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Customer Success Story

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Autodesk BIM solutions helped us to create models at a very early stage of the design process. These models helped us visualize and refine the building's innovative systems long before we began construction.

—Nathaniel Buckingham
Principal Engineer
AECOM

# Blend tradition and innovation.

## Global engineering services firm designs Scotland's largest whisky distillery and wins sustainability awards with BIM.

**Roseisle Distillery. Image courtesy of AECOM.**

### Project Summary

Diageo PLC is one of the world's leading premium beverages companies, managing many major brands, including Guinness, Smirnoff, and Johnnie Walker. In response to a growing global demand for Scotch whisky, Diageo PLC recently constructed the £40-million Roseisle Distillery in Speyside, Scotland. To lead the design and construction process, Diageo selected AECOM, a prominent global engineering and architectural services firm. "Right from the start, we knew that we wanted to integrate the building with the processes that it housed," says Nathaniel Buckingham, principal engineer at AECOM. "The challenge was to design a building that wrapped around the complex process equipment required to distill whisky, while maintaining the high level of flexibility required for future maintenance and improvements." As the lead consultant, AECOM delivered all non-process consultancy services, presiding over professionals from 24 different disciplines, including architecture. Diageo provided all process design services in-house.

### The Challenge

AECOM began work on the fast-track project in April 2007. "Our primary goal was to deliver the completed distillery in 22 months, from concept through detailed design to construction," says Buckingham. Diageo wanted the new distillery to be the largest in the United Kingdom, with a capacity of 10 million liters per year. "We were also charged with delivering a facility that blended centuries-old distilling knowledge with advanced technical and environmental practices." These practices included water reclamation, a removable roof, and an innovative waste and heat recovery system.

To help complete the complex project designs on time, AECOM used Autodesk® Revit® software products for Building Information Modeling (BIM), as well as Autodesk® Navisworks® Manage software for clash detection. "Autodesk BIM solutions helped us to create intelligent models at a very early stage in the design process," says Buckingham.

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# The new distillery will serve as a benchmark for the design of future distilleries.

**The Solution**
These models helped Diageo representatives visualize and refine the building's innovative systems long before beginning construction. "Autodesk BIM solutions were instrumental to designing the distillery's complex processes and to achieving Diageo's ambitious sustainable design goals," says Buckingham. The completed distillery included many design elements that BIM helped make possible.

Two of these features are the distillery's removable roof and walls. "The client was concerned about the environmental impact of the eventual replacement of the fermentation units," says Buckingham. With help from Autodesk BIM solutions, AECOM created a unique, flexible structure that will allow Diageo to remove the walls and the roof when the time comes to replace the fermentation units. This involved creating a combined 3D model of the structure, architectural façade, building services, and processes to help see if that the fermentation units could be removed in the future with minimal disruption.

To reduce the building's carbon footprint, AECOM and Diageo designed the distillery to recover waste heat and water from the internal distillation process. "We also sited the building adjacent to a malting plant from the 1980s," says Buckingham. "That allowed us to capture additional waste heat from that facility."

One of the most innovative aspects of the new distillery is its conversion of process waste into energy. "We were able to reuse co-products from the distilling process to provide energy where, in the past, these residues would be removed and used as animal feed," says Buckingham. Using a process known as anaerobic digestion, the new distillery converts the carbohydrates present in the waste products into clean process water and methane for a biomass boiler.

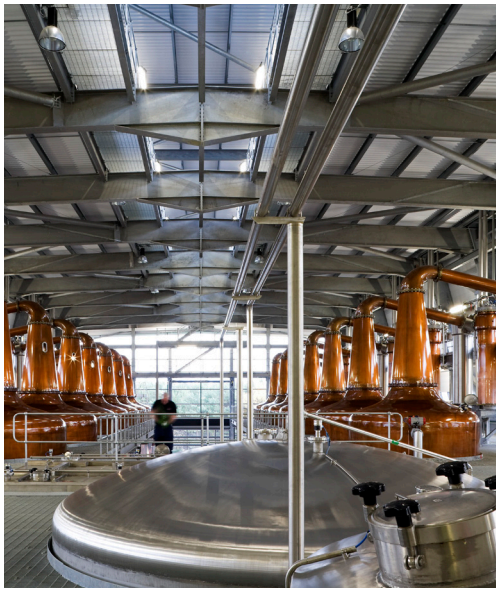
The completed distillery also includes a water reclamation plant capable of treating liquid byproducts from the distillery, saving approximately 300,000 cubic meters per year—roughly the equivalent of the distillery's annual water demand.

**The Result**
Roseisle Distillery commenced operations in April 2009, with the first bottles of whisky available for release to the public in 2012. The distillery won the 2010 Royal Institute of Chartered Surveyors Sustainability Project of the Year and Overall Project of the Year. It also earned a BREEAM® Excellent sustainable design rating. "We couldn't have completed this fast-track project on time and under budget without BIM," says Buckingham. By using BIM and integrating the 3D architectural, structural, and complex-process equipment models, the team was able to better coordinate and manage the design solution in a virtual environment. "The result was a more coordinated, efficient, and collaborative process."

"Autodesk BIM solutions and Navisworks Manage helped us minimize design time and reduce the number of onsite clashes and requests for information from the contractor," says Buckingham. "This helped provide high levels of coordination and consistency across the project."

"Roseisle Distillery will serve as a benchmark for the future design of distilleries, and will influence the way the beverage industry looks at the distilling process," says Buckingham. "The significance of these innovations cannot be underestimated."

For more information, visit
**http://www.autodesk.com/bim.**



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