

Intelligent Document Retrieval System, Powered by Responsible AI, Helps Reduce Air Pollution

Client snapshot



Profile

This company is a leader in the supply of after-sale services to the world's engine and compressor markets and is trusted by nuclear power plants, the U.S. military and both public and private electricity generators around the globe.



Client situation

With the EPA's recently announced Good Neighbor Plan in mind, the client needed a quick, reliable air pollution reduction strategy. However, the company had to sift through massive amounts of data to create a plan to rebuild, upgrade, and retrofit its machinery to lower emissions.



Work performed

To quickly analyze all equipment and machinery to comply with the new EPA regulations, we leveraged the Microsoft Azure AI portfolio to create an intelligent information retrieval system and to host the company's engineer-facing platform.



Outcome/Benefits

The solution will generate millions of dollars and hundreds of hours in productivity gains as the client avoided the need to hire 100 engineers to meet the EPA deadline. The AI-enabled solution provided an improved data retrieval process, eliminating the need to manually sift through terabytes of data.

This AI-driven search capability improves findability and reduces the client's dependence on individual knowledge across its large engineering database.

The challenge

In March 2023, the U.S. Environmental Protection Agency (EPA) announced its final Good Neighbor Plan, putting protections in place for cross-state air pollution. As a result, power plants and industrial facilities in several states had to reduce ozone-forming emissions to comply with the Clean Air Act's health-based air quality standards.

This client produces and maintains industrial equipment and has successfully adapted to industry changes many times during its almost 200 years of operation. To reduce pollution levels, the company had to analyze all its equipment and machinery to determine what it should rebuild, upgrade, or retrofit to comply with the new EPA regulations. However, the client faced a problem with its operational intelligence: its decades of reports would take hundreds of hours to identify and analyze. Company leaders estimated it would have to hire 100 additional engineers to comply with this regulation.

AI-enabled search to harness data

The client had massive amounts of data spread across multiple sources and needed to enable their engineers to quickly find technical specifications contained within large technical documents. After meeting with company leaders and conducting an initial assessment of the situation, our project team determined the best solution would be to design and execute a proof-of-concept that used natural language processing and semantic search. We leveraged the [Microsoft Azure AI](#) portfolio and its document intelligence features to create an intelligent document retrieval system.

This AI-enabled search proactively reads through all those disparate sources of information and delivers not just specific keywords, but contextual answers to questions asked.

Using this tool, the client's engineers can query data such as technical drawings, bills of materials, commissioning documents, pictures, and other data points to view relevant results received in an instant from the document retrieval platform. Search results provide summaries, relevant keywords and specifications, as well as links to original sources for each document. The AI-enabled search capability improves findability and reduces the client's dependence on individual knowledge across its large engineering database, which contains 300,000 documents and five knowledge bases. The client had estimated it might take an engineer several days to find the information required to perform their job, and now they find what they need in minutes, if not seconds.

The tool's features align with ethical AI best practices like fairness, inclusiveness, reliability and safety, transparency, security and privacy, and accountability.

A commitment to responsible AI

The proof-of-concept results were highly successful, and a full-scale production solution was then implemented. The solution significantly improved the client's data retrieval process, and the company has seen increased productivity gains from the simplification of information retrieval, far surpassing the speed of engineers' manual work previously. The client projects this solution will save millions of dollars and hundreds of hours.

Throughout this innovative and impactful project, Protiviti leveraged its [commitment to responsible AI](#), ensuring the tool's features align with [ethical AI](#) best practices like fairness, inclusiveness, reliability and safety, transparency, security and privacy, and accountability. The user-facing platform is gated using Azure AD accounts, resulting in high security and privacy. The project also created a reliable way to access and categorize data transparently. More broadly, the solution helped reduce emissions, leading to cleaner air.

While much of the manufacturing industry must comply with the Good Neighbor Plan, this tool directly benefits companies looking to reduce pollution levels, although the solution has a broader reach than just manufacturing. This project aimed to make enterprise-wide documents accessible through an AI-powered information retrieval platform search engine. The infrastructure is industry-agnostic and will serve any company seeking quick, specific access to large amounts of data that is not well structured and managed.

Working closely with Microsoft, Protiviti has executed a successful go-to-market campaign for Generative AI with Confidence, allowing us to build meaningful industry-specific AI solutions for clients around the world. Our efforts toward responsible AI are currently in play for clients around the world who are utilizing AI solutions to drive impactful, innovative transformation.

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