Reducing Technical Search Time by 60% Using Gen AI-Powered RAG Search for a Leading Agricultural Irrigation Solutions Provider

Industry	HQ
Agriculture	United States

About the Client

A leading provider of irrigation and infrastructure solutions for the agriculture industry, the customer offers innovative water management and irrigation technologies. To support field technicians and engineers, the organization maintains a vast engineering knowledge base consisting of service manuals, technical documentation, training videos, SCORM learning modules, images, and technical diagrams used for equipment troubleshooting and operational support.

Business Challenges

As the organization's engineering knowledge repository expanded, critical information became scattered across multiple content formats, making it increasingly difficult for technicians to locate relevant troubleshooting guidance quickly. The absence of an intelligent search capability limited knowledge accessibility and slowed issue resolution.

- Engineers spent excessive time searching thousands of pages of technical manuals for troubleshooting information.
- Critical knowledge was fragmented across documents, videos, SCORM modules, images, and diagrams.
- Lack of semantic search limited quick access to contextually relevant engineering information.

- Correlating video-based training content with supporting documentation was difficult and time-consuming.
- Troubleshooting required extensive manual research across multiple knowledge repositories.
- Existing systems could not deliver accurate, grounded answers from engineering knowledge assets.

Aspire Systems Solution

Aspire Systems developed a Generative AI-powered engineering knowledge retrieval solution that unified, processed, and indexed content from multiple sources. Using a multimodal architecture and Retrieval-Augmented Generation (RAG), the solution delivered accurate, traceable, and context-aware responses for engineering support teams.

- Processed and indexed large engineering manuals for intelligent document search.
- Consolidated documents, videos, images, diagrams, and training content into a unified knowledge repository.
- Implemented semantic search using Amazon OpenSearch and RAG-based retrieval.
- Combined transcript extraction and video-frame analysis to connect visual and textual knowledge.
- Developed reusable AI APIs for intelligent query processing and troubleshooting support.
- Enabled source-grounded responses with document references and video timestamps.

Technology Snapshot

AWS Cloud Platform

AWS Transcribe for speech-to-text extraction from training videos

Claude Sonnet 4.5 for text extraction and video-frame interpretation

Amazon OpenSearch for vector-based semantic search

RAG Architecture for knowledge retrieval

Python AI APIs for knowledge retrieval

Vision Models for image description generation

Streamlit for internal testing and validation

Results

The AI-powered solution transformed engineering knowledge discovery by making technical information easily accessible across formats. It accelerated troubleshooting, reduced manual effort, and delivered reliable responses backed by source content.

- Reduced technical documentation search time by **40-60%.**
- Enabled unified access to engineering knowledge across multiple content formats.
- Improved retrieval accuracy through context-aware semantic search.
- Connected video-based learning content with supporting technical documentation.
- Improved troubleshooting efficiency, resulting in **30-40% faster response times.**
- Delivered traceable, verifiable responses linked to original source materials.

About Aspire Systems

Aspire Systems is a global technology services firm serving as a trusted technology partner for our customers. We work with some of the world's most innovative enterprises and independent software vendors, helping them leverage technology and outsourcing in our specific areas of expertise. Our core philosophy of "Attention. Always." communicates our belief in lavishing care and attention on our customer and employees.

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