

Case Study

Implementing AI alternative-design estimation, BOQ regeneration, and pre-construction analytics for a construction contractor

Client:

A regional European construction and facade contractor specialising in mid-rise commercial buildings.



Challenges

The company faced several recurring obstacles in estimation and pre-construction processes. These issues slowed down responses, increased manual workload, and affected commercial competitiveness:

Slow re-evaluation of alternative design or structural solutions

The company often needed to quickly re-evaluate alternative structural or design solutions based on client requests, but traditional manual recalculation of quantities, materials and labour could take several days.

Manual facade BOQ regeneration after geometry changes

For facade works, the company often received updated building geometry from the client's architect, which invalidated the existing BOQ and commercial offer. Engineers then had to manually remeasure facade areas and recalculate materials, fastening systems and labour.

Reduced competitiveness and higher estimation errors

Slow response times reduced competitiveness in tenders, increased estimation errors, and raised internal pre-construction overhead.

Solution

ZONE3000 implemented an AI-driven estimation and documentation automation layer that streamlined calculations and accelerated updates:

AI module for alternative-design estimation

The module supports the company's need to rapidly reassess structural or design alternatives requested by clients. It ingests the original proposal and technical requirements, automatically generating revised estimates including materials, labour and impacts on adjacent systems.

AI module for automatic BOQ regeneration

after facade geometry changes: The solution addresses the company's recurring challenge of updated building geometry. It ingests updated project documentation in various formats (BIM files, DWG, PDFs or image-based drawings), compares it with previous versions, identifies geometric or configuration changes and recalculates areas, nodes, non-standard elements and material/labour quantities, producing an updated BOQ and commercial offer.

Pre-construction estimation dashboard

It supports the company's recurring need to evaluate multiple structural or facade options by enabling teams to compare alternatives, review key metrics (areas, material counts, labour, cost, timeline), and generate client-ready PDFs quickly and consistently.

Technology used



Machine Learning

on historical estimation datasets.



NLP-based automated proposal generation.



Computer vision and document analysis

(BIM, CAD, PDF or image-based drawings) for geometry extraction and version comparison.



Integrated dashboard

connected to CRM/ERP systems

Result

The AI modules and estimation dashboard delivered measurable improvements across the company's pre-construction process:



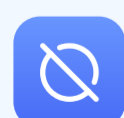
Reduction in alternative-design estimation time:

Estimation time was reduced from approximately 5 days to approximately 8 hours, which represents an ≈84% reduction.



Reduction in facade BOQ regeneration time:

BOQ regeneration time was reduced from approximately 3 days to approximately 1 day (≈67% decrease).



Fewer estimation errors: Estimation errors decreased by approximately 30%.



Higher conversion rate: Proposal-to-contract conversion increased by around 15% within six months.

This case study demonstrates how ZONE3000 applied AI, computer vision, and automated estimation workflows to help a construction contractor speed up pre-construction work, reduce errors, and strengthen competitiveness in tenders.

Start your **AI transformation** today!