



AI-Powered Extraction of Engineering Drawings

Transform CAD, PDFs, Blueprints, and Schematics into Structured, Searchable Data

Problem

Engineering drawings hold critical information — dimensions, tolerances, parts lists, materials, safety notes, and manufacturing parameters — but most of this data is locked inside PDFs, images, or legacy CAD exports.

Manual extraction is slow, error-prone, and difficult to scale across manufacturing, quality, or maintenance workflows.

Intuceo's AI Solution

Using advanced Vision AI, OCR, NLP, and LLM-based engineering models, Intuceo automatically extracts structured information from:

- Mechanical drawings (2D)
- Electrical schematics
- P&ID diagrams
- CAD exports (DWG, DXF, STEP → PDF)
- Blueprints & technical specifications
- Manufacturing process sheets and change orders

The AI understands **symbols, callouts, legends, GD&T, dimensions, materials, annotations, and engineering semantics**.

What We Extract

- Dimensions, tolerances, GD&T
- Part numbers, BOM items
- Materials & finishes
- Revision history & version control
- Weld symbols, connectors, electrical symbols
- Safety notes, instructions, engineering annotations
- Asset metadata (ID, type, system, location)
- Process parameters (feeds, speeds, operating limits)



Business Outcomes

Faster Engineering & Manufacturing Workflows

- Automate data capture for ERP, PLM, MES, QMS, CMMS

Technology Components

- Vision AI for symbol & callout recognition
- OCR + NLP for engineering text extraction
- LLM-powered semantic interpretation
- Embeddings for similarity search across drawings
- RAG-powered engineering Q&A
- Integration with Azure AI Vision + Custom Models
- Optional: On-prem inference for sensitive drawings

Why Intuceo

- Deep expertise in **Manufacturing, MedTech, Life Sciences**
- Proven AI/ML + Vision AI delivery
- Fabric, Databricks, and Oracle data platform expertise
- Ability to integrate AI output into ERP/PLM/MES systems
- Fast 6–8 week MVP
- Explainable and auditable AI pipelines

Use Case

Tier-1 Manufacturer Automates Drawing Extraction

A global manufacturing leader (Fortune 500, Tier-1 supplier) partnered with Intuceo to unlock data from decades of nozzle engineering drawings. The goal: **automate extraction of dimensions and metadata** that engineers previously logged by hand.

- **Challenge:** ~2,000 legacy drawings (PDF scans) contained ~40 key dimensions each, with multiple drawing variants and views. Finding if a certain nozzle design existed or comparing revisions was nearly impossible manually.
- **Solution:** Intuceo ingested all drawings (including scanned images and CAD exports). The AI pipeline applied OCR to text and used vision models to interpret



drawing geometry. We extracted part numbers, nozzle hole counts, every dimension & tolerance, and even table data from the drawings. **Custom validation rules** and human-in-the-loop checks ensured accuracy for critical values. Key steps included OCR & layout analysis, AI-driven data extraction, validation against expected ranges, and post-processing into an Excel database.

Intuceo's AI drawing extraction turns your engineering documents into actionable intelligence. Say goodbye to tedious manual tracing and hello to faster designs, fewer errors, and a truly digital engineering workflow. Let Intuceo help you *accelerate innovation* by tapping into the wealth of data hidden in your drawings.