

Case Study

PCI Instruments

Background

PCI Instruments, a leading British manufacturer of process instrumentation and diaphragm seal technology, has been delivering high-quality products and services globally for 25 years.

Their product range includes pressure gauges, temperature probes, level indicators, diaphragm seals, chart recorders, needle valves, and manifolds, serving industries such as pharmaceutical, food processing, chemical, and nuclear.

The company's commitment to quality, innovation, and customer support reinforces its position as a global leader in process measurement and control. PCI works closely with university departments to enhance and test product technologies.

Challenge

After connecting with the Horizons team at Liverpool John Moores University (LJMU), a support process using digital diagnostics and readiness assessments was initiated. This led to opportunities focusing on manufacturing simulation, digital modelling, and performance testing of pressure diaphragm seals, as well as digital order management and knowledge retention systems. PCI is eager to explore further collaborations with LJMU graduates, particularly in the Mechanical & Electrical Engineering and Electronic Departments

Delivery Partner



Solution

An "Art of the Possible" demonstration at LJMU showcased novel digital technologies and involved key experts. Growth Horizons utilised digital simulation software to optimise the diaphragm seal assembly line. Finite element analysis software characterised the diaphragm spring rate, improving specifications. Additionally, digital climatic testing equipment validated performance across various temperatures and pressures, opening new market sectors.

Impact

The enhanced manufacturing process is anticipated to boost productivity by 15%. The improvement is underpinned via better loading (limiting inlet pressure and control logic) of high efficiency turbo vacuum pump reducing the time required to fill the diaphragm seal with transmitter fluid.

Additionally, a new diaphragm pressure gauge has been designed, able to function in extreme temperature ranges from -75°C to 150°C, broadening market applications. Moreover, further innovation resources will be directed towards improving the finite element analysis software to refine diaphragm seal specifications.

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“Our partnership with Horizons has greatly enhanced our digital processes and provided access to specialised testing equipment, improving the performance and productivity of our diaphragm seal pressure instrument manufacturing. This has enabled us to manage warehouse stock more efficiently and respond to sales orders promptly.”

With 14 employees and 60% of production exported, we face increasing demands for technical capabilities that are challenging for our small size. The Horizons project has been crucial in facilitating our development by granting access to university resources, particularly climatic chamber equipment, allowing us to test diaphragm seals at temperatures as low as -75°C . This data has opened new markets for us.”

Steve Haughton
Owner of PCI Instruments Ltd

