Case Study

Streamlining design and modelling for public building projects

Aberdeenshire Council boosts engineer productivity and quality of mechanical and electrical system designs with Stabicad for Revit

Challenge:

Streamline complex design and modelling workflows and ensure sizing accuracy for mechanical and electrical systems to support public building projects

Solution:

Implement Stabicad for Revit to simplify the modelling of mechanical and electrical systems with automated design tools, rich element content, and built-in sizing calculations

30-60%
Efficiency improvement

Results:

- Reduces modelling time by 20–40 per cent, depending on project complexity
- Saves hours connecting different mechanical or electrical elements thanks to automation
- Increases design engineering productivity, producing more work within the same timeframe
- Eliminates double work by integrating sizing calculations directly in the modelling tool
- Improves team confidence in the accuracy and quality of calculation results thanks to CIBSE verification
- Helps Aberdeenshire Council deliver more projects to benefit the public

Simplifying complex mechanical and electrical design projects

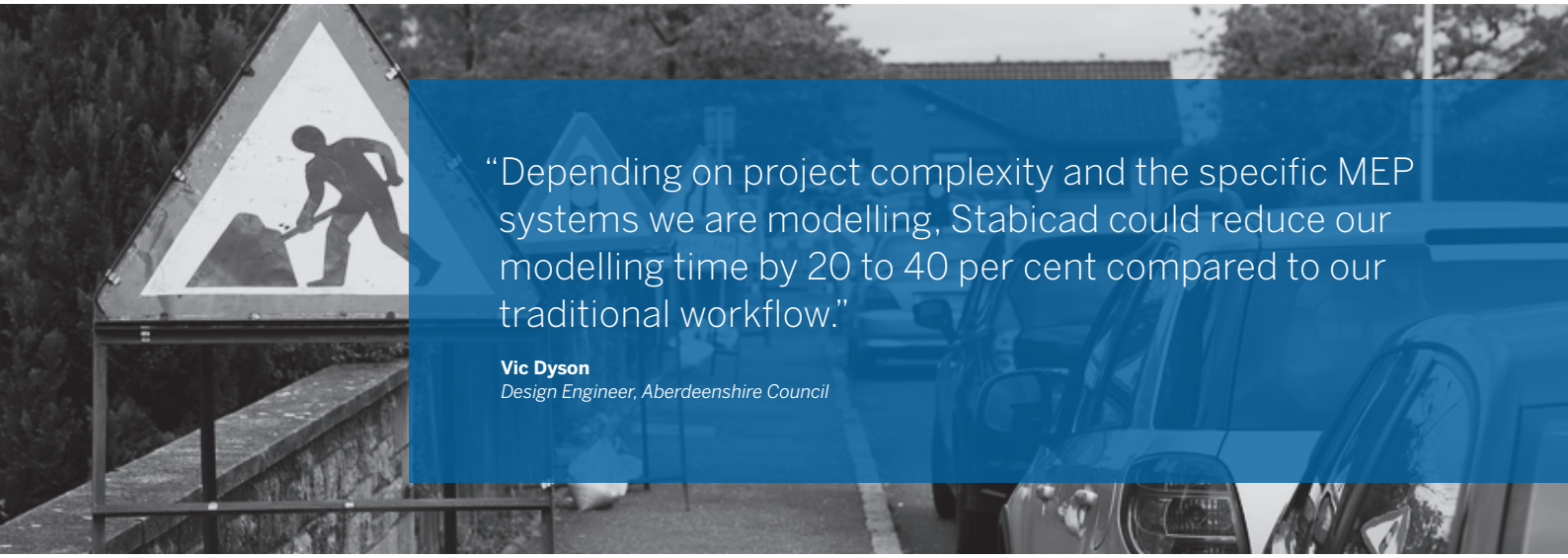
From the rugged north-eastern coastline of Scotland, across rich agricultural lowlands, and extending to the mountainous Cairngorms lies the region of Aberdeenshire. Largely rural with an economy traditionally driven by agriculture, forestry, and fishing, modern Aberdeenshire has experienced a surge in growth thanks to a thriving offshore oil and gas industry. This, in turn, has spurred demand for more public services from Aberdeenshire Council, the administrative body of the region, including a wide range of building projects.

New construction and refurbishment projects span a variety of facilities, from administrative offices and public works to schools and housing. Ged Philip and Vic Dyson, two members of the Council's building engineering team, are responsible for designing and modelling the mechanical and electrical systems for these projects. To do this work, Ged and Vic rely on Stabicad for Revit, a fully-integrated building information modelling (BIM) solution from Trimble MEP.

Ged says, "Stabicad has been a fantastic help for me, particularly since we can perform the calculations along with modelling in the same software."

The streamlined design and modelling enabled by Stabicad saves time for the team every day, especially when working on more complex projects. Vic shares his experience on a particularly challenging project for a primary school designed using Passivhaus efficiency principles. "To model this school in Revit would have taken at least a couple days and another day to carry out the calculations using a separate programme. Depending on project complexity and the specific MEP systems we are modelling, Stabicad could reduce our modelling time by 20 to 40 per cent compared to our traditional workflow."

