An AI Application for Intelligent Document Processing in Manufacturing

The Challenge | Developing an AI Solution for Assisted Human Judgement

RH AeroRhinestahl Corp. is a global supplier of some of the most complex tooling equipment in the world, used by aerospace companies to build and service aircraft engines. RH AeroRhinestahl works with hundreds of suppliers, all of whom send quality documents for the parts they supply. A subset of those documents needs to accompany the tooling equipment that RH AeroRhinestahl sends to its customers. It takes highly trained engineers about 20% of their workday to manually review, sanitize, and extract the critical pages that need to be delivered to customers.
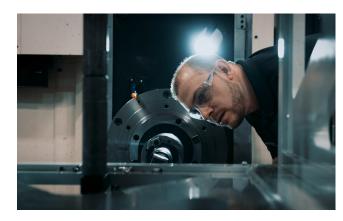
Seeking to free up engineers for more strategic work, RH Aero submitted this use case to The Circuit's "Proving Ground - Where Ideas Meet Reality" competition - and won! The Circuit worked with contest co-sponsor, CoStrategix, to develop an AI Proof of Concept (POC) for intelligent document processing to enhance RH Aero's operational efficiency.

The Results

CoStrategix developed an AI-driven application that automates the labor-intensive task of processing RH Aero's Rhinestahl's suppliers' quality documents. These documents - ranging from load test results to calibration verification and CE certification - can span up to 100 pages, with varying formats and structures even within the same document type.

"This AI application is a game-changer, significantly reducing the time our engineers have to spend on manual review, while keeping humans in the loop to ensure accuracy and compliance across complex document sets," said Thomas Clark, Director of Quality and Compliance at RH AeroRhinestahl. "We are committed to process improvement and lean practices, and this AI POC opens our eyes to so many opportunities."

In the first two weeks alone, the AI Agent returned an accuracy rate of 95% and saved 25% of the hours engineers spend on the document sanitization process. In the long term, however, the benefits are likely to be significantly greater. RH AeroRhinestahl plans to integrate this AI tool with its supplier portal, where suppliers upload their quality documents. The integration and automatic document sanitization without human intervention has the potential to return an 85% time savings.

The Process

The AI-driven application that CoStrategix built automates the review process by allowing engineers to upload files through an intuitive interface. Once uploaded, the AI automatically parses, classifies, and processes document sections using a dynamically trained AI model. The AI Application then recommends a final version for engineers to review. The engineers can accept or reject specific sections, and finalize a sanitized PDF to send to customers.

CoStrategix leveraged its five-step AI POC framework that streamlines the complex process of developing AI applications.

"CoStrategix took the time to understand our needs upfront and make sure that we were all aligned on the parameters of the POC," said John Hoevener, Director of IT. "You don't want to spend time developing all the bells and whistles with a POC. You want to make sure that the solution will provide demonstrable value. CoStrategix's ability to translate our challenges into a clear AI-driven solution was invaluable."

The process always starts with a strategic discussion with business leaders to fully flesh out the business use case and the pain points. CoStrategix worked closely with RH Aero's Rhinestahl's team to understand in detail the existing process and future ambitions. CoStrategix verified there was enough available, quality data to make an AI solution possible. Then, its team of skilled data scientists worked to find a technical solution to deliver business value.

RH Aero'sRhinestahl's AI-driven application for intelligent document processing includes:
- Vector embeddings to capture semantic meaning for section boundary identification and classification
- RAG to enhance classification accuracy and boundary detection using an LLM combined with a vector store
- A continuous feedback loop to train the model based on historical decisions

"In today's fast-evolving landscape, leveraging AI isn't just an advantage - it's a necessity," Hoevener said. "CoStrategix's AI Proof of Concept is a perfect example of how we can use AI to transform manual, time-consuming processes into intelligent, efficient workflows."

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> "CoStrategix helped us use AI to automate tedious tasks and focus on what truly drives innovation and growth."

Thomas Clark
Director of Quality and Compliance at RH Aero

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