SIEMENS
Ingenuity for life

TIAN Building Engineering

TIAN Building Engineering chooses Iray+ for BIM HVACTool

Product

PLM Components

Business challenges

Enhance AEC simulation applications with photorealistic visuals

Support interactive and immersive user experience with minimal rendering times

Enable reliable subjective assessments of building environments with life-like imaging

Keys to success

Develop a new module for photorealistic rendering of the built environment

Evaluate the performance of leading photorealistic rendering software technologies

License and integrate the Iray+ software developer kit from Siemens Digital Industries Software

Results

Stunning visuals in a new add-on application for BIM HVACTool

Interactive visualization with scene rendering times reduced from minutes to seconds

More reliable subjective assessments of lighting conditions in simulation models
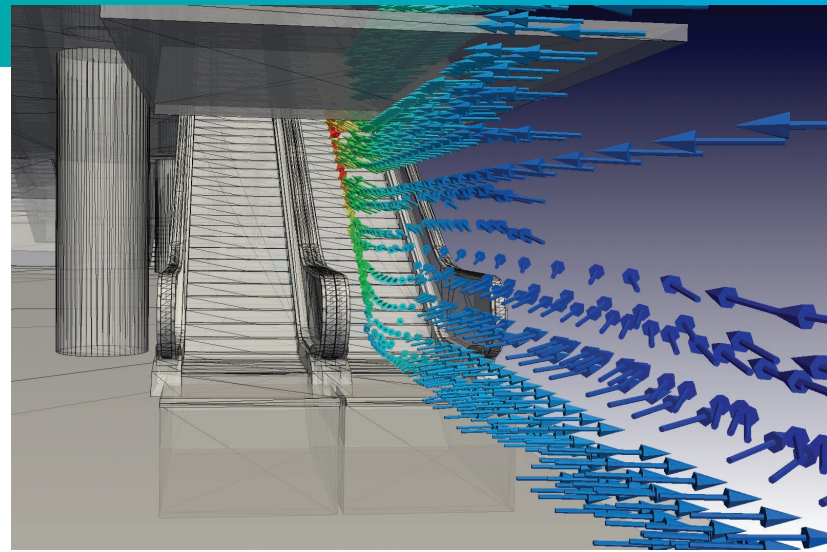
High-quality images using Iray+ supply customers with key details when making subjective decisions in their architectural designs

TIAN Building Engineering began in Berlin, Germany with a vision to deliver scientific methods to companies within the architecture, engineering and construction (AEC) sectors. TIAN combines crucial techniques for simulating and calculating physical behaviors of building structures.

Today TIAN is providing essential, high-end software tools to architectural companies, helping them to save costs and time on planning their innovative concepts. TIAN's success is built on maintaining strong relationships with customers from around the world through its offices in Berlin and Singapore.

