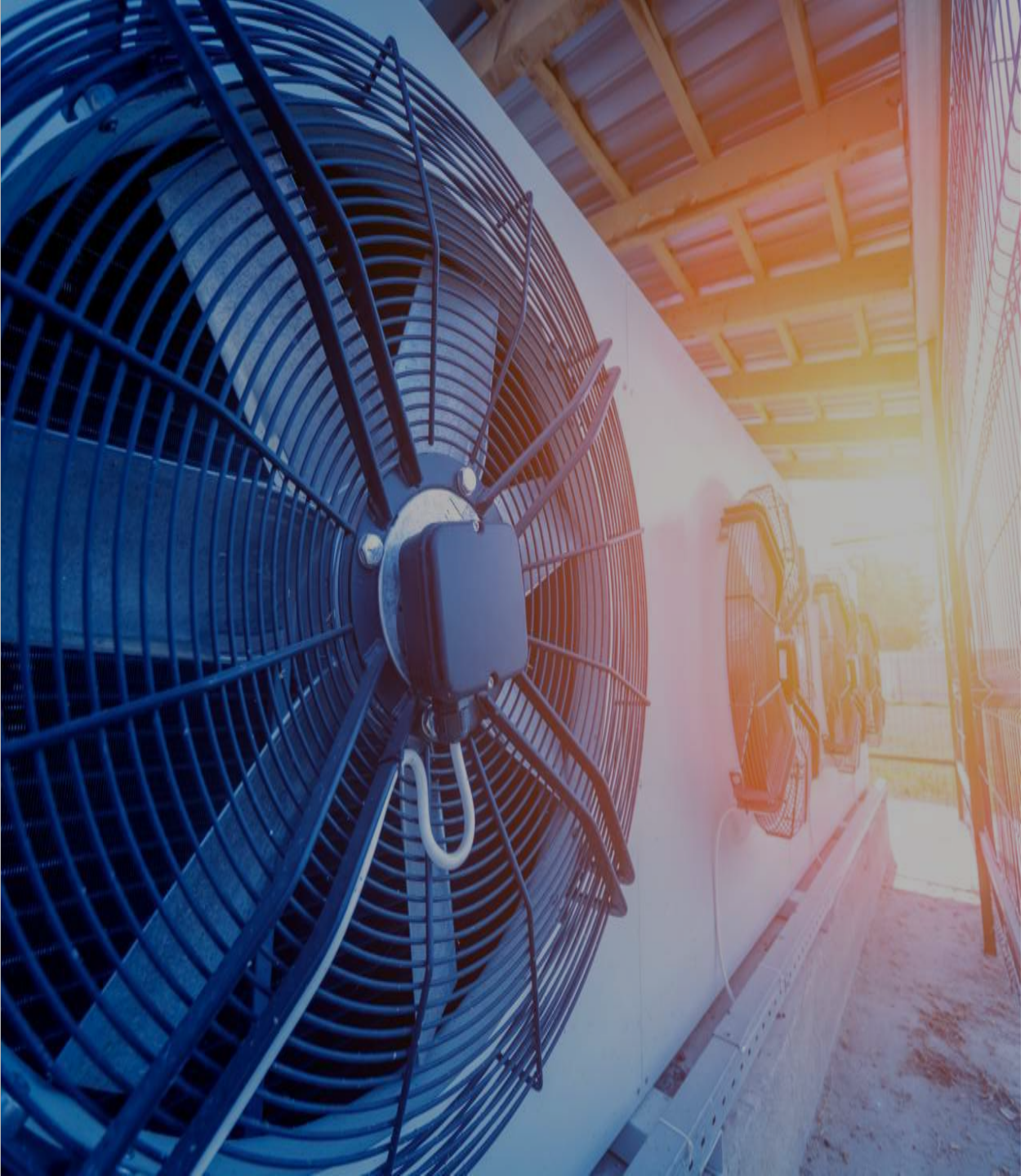
# Digitization for Automated Testing Setup on Assembly Line
(Air Conditioning Industry)



