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Roundabouts, intersections, parking lots, traffic signs, light rail construction, and intelligent island design each present unique challenges and our software puts impressive computational power in the designers’ hands. With over 22 years of engineering research and industry feedback behind us and a “Who's Who” of the top DOTs and global engineering consultants using our software, Transoft Solutions is changing the way our world is built.
Welcome to the 10th Edition of the Autodesk Partner Solutions Design Guides, 2014

It seems hard to believe that the 10th year anniversary of the Autodesk Partner Solutions Design Guides have come upon us so quickly! There have been many changes at Autodesk and their Partners during this time and no doubt there will continue to be more in the future. One thing that has not changed though is the incredible innovation from Autodesk and the manner in which the Partners utilize the technology to advance their products and services.

One of the most compelling events at Autodesk University each year is the keynote presentation. As the leading innovator in Product Lifecycle Management (PLM), Building Information Modeling (BIM), digital prototyping, sustainable design, and simulation, Autodesk takes pride in showcasing partner’s projects to attendees. The keynotes are extraordinarily inspirational, and set the tone for networking and learning opportunities throughout the week.

Escape Dynamics is one of the stellar companies featured by Autodesk at past keynotes. A pioneer in space propulsion technology, Escape Dynamics was also recently awarded The Autodesk Small Business Success Award, celebrating businesses excelling through innovation, leadership, and design. Escape Dynamics is utilizing Autodesk Simulation CFD 360 to simulate airfoils and other components for creating prototypes of their reusable space launch systems. We are excited about featuring Escape Dynamics in this year’s Autodesk Partner Solutions Design Guides.

Utilizing Autodesk Software, Partners innovate in every field. The Excellence in Infrastructure Awards spotlights the world’s best civil infrastructure projects, featuring the best uses of BIM. The diversity of the winner’s projects is symbolic of the broad range of BIM applications, around the world.

Creativity and innovation are keywords associated with all of Autodesk’s partners, and this year we are pleased to present them to you. HydraulI-CAD and Piping Systems’ designs, for example, are testimonies to the automation of pipelines and facilities. Their focused expertise in solving problems taken for granted in everyday life, like how our orange juice or water is delivered to final destinations safely, is important to every citizen. Transoft and Simrad AeroTech’s utilization of Autodesk software to develop roads and runways for vehicle and aircraft transportation enable us to feel secure when we travel. 3DA Systems and Panzura are at the leading edge developing tools that solve pressing issues for the AEC market. Teradici’s technology promises to transform the virtual workspace, and we continue to see how the cloud underlies much in the way of efficiency, data archive and retrieval and remote access.

We are grateful to Autodesk for the continued support of the Autodesk Partner Solutions Design Guides. I hope you enjoy this 10th year anniversary edition!

Publisher
kpopp@extensionmedia.com

Cover images courtesy of Escape Dynamics, NASA, Gensler, and Autodesk.
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Escape Dynamics Inc. is an advanced technology company working on design and development of propulsion systems and technologies needed for efficient and sustainable aerospace transportation and space launch. The company was founded in 2010 with the vision of opening space for large scale commercial, social and scientific exploration and enabling sustainable travel in the atmosphere and beyond. From the early days of the company we partnered with Autodesk to bring cutting edge innovation into the aerospace field and design game-changing solutions by leveraging the power of the most advanced design and simulation tools and the new approaches to rapid prototyping and optimization.

At Escape Dynamics we believe in the future where space flight is affordable, efficient and sustainable and where people can fly through the atmosphere much faster and in a more efficient way. Making this happen clearly requires development of completely new propulsion systems. We started by asking a fundamental question: how can we build affordable space launch and aircraft systems with efficiencies order of magnitude greater than systems that rely on combustion of fossil fuels? The question required us to completely re-think what was possible and moved us way from incremental thinking. Over the past three years our team identified and tested a number of technologies that instead of chemical combustion rely on efficient utilization of electromagnetic energy. We also invented and tested a unique solution for wireless energy transfer which allows safe and efficient delivery of electromagnetic energy to moving vehicles. Today we are preparing for a series of large scale engine tests and flight demonstrations scheduled for 2014 that will show that affordable and efficient flight powered with renewable energy is the way of the future.

It is not hard to see that there is a clear opportunity for positive change in aerospace industry. For over five decades people have been launching payloads into Earth orbit and flying in the atmosphere using combustion systems. There has been little innovation in the way propulsion systems work and there is an extraordinary opportunity for positive change. Through an extended research we discovered that electromagnetic propulsion has a unique potential to dramatically improve the efficiency of flight. The architecture we developed uses energy delivered from a ground station and reduces (or in some cases eliminates) the need to carry energy on-board. In the space launch system designed by our team wireless energy is coupled into propulsion through a thermal engine which absorbs external microwaves into heat and transfers that energy into a flow of propellant which is expanded through a nozzle creating thrust. This simple approach leads to engines with efficiencies dramatically greater than those of currently used rockets. Consider the following: a non-reusable chemical rocket used today to launch a 200 kg satellite into low Earth orbit would typically weight more than 10 tonnes. Our reusable launch vehicle with same payload is projected to weigh less than 2 tonnes.

Such development clearly represents a significant technical challenge. Historically aerospace industry has been a domain of large corporations and governments and even today development of novel aerospace systems is a daunting task. However, this situation is rapidly changing and Autodesk is one of the key companies enabling this change. Digital prototyping and simulation tools as well as cloud-based tools for design and project management dramatically change the landscape for innovation.

Escape Dynamics is designing and building novel propulsion systems with the team size of less than 30 people. From the early days we focused on bringing together visionary scientists and engineers from schools like Caltech, MIT and University of Colorado and providing them with the right tools for disruptive innovation. We believe that the only way to create the future is to start with the tools of the future in mind. We transitioned our R&D process into digital space with fabrication of physical
prototypes relegated to the last step. This is possible because of the increased precision and reliability of simulation tools such as Autodesk Simulation CFD. On the manufacturing front we are looking into designs of fully automated factories using Autodesk Factory Design Suite to enable smart operation of facilities that relies on flexible, agile robotic manufacturing. Our confidence in this approach is based not only on our own experience and experience of the Autodesk Team, but also on an extremely compelling example of Tesla Motors which implemented the most efficient robotic manufacturing approach in the automotive industry, allowing them to create a game-changing electric car.

Another dimension of making successful products is ability to present the results of your work in an inspiring way consistent with the transformational nature of our technology. Autodesk visualization tools like Showcase, 3ds Max and Inventor Studio allow us to do this. These tools allow our team to show the future and inspire new generation of innovators and visionaries who will build upon game-changing ideas. The ease of use of the tools like 3ds Max allows our team to save large amount of resources on development of presentation materials and at the same time gives our engineers and scientists an opportunity to dream big and convey their ideas and visions without limits.

There are many exciting challenges that still need to be overcome and innovation in space access and flight is still a significant challenge. Our experience shows that transitioning from CAD, simulations and great visuals into flying hardware requires long and dedicated effort. But this transition is possible and we see this with every test and every prototype we build. We believe that tools like the ones developed by Autodