

Case Study

Openhouse Products

Delivery Partner



Background

Openhouse Products is a family-owned business located in a repurposed historic building from around 1900. They manufacture a variety of bags for emergency services, including customisable options with built-in pockets.

Most stock items are produced in a Chinese facility and shipped to the UK, while short runs and custom orders are made locally. The company operates near full capacity but can ship orders within 3 to 4 days. The historic building poses unique challenges for production due to its layout.

Challenge

Openhouse aims to boost production but is nearing full capacity in the UK, whilst additional capacity in China is restricted due to space limitations that prevent the addition of new sewing machines.

Furthermore, there are challenges with production and quality data being stored digitally. Printed documents are required for job distribution before task sign-off, and these are scanned, prior to shredding but Openhouse wanted to explore how to digitise these processes for enhanced efficiencies.

An additional concern with insufficient Wi-Fi connectivity means job tracking is managed through timely manual spreadsheets.

Lastly, certain identified equipment is outdated, such as a manual guillotine that needs to be replaced with an automated machine for better usability. Although the company's high-frequency welding machines are dependable, their components are considered fragile and lack identified replacements.

Solution

The Horizons team at Liverpool John Moores University (LJMU) has been investigating the analysis and design development of backpack shoulder straps. Openhouse Products currently has four basic configurations based on experience, allowing for individual choice.

However, these are concerns surrounding the lack of support these can offer. Members of differing LJMU faculties were approached as a cross-discipline set of proposed tests. These provided results related to performance, as indicated by factors including lung efficiency during use and key issues such as load distribution through the body.

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The assessment of Wi-Fi coverage within the different areas of the Openhouse Products premises, utilising industry 4.0 technologies, enabled the teams to immediately identify modifications to the hardware. The Horizons teams also undertook a scan of the shop floor along with subsequent analysis, which enabled the reassessment of the layout. The apparent capacity for this area is considered a major limitation to the aspirations for an expansion, so this needed to be overcome to de-risk the company.

The teams also investigated modern industrial guillotines and plastic welding technologies regarding suitability to Openhouse Products applications as alternative solutions were also proposed, opening additional avenues for Openhouse beyond established in-house practices.

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Impact

Collaborating with the University has facilitated a work package that will deliver comprehensive, measurable insights for future development.

The investigative work into the Wi-Fi networks has greatly reduced risks associated with development, allowing for the broader adoption of Industry 4.0 technologies and practices within Openhouse processes and functionalities. This initiative has also opened up new pathways for the company to future-proof itself while laying the groundwork to achieve strategic objectives.

The collaboration has focused on fostering further development beyond the conclusion of the Horizons project. Openhouse Products can pursue additional development and actions based on the outcomes from this support as part of their planned improvements for continuous improvements and innovation.