

MA's Technology
Handbooks
are a series of
digital magazines
that focus on
single product
category within
Canada's
manufacturing
industry.

MANUFACTURING
AUTOMATION

LEARN MORE

WILL AI REPLACE
WORKERS?
OR AUGMENT THEM?

IFS REVEALS THE AI PLANS OF
600 BUSINESS LEADERS
SEE HOW YOU COMPARE

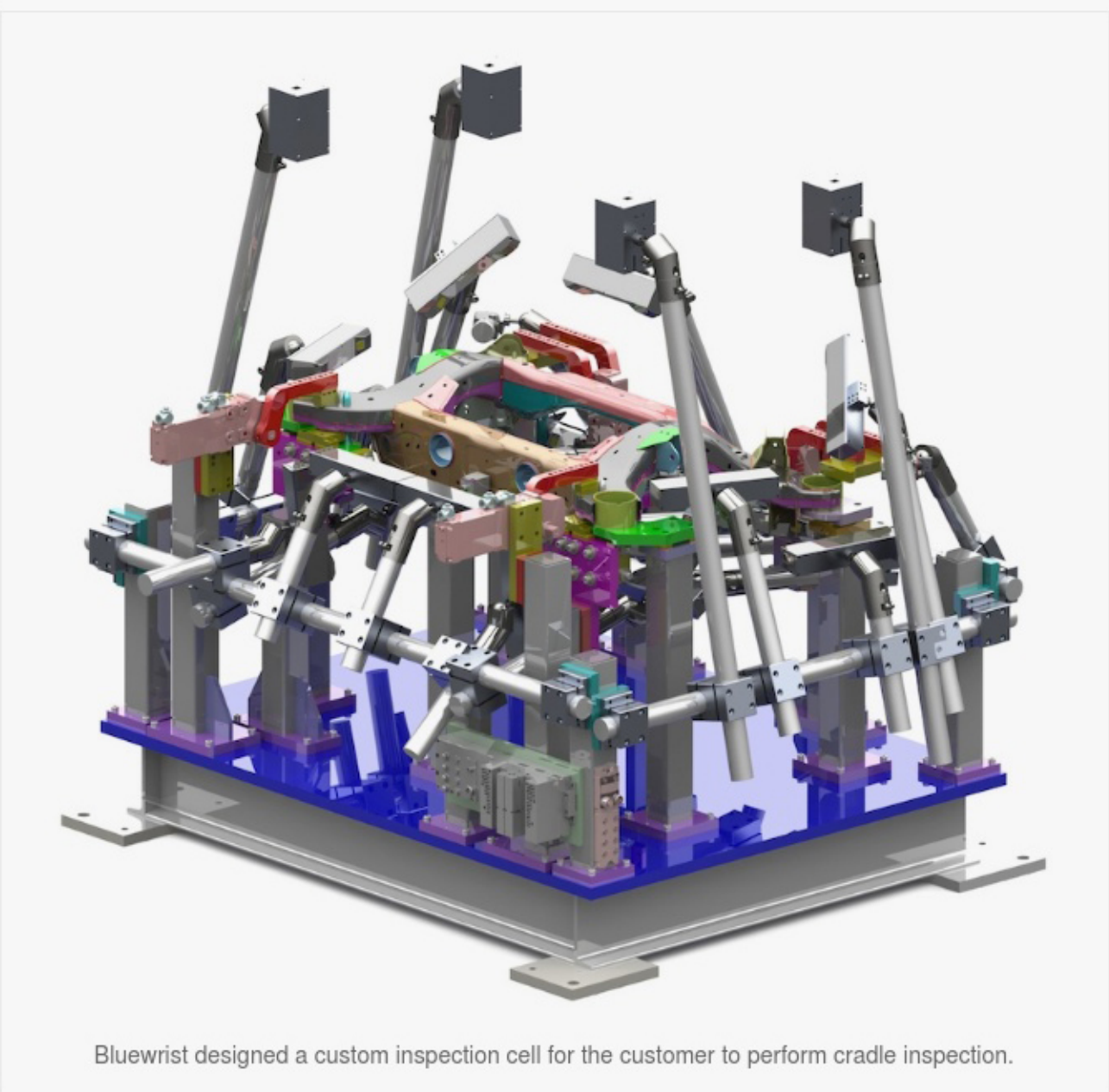
IFS

Features> Automation in Action Operations

Custom cell helps automaker perform cradle inspections

June 22, 2017

By Jason Niu Bluewrist



Bluewrist designed a custom inspection cell for the customer to perform cradle inspection.

Jun. 22, 2017 – A global Tier 1 automotive component manufacturer, generating annual revenue in excess of US\$30 billion, approached Bluewrist Inc. with an inline engine cradle inspection problem.

Bluewrist Inc. was tasked to design and produce a custom inspection solution that can be integrated into the customer's existing manufacturing process to verify the dimensional quality of the engine cradle. What makes this project unique and challenging is the customer's need of performing 32 feature inspections in under 13 seconds in order to meet the high-volume cycle-time requirements.