Developed in-house by a skilled, dedicated team, TIAN's leading product, BIM HVACTool enables users to apply comprehensive building performance analysis more cost-effectively. Using just a single building
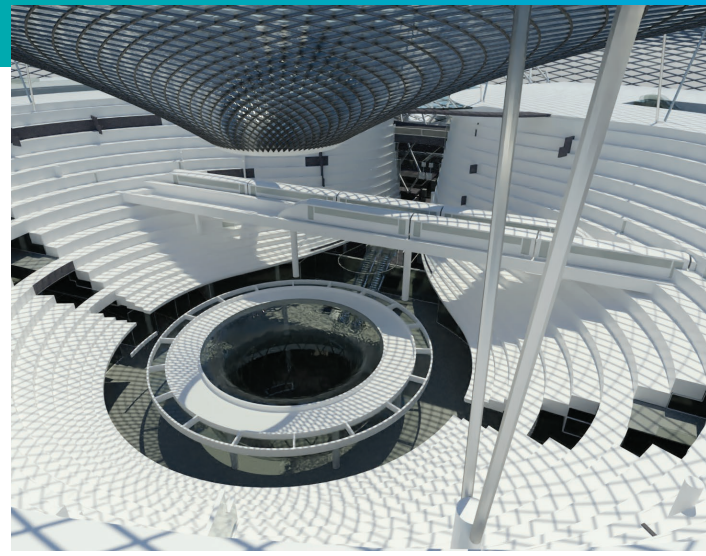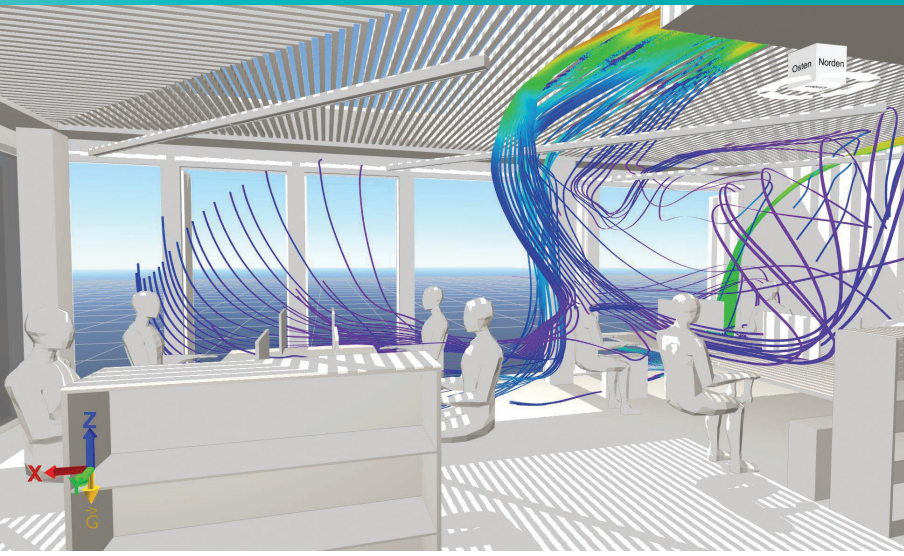
model, companies can perform a wide range of simulations including computational fluid dynamics (CFD) for building ventilation and emissions, energy simulation for thermal comfort, and daylight analysis for light/shade studies and solar energy modeling. Popular simulation engines are supported such as Open FOAM, EnergyPlus™ and Radiance.

BIM HVACTool supports industry-standard formats so that users can import 3D models before applying their choice of simulations. This unique and flexible design experience enables users to explore simulations that are imperative for complying with sustainable building certifications, many of which are supported by the application.

Competing in the chaotic market for the highest-quality visualization

High-end visualization is forever evolving, with companies demanding computer-generated images that are indistinguishable from the real world. This demand is driving suppliers of visualization software to continuously push their technologies to the limit, with the goal of creating the perfect photorealistic render. At the same time, computer-generated scenes are becoming more interactive and dynamic, driving the additional demand for real-time performance.

TIAN wanted to provide its customers with the optimum building visualization tool – one that would create beautifully rendered images without prohibitively slow computation times. Through aligning their product development with customer requirements, TIAN realized that performance would be critical. Having evaluated the performance of several alternative software technologies for scene-rendering, the company chose to license Iray+ from Siemens Digital Industries Software for prototyping a new option for photorealistic imaging in BIM HVACTool.

"We had looked further into the market, and what other technologies were available to us, but we came to settle on Iray+ given its ability to create high-quality
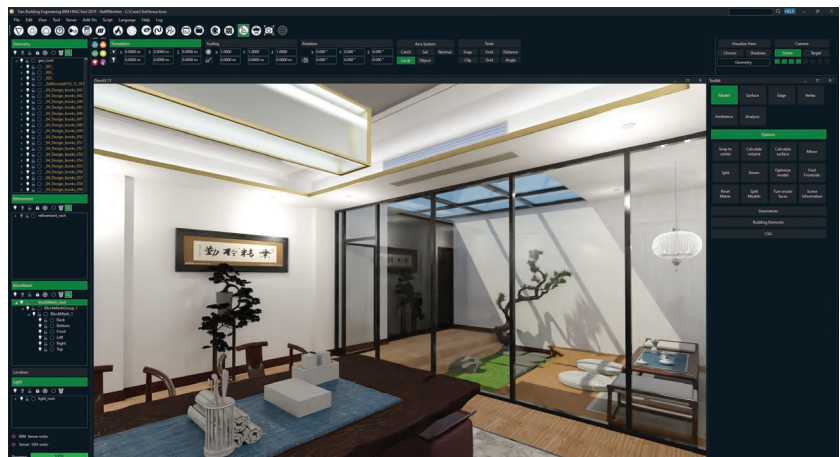
visuals while keeping the render time to a minimum," says Thomas Tian, CEO at TIAN Engineering.