## Client Background

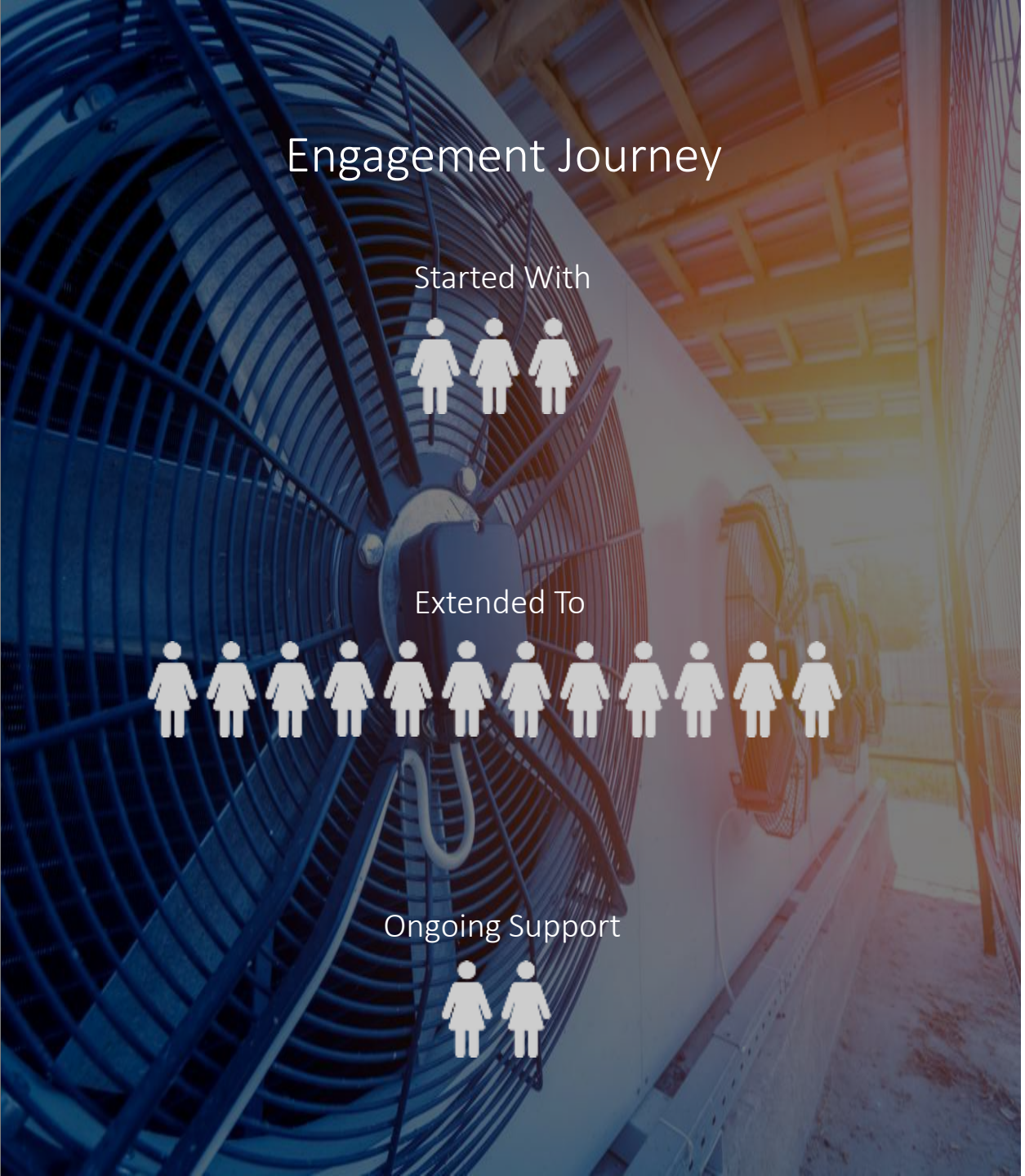
Client is a multinational air conditioning manufacturing company that manufactures home appliances and specialises in air conditioning and cooling technology.

As part of an Industry 4.0 and Digital Transformation initiative, a leading air conditioning manufacturer sought an automated testing setup for their assembly line at their Kadi, Gujarat facility. Optimized Solutions was engaged to supply, install, commission, and digitize the automated testing equipment (ATE) systems. This included the integration of various testing instruments, sensors, and communication interfaces to enhance the testing process and ensure seamless operation within their manufacturing setup.



## Challenge

The primary challenge was to create an automated testing setup that could efficiently handle the diverse testing requirements of the assembly line. This included integrating various sensors, transmitters, and meters while ensuring communication compatibility between the PLC and Device Under Test (DUT). Additionally, the system needed to support Industry 4.0 initiatives, allowing for data logging, remote monitoring, and interfacing with the Manufacturing Execution System (MES).