Vic adds, "The biggest savings will come from being able to automatically do the calculations in Revit. With just a push of a button, Stabicad will size and calculate the system in Revit and generate the calculation reports. Based on project complexity, these capabilities help us improve overall efficiency 30 to 60 per cent—possibly higher depending on the design stage."



> "Depending on project complexity and the specific MEP systems we are modelling, Stabicad could reduce our modelling time by 20 to 40 per cent compared to our traditional workflow."
>
> **Vic Dyson**
> *Design Engineer, Aberdeenshire Council*

Accelerating productivity with automated software and support

The Aberdeenshire Council team didn't always have the productive design and modelling experience they currently enjoy with Stabicad. In the past, Ged and Vic used another tool that claimed to simplify the workflow but failed to live up to expectations.

"Our previous solution was so difficult; we would sometimes spend 10 or 15 minutes just to get a pipe to fit to another pipe," Ged recalls. "And we couldn't do any calculations—we had to use another programme for calculations and then jump back in the modelling tool to finish the design. It wasn't good."

Frustrated with a tool that could not deliver on their design and modelling needs, Ged and Vic were pleased when a colleague introduced them to Stabicad. Still, they'd seen how vendor promises could fall far short of reality and reserved final judgement until Stabicad could prove itself on the job.

To help the team come up to speed quickly on Stabicad, a Trimble engineer provided an initial tutorial and remained "on call" to answer any questions that came up along the way. As Vic points out, even after formal training it's difficult to know where questions will arise until you're actively using the tool for a specific project. "At one point I was having a hard time trying to work out an issue. It was literally five minutes on the phone with our Trimble engineer to get everything sorted, and I was able to get on with the job."

Ged adds, "With any of the other tools we've used, the software is just handed over and that's it. The support we've had from Trimble made a huge difference in our ability to use Stabicad effectively. That support saves us loads of time by helping us understand how to get more value out of the tool."

"Using Stabicad, we know the pipes or ducts we're working on are connected properly. And the quality of the drawings that come out of Stabicad are fantastic."

Ged Philip
Design Engineer,
Aberdeenshire Council

Saving time while gaining confidence in accuracy and quality

Now that Ged and Vic have been using Stabicad for some time, they are seeing the benefits of a more streamlined design and modelling workflow, saving them time while producing accurate results. Stabicad includes a number of automated tools, like the Nodesolver, that simplify connecting elements in a model. For the team at Aberdeenshire Council, these tools now make even highly complex projects seem easy.

In fact, using their previous software, the team could draw in pipes thinking they were connected, only to find out they actually weren't. It then required additional time to figure out how to get them connected. Ged recalls, "It used to take us ages to figure out what the problem was, and we sometimes just gave up. But the Nodesolver is awesome—to connect one pipe to another is a piece of cake. It's a game changer, really."

Taking pipes off at a certain angle used to be especially challenging, necessitating a section through the pipes. Vic says, "It was a major issue to do sections. We could spend 20 minutes trying to get the connections to work. With Stabicad, we just take the pipes down at any angle and in less than a minute the software connects them automatically. We immediately save 19 minutes on that one task."

"Being able to do our jobs faster and better helps the Council deliver more projects to benefit the public in Aberdeenshire."

Vic Dyson
Design Engineer,
Aberdeenshire Council

Having complete design and modelling capabilities in one software solution, including rich mechanical and electrical content and built-in sizing calculations, is another time saver. "I'm easily saving hours per week," Vic notes.

Importantly, using Stabicad also gives the building engineering team more confidence in their work. Not only are pipes and ducts connected properly by the software, but calculation results are verified with CIBSE Software Verification Assessment (SVA) certificates—a first in the UK. "Having the CIBSE verification is the whole reason why we can have complete confidence in the calculation results," Vic says.

Vic sums things up: "We can produce more work within the same period of time, have confidence in the accuracy of what we deliver, and the final product looks great. Being able to do our jobs faster and better helps the Council deliver more projects to benefit the public in Aberdeenshire."

About Aberdeenshire Council

Aberdeenshire Council is a Scottish public authority overseeing services such as roads and public transport, schools, public housing, social care and health, children and family support, and recycling. The Council is comprised of 70 elected councillors, representing 19 wards across Aberdeenshire. For more information about Aberdeenshire Council, visit: aberdeenshire.gov.uk

About Trimble

Trimble MEP delivers sophisticated solutions that transform workflows from the office to the field. The Trimble Constructible Process allows specialty trades to build beyond BIM to automate fabrication and fieldwork with reliable construction data. With access to the largest library of manufacturers' content and a broad portfolio of hardware and software solutions, Trimble optimizes the entire design, build, and operate lifecycle. For more information about Trimble MEP, visit: mep.trimble.com