An engine cradle is a complex component found in every vehicle on the road and consists of several welded hydroformed high-strength steel tubes and stamped parts in precise alignment to support the mounting of the engine, transmission and control arm brackets. The front and rear body mounted on the engine cradle must also be assembled with high precision to guarantee a perfect fit with the rest of the vehicle body. The welding and assembly is performed in an automated process on the production line and must adhere to strict GD&T specifications and other mechanical design requirements, as any deviations will lead to misfit and affect a vehicle's camber and toe angles that will lead to costly rework and recall.

100% inline solution is a prerequisite for this critical component and rules out the traditional sampling based quality control using a CMM, which may take more than 40 minutes of manual inspection. To accomplish this task, the ingenuity of the Bluewrist engineering team and the flexibility of the in-house designed software solutions are put to full use. In order to inspect the 32 features under the 13-second requirement, an array of 23 LED 3D snapshot cameras have been strategically positioned on a custom designed fixture where the engine cradle will be placed, secured, inspected and removed by a robot arm. The 23 cameras take simultaneous measurements of the features which are then streamed in real time to the comXstream software. The cameras capture detailed 3D point Cloud of the holes, slots, studs and trims on the engine cradle, which are then compared to the CAD design and GD&T specifications. The system also integrates several cost-effective 2D cameras to detect feature presence on the engine cradles that are required for the final assembly process.

ADVERTISEMENT

Bluewrist's inline inspection software is optimized for use in fast-paced manufacturing environments and promises accurate, efficient and stable performance. The software effortlessly processes the large amount of data streamed from the 23 cameras in real time to perform the inline 3D scanning and dimensional measurements of the engine cradle. Cradles that pass the inspection are delivered to another manufacturing facility for the next steps in the assembly process. When defects or deviations are detected, the engine cradle is automatically removed from the production line, which prevents downstream defects. The customer also leverages Bluewrist SPCWorks software to monitor the real-time dimensional data of the inspected cradles to minimize defects at the source. SPCWorks reports results and statistically analyzes all gauged cradle data and automatically notifies plant floor operators of deviations from predetermined tolerances. All data is also logged and stored in a central database for improved traceability and internal audit purposes.

The custom inline inspection solution consists of multiple snapshot cameras, an industrial robot for material handling, and PLCs for pass or rejection of the inspected cradles. The Bluewrist comXstream industrial communications software links all these components together in one cohesive system to trigger the measurements and the inter-device, sensors and robotics communications. Bluewrist software solutions are also platform and hardware agnostic and are compatible with all major robot, PLC and 3D vision sensors in the market. As a result, the solutions can be integrated into a manufacturing facility with minimal delay or costly custom engineering work, notes the company.

Should the customer change the engine cradle design for future vehicle models, the Bluewrist system can be modified and reprogrammed onsite to meet their ever-changing requirements. This inline 3D inspection system is still actively used at the customer's manufacturing facility and performs thousands of cradle inspections per day, and has meet and exceeded all the requirements, it notes.

Bluewrist Inc. is headquartered in Markham, Ont.

[Tweet](#) [Share](#) [Share](#)

Print this page

COVID-19 Updates

April 22, 2020

Broken supply links at home and abroad bedevil easing of COVID-19 restrictions

April 22, 2020

ATS Automation receives \$65M order for equipment to produce COVID-19 test kits

April 21, 2020

Festo collaborates with OEMs on ventilator, mask development

More COVID-19 Updates

Does AI translate into more profit or just more IT?

FIND ALL ANSWERS HERE.

automatica

December 8–11, 2020 | Munich

Editor's Picks

- ▶ How will COVID-19 impact the manufacturing automation market?
- ▶ A list of major manufacturing events affected so far due to coronavirus
- ▶ Custom rules: 'Canadian Welder Girl' Alicia Butty talks trades
- ▶ Sustained change: Raven Telemetry turns operational data into action
- ▶ Automation the Lean way: LJ Welding streamlines GE process

Robotics Insider eBook

MANUFACTURING AUTOMATION

ROBOTICS INSIDER

MOVE WITH MOBILE ROBOTS

READ ISSUE

Digital Edition

- ▶ View Digital Edition
- ▶ Archives
- ▶ Subscription Centre

MANUFACTURING AUTOMATION

THE STATE OF AI IN CANADA

MANUFACTURING AUTOMATIC

THE STATE OF AI IN CANADA

MANUFACTURING AUTOMATION

GET YOUR FREE PRINT OR DIGITAL EDITION

SUBSCRIBE TODAY!

MRO

MAINTENANCE MANAGEMENT AMID COVID-19

HOW ORGANIZATIONS ARE MAXIMIZING MAINTENANCE ACTIVITIES AND OPERATIONS.

WED, APR 22, 2020 12:00 PM - 1:00 PM EDT

REGISTER NOW

Don't miss your opportunity to provide a market and information machine built component manufacturing end-users a system inte

MANUFACTURING
AUTOMATION

LEARN MORE