Once TIAN had chosen Iray+, the company found that not only was the integration itself smooth and efficient, but it was able to showcase impressive visuals much more quickly in comparison to previous solutions developed using alternative rendering engines available on the market.

"When we were comparing render times of other software technologies, Iray+ really stood out from the crowd. A given building scene could take around five minutes in competitor options, but as little as 10 seconds in Iray+," Tian says.

"Looking toward the future, TIAN wants to deliver an impressive user experience where CFD simulations are viewed in a photorealistic environment, through Iray+. Not only will this provide our customers with the best design experience, but also allow them to decide on key issues with the best possible alternative to reality."

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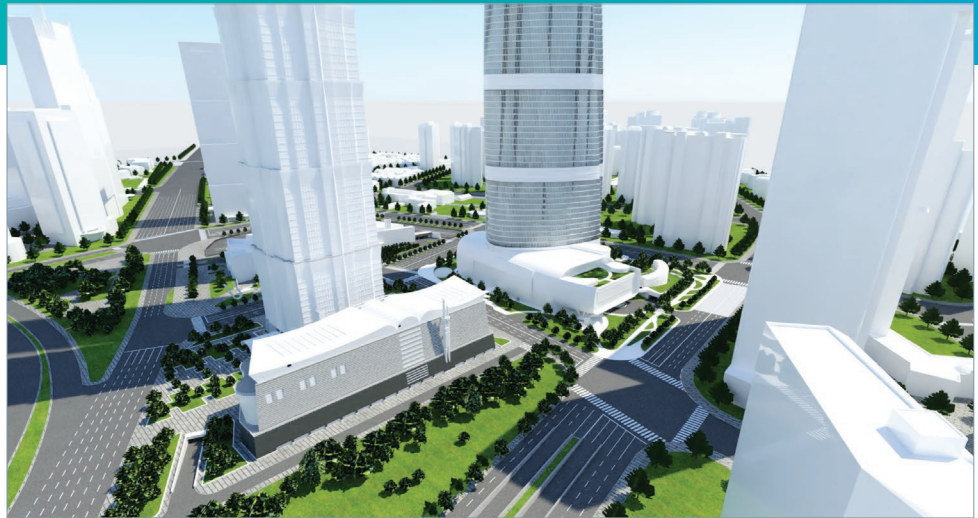
Solutions/Services

Iray+
siemens.com/iray

Customer's primary business

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www.building-engineering.de

Customer location

Berlin
Germany

With reduced rendering wait time, TIAN clients will enjoy more productive and engaging architectural and construction simulations, accelerating the entire process from start to finish.

No substitute for the human eye

Iray+ uses state-of-the-art techniques to create superior visuals that bring ideas to life. It accurately replicates the complex interactions between light rays and materials according to their physical properties, enabling designers see their ideas as close to the real world as possible.

Realizing there is no substitute for the human eye, TIAN saw the value in offering lifelike rendering to their users – subjective decisions about building designs could be made to complement quantitative analyses. For example, high-quality rendering enables the user to assess potential glare arising from the relative positions of lights and reflective surfaces.

Looking toward the future

TIAN is striving toward new goals continuously and is investigating further benefits from Iray+ to provide their customers with the best capabilities. "Looking toward the future, TIAN wants to deliver an impressive user experience where CFD simulations are viewed in a photorealistic environment, through Iray+," Tian says. "Not only will this provide our customers with the best design experience, but also allow them to decide on key issues with the best possible alternative to reality."