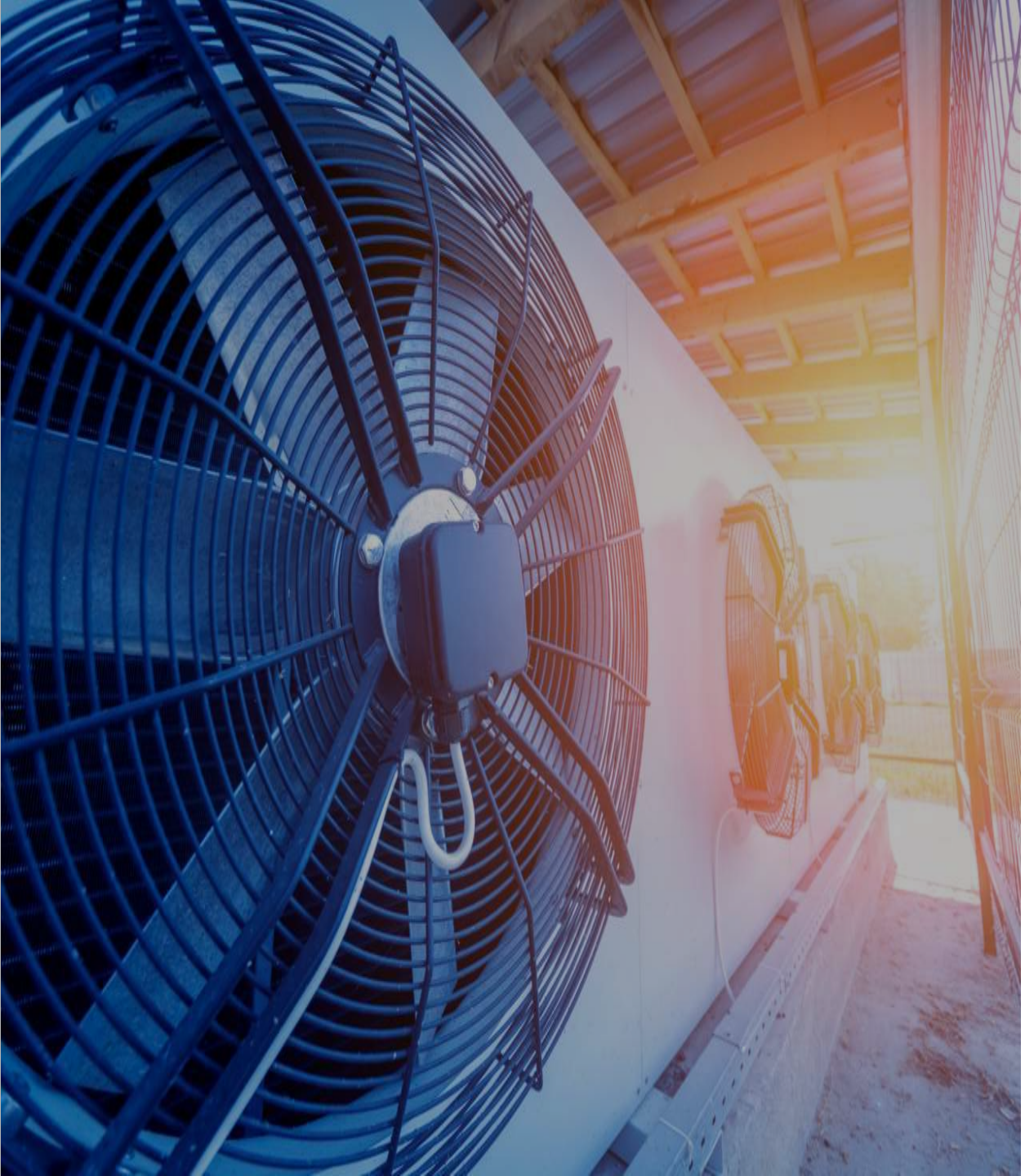

## Solution

Optimized Solutions delivered a comprehensive ATE system tailored to meet the specific needs of the manufacturer. This involved the supply and installation of critical components such as temperature sensors, pressure transmitters, LC testers, and energy meters. The system was developed using LabVIEW for application software, ensuring customized and efficient performance testing. Additionally, communication protocols like RS485 and MODBUS TCP were integrated to enable seamless data exchange between the PLC, DUT, and MES.

We also provided essential hardware, including PLC controllers, HMI displays, and ATE panels, ensuring compatibility with existing systems. The installation and commissioning process included comprehensive support to meet all acceptance criteria, including live process verification and report generation. This holistic approach ensured that the automated testing setup was fully operational and aligned with the customer's Industry 4.0 objectives.

