5 REASONS TO ADOPT
GENERATIVE DESIGN
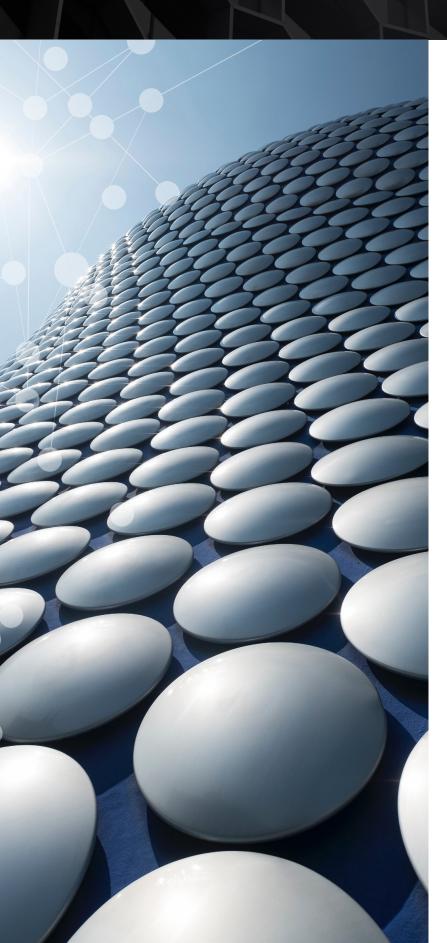
Architects and engineers face constant pressure to do more with less,
creating high-quality buildings and infrastructure with limited resources.
Here's why now is a perfect time to integrate generative design into your practice.

1 EXPONENTIALLY IMPROVE PROJECT OUTCOMES

In generative design, designers create a digital model that describes their goals and constraints for a given project. The computer then uses AI-powered algorithms to identify and assess a large number of potential solutions, augmenting human intuition and experience.

For example, an architect designing an apartment building layout may want to maximize rentable square feet, daylight, and views to the exterior, while also ensuring effective circulation. The computer generates thousands of layouts that address these goals, then helps the architect understand which might work best for the project. Because generative design can create many potential layouts in a fraction of the time it would take the architect to develop just a few, it improves the chances of finding an optimal solution.

2 MAKE BETTER USE OF YOUR MOST VALUABLE RESOURCE: TIME

Outsourcing repetitive tasks to algorithms can help AEC professionals find more time for higher-level thinking. With generative design, the computer essentially acts as an assistant, increasing the amount of work you can accomplish while helping you use your days more strategically.

"From manual drafting to drafting with AutoCAD, you do less work. From AutoCAD to BIM [building information modeling], you do less work—you draw way less to get the same amount. Generative design is kind of that next wave."

—Ben Guler, CTO of AEC tech consultancy EvolveLAB

3 BE GREENER

AEC professionals are increasingly committed to making buildings and communities more sustainable and resilient. The rapid iteration, sophisticated analysis, and out-of-the-box thinking that generative design enables can help architects and engineers take advantage of proven strategies like passive design, low-carbon materials, and green infrastructure—while inspiring them to develop new kinds of inventions.

In a 2018 survey of global AEC professionals, almost 50% of respondents predicted that a majority of their projects would be green by 2021.[2]

4 TAKE ADVANTAGE OF RECENT TECH ADVANCES

While generative design has been around for decades, it's historically been seen as the realm of expert programmers. This is changing rapidly, as dramatic advances in software and hardware make it easier for people without coding experience to jump in.

As software companies develop better, more user-friendly programs, and hardware manufacturers release faster, more powerful PCs, complex calculations that would have taken days to run only a few years ago can now be completed in hours.

"A building is such a complex system, with so many different axes of optimization, that it would be a monster to tackle through generative design without computational horsepower. Now, with the advent of hardware that actually makes this feasible, we also have AEC software that starts to take advantage of the power of the hardware."

—Ben Guler, EvolveLAB

5 PREPARE FOR FUTURE DISRUPTIONS

The algorithms that make generative design possible are one kind of artificial intelligence, but they're only a small piece of the AI puzzle.

As AI, the Internet of Things, and other forms of technology become increasingly integrated into the built environment, designers who stay on top of current developments will be well-positioned to thrive.

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For optimal performance using generative design software, we recommend using our Z4 Desktop and ZBook Studio with high-frequency Intel® processors, high-end NVIDIA® Quadro® graphics, and 64 GB memory.

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