Case study

Environmental Systems Design

Global architectural engineering firm relies on HP Z Workstations

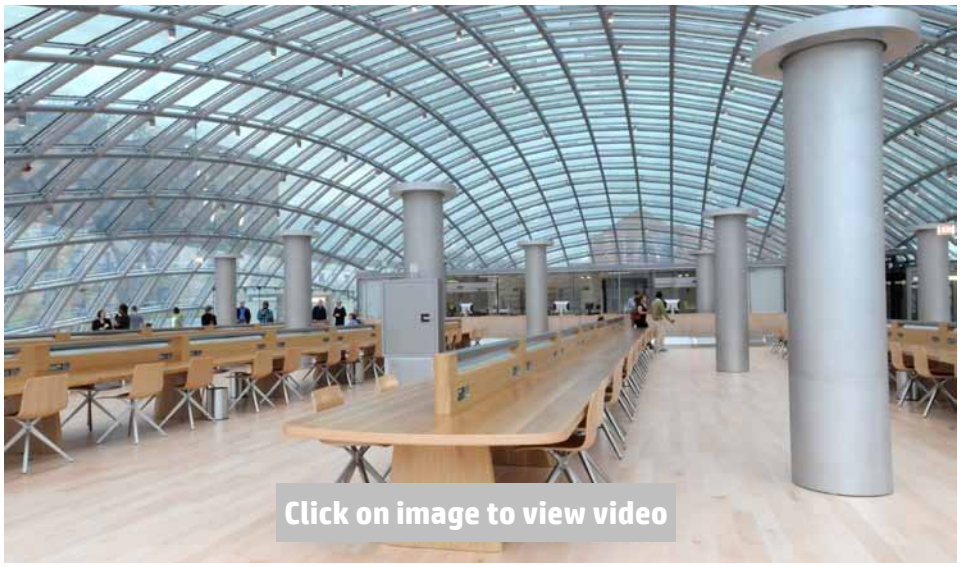
Industry
Architectural engineering

Objective
Reliably run powerful applications such as AutoCAD and Revit as well as standard business software

Approach
Standardize on HP Z Workstations

IT matters
- Run demanding software quickly, reliably
- Enable secure, mobile collaboration
- Focus staff on value versus maintenance

Business matters
- Collaborate on complex projects
- Maximize staff productivity
- Expand global business global reach



"HP Z Workstations allow us to move in and out of all the different models, platforms, and engines we use to optimize built environments—and to communicate in real time. We can now speed innovation to market in ways our competition hasn't been able to do yet."

– Kurt Karnatz, president, Environmental Systems Design

Environmental Systems Design (ESD) is a global architectural engineering firm based in Chicago, Ill., with an office in the United Arab Emirates. ESD creates the mechanical, electrical, plumbing and fire-protection solutions that mostly go unseen inside the walls and ceilings of high-performance buildings such as data centers, call centers, and hospitals. Its 280 employees include marketing, IT, accounting and administrative staff, as well as specialized engineers. All employees use computer resources, but their needs range from basic office functions to graphics-intensive 3D modeling and collaboration software. To gain the benefits of platform standardization as well as the power and reliability to run the most demanding applications, ESD relies upon HP.

As a global architectural engineering firm, ESD offers special expertise in building codes and sustainable design and provides innovative solutions for systems upgrades and retrofits, lower operating costs, and simplified maintenance. The company serves architects, developers and property managers in diverse markets such as financial, healthcare, residential, cultural, energy, and transportation. When ESD opened its doors in 1967, architectural engineers were still using drafting boards. In the 1980s, AutoCAD brought computer-aided design to desktop computers. Today, Building Information Modeling (BIM) represents the newest leap forward. BIM is a digital representation of a facility's physical and functional characteristics. It goes beyond 2D drawings to 3D modeling, moving objects around in space, and even beyond 3D to incorporate dimensions of time and cost. BIM tools such as Autodesk Revit deliver more accurate, accessible and actionable insight throughout a project's lifecycle. They enable collaboration among project participants, from architects to engineers and contractors. But with increasing software sophistication comes a growing need for processing power—something the previous compute infrastructure at ESD could not reliably deliver.

> "We're pushing information back and forth in ways we never were in the past. HP Z Workstations process tremendous amounts of data in the most seamless and communicative way possible."
>
> – Kurt Karnatz, president, Environmental Systems Design

"The buildings aren't really changing in size, but the models are," says Mark Andersen, ESD vice president of information technology. "We're modeling not just the geometry of the building, but all the information attached to it. Frequently in the past we had to break models into several parts so the equipment could keep up. With HP Z Workstations, we often can keep the model in one piece, which frees our engineers to focus on design innovation instead of on making their tools run properly."

HP Z Workstations allow ESD to move in and out of the varied models, platforms, and engines the company uses to optimize built environments—and to communicate in real time, says Kurt Karnatz, ESD president. "We can now speed innovation to market in ways our competition hasn't been able to achieve."

Previous technology could not keep up

Until recently, ESD ran its graphics and engineering software, as well as its business applications, on home built white boxes. The company would purchase memory and processors, and assemble its own devices. However, the IT staff found itself spending too much time supporting this hardware and rebuilding it every six months. Even so, systems sometimes crashed when performing complex calculations. Downtime, scheduled or not, harmed everyone's productivity. "Revit is a work share environment, everybody works on one file. If you crash that, you take 10 people offline," says Eric Olson, BIM manager at ESD. "It's a big problem to crash a model, so you need a hardware solution that can meet the application's intensive demands."

Autodesk recommends HP Workstations

ESD chose HP Z Workstations for a number of reasons. The company already used and liked HP servers. In addition, Autodesk, the maker of AutoCAD and Revit, recommends HP. The fact that Autodesk and HP collaborate to ensure their solutions work well together gives ESD confidence that HP is on pace with future demands. In addition, the broad HP portfolio lets ESD match solutions to its varied workforce needs. Some employees need massive processing power and sophisticated graphics capabilities; others use standard office tools. Some want heavy duty desktop devices; others prefer ultralight mobility. HP brought it all. The ESD IT staff liked that they could pop open HP chassis without tools to service the machines easily—although they have not often had to. Most of all, ESD appreciated the assistance it received from HP. "The biggest difference for us is that HP is customer-service oriented," Andersen says. "The HP team works with us to understand

HP recommends Windows.

what we need, allows us to test different Z Workstation configurations, and supports us with information to make good decisions."

ESD uses the HP Z420 Workstation for high-end engineering. For less-demanding administrative work, ESD chooses the economical HP Z220. The HP Z1 Workstation provides all-in-one convenience, and the HP Ultrabook and HP ElitePad give mobility to employees on the road or working from home.

"We went with HP Z Workstations because they are very reliable, and upgradeable; we can add memory or put in a different graphics card if needed," Andersen says. "We can configure the Z Workstations to take the most advantage of our graphic and engineering software. In addition to the desktop devices, we deploy HP Mobile Workstations and HP Ultrabooks depending on user needs."

ESD uses HP Performance Adviser, a software wizard built into every device, to run consolidated reports on workstation hardware and software configuration. This enables the company to tune its workstations to their application workloads. The reliability, tool-less serviceability, and streamlined management of the Z Workstations free ESD IT staff to spend more of their time adding value to applications instead of servicing and maintaining hardware.

Engineers gain speed, power, mobility, remote access

The most dramatic benefits are felt by ESD power users, the engineers. The first benefits are speed and reliability. Simulations that might have taken weeks now occur very quickly. Systems no longer crash when performing complex calculations and renderings.

> "HP Z Workstations perform admirably under heavy duress. That means no hiccups, glitches, or crashes, which is especially important with BIM models. Recently running two sessions of Revit on an HP Z Workstation, we didn't even hit 50% of what the hardware is capable of doing."
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> – Eric Olson, BIM manager, Environmental Systems Design

"A typical building might be four floors, and each floor can have up to 30,000 components across all the trades—mechanical, electrical, plumbing, the sprinkler systems, security, audio/visual. Occasionally we get buildings up to 100 floors, so you're talking 3 million components that have to be processed in the software," Olson says. "HP Z Workstations perform admirably under heavy duress. That means no hiccups, glitches, or crashes, which is especially important with BIM models. Recently running two sessions of Revit on an HP Z Workstation, we didn't even hit 50% of what the hardware is capable of doing."

Customer at a glance

Application
Autodesk® Revit® MEP 2014; AutoCAD 2014

Hardware
- HP Z420 Workstation
- HP Z220 Workstation
- HP Z1 Workstation
- HP Mobile Workstation
- HP EliteBook
- HP ElitePad
- HP ProBook
- HP ENVY Pro Ultrabook™

Software
- HP Remote Graphics Software
- HP Performance Advisor

HP recommends Windows.

Another benefit is easier, secure collaboration. Revit is designed to align the work of multiple project contributors. But one of the challenges of collaboration is finding the right balance between sharing and security. HP Remote Graphics Software (RGS) enables ESD to strike this balance, even as it frees engineers to take their graphics intensive workstation applications wherever they go. HP RGS enables mobile HP Ultrabook users at ESD to access Revit from home, in coffee shops, or on the road. They can share their work screens with multiple people simultaneously, granting view-only or full interactive access. This enables ESD staff to collaborate with colleagues in the office or around the world, in real time—with data remaining secure in the firm's data center. One ESD project involved Saudi Arabia's Kingdom Tower, the tallest building in the world. HP Z Workstations deliver the processing power, while HP RGS enables engineers to show 3D views to collaborators, and HP Ultrabooks let them take it all on the road.

"BIM on HP Z Workstations allows us to extend our innovative leadership into a global marketplace."

– Eric Olson, BIM manager, Environmental Systems Design

ESD uses all this interlocking compute capability to solve its customers' problems efficiently and creatively—and to expand its business beyond the company's Midwest roots. "If you can't do BIM, you won't get the contract anymore," Olson says. "BIM on HP Z Workstations allows us to extend our innovative leadership into a global marketplace."

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