## Solution

The final solution enabled real-time monitoring, data logging, and remote operation capabilities, significantly enhancing the testing process's efficiency and accuracy. By addressing all technical and operational requirements, Optimized delivered a robust, future-proof ATE system that supported the manufacturer’s digital transformation efforts.

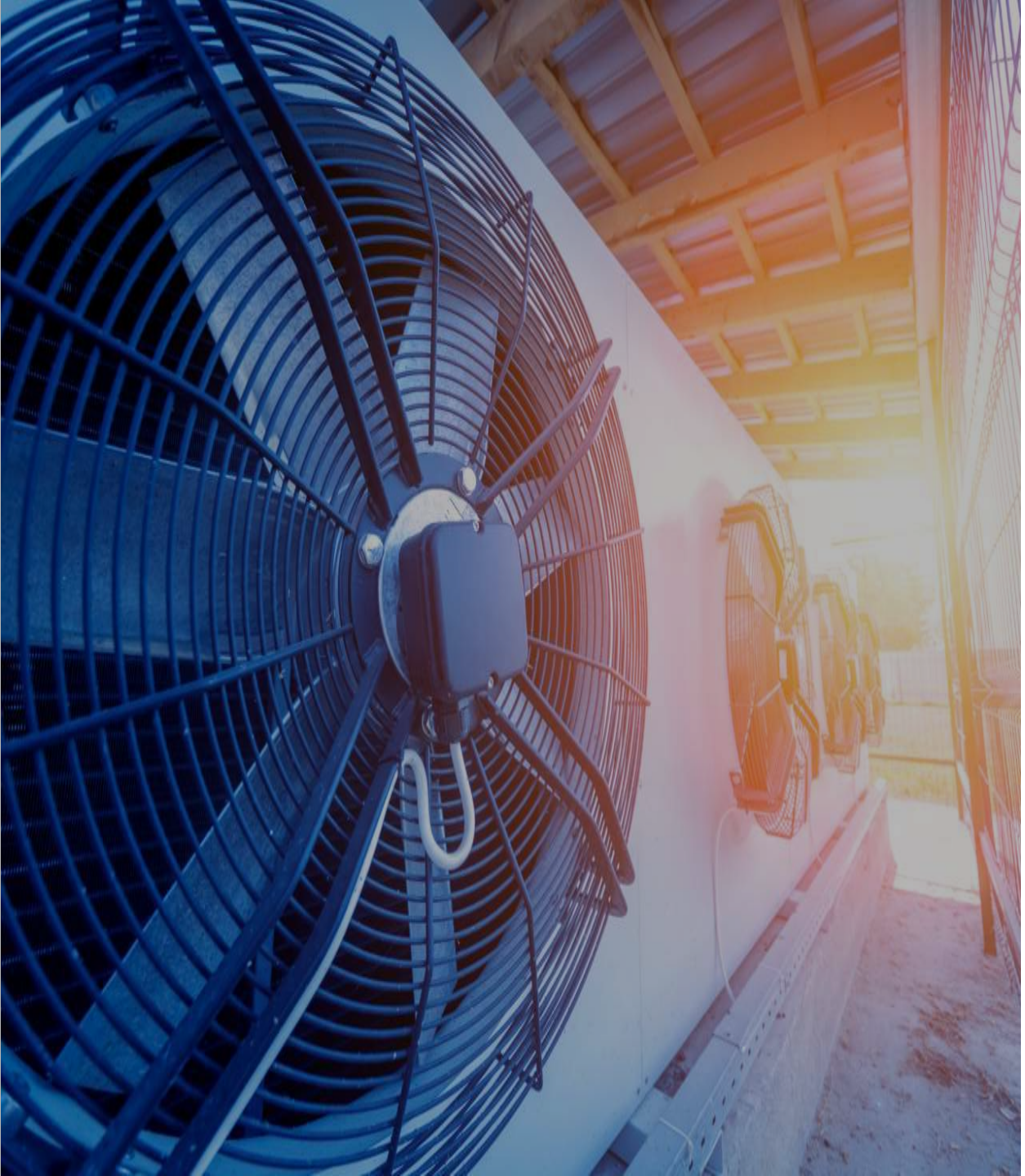


## Benefits

1. Enhanced Efficiency: The automated testing setup streamlined the testing process, reducing manual intervention and improving accuracy.

2. Real-Time Monitoring: Integration with MES and real-time data logging allowed for better process control and quicker decision-making.

3. Flexibility: The system's design allowed for easy integration of additional testing equipment and sensors as needed.

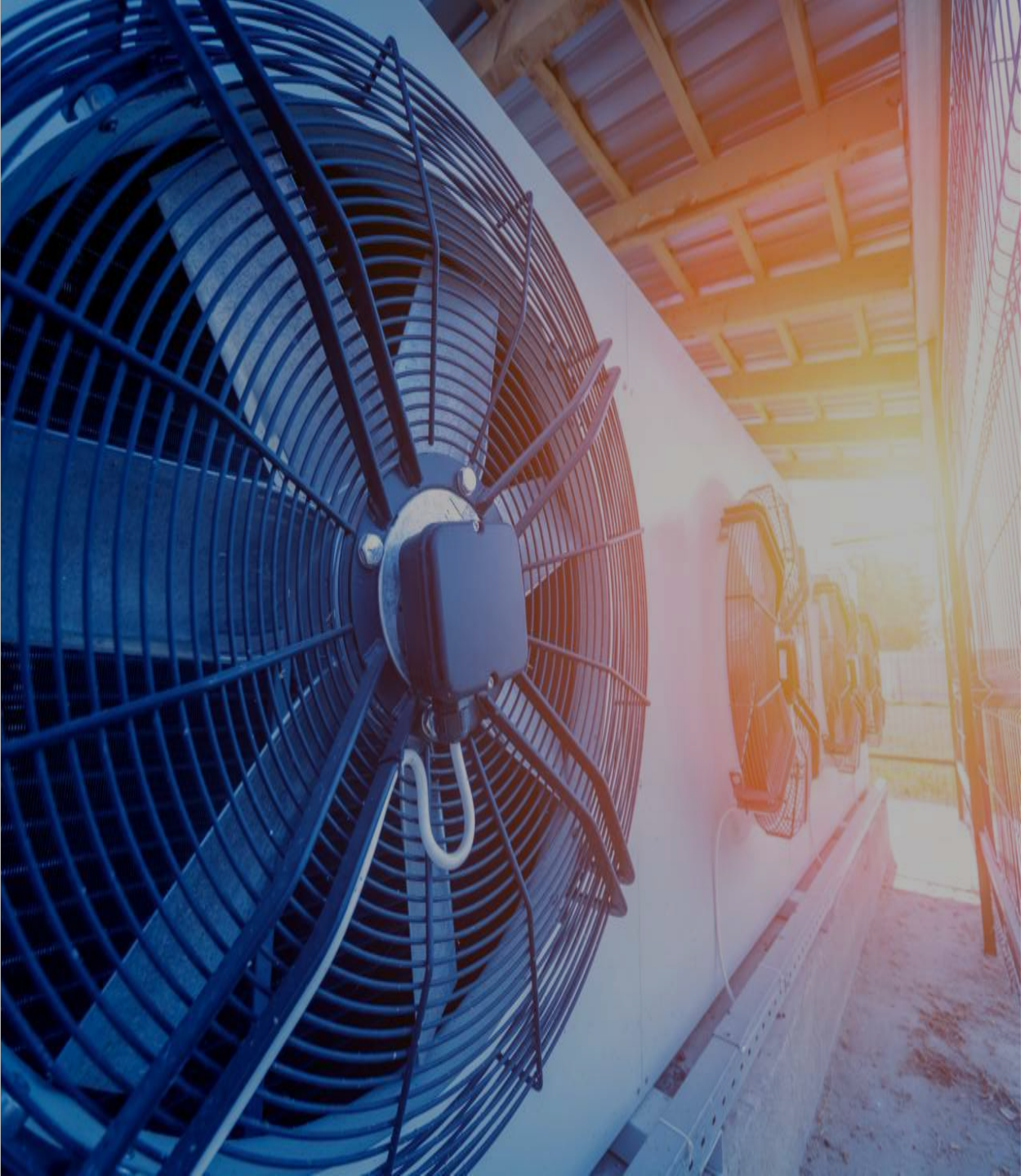


## Benefits against alternatives

1. Comprehensive Integration: Unlike standalone testing systems, our solution offered a fully integrated setup, ensuring all components worked seamlessly together.

2. Custom Software Development: The use of LabVIEW for application development provided a tailored solution that met specific testing requirements.

3. Scalability: The system was designed to be scalable, allowing for future upgrades and expansions without significant overhauls.



## Value Proposition

Optimized Solutions provided a turnkey ATE system that met the rigorous demands of Johnson Controls-Hitachi's manufacturing process. By leveraging advanced technologies and ensuring seamless integration, the solution not only enhanced testing efficiency but also supported the company's broader Industry 4.0 and Digital Transformation goals. With comprehensive support and a one-year performance warranty, we delivered a robust, future-proof system that added significant value to the customer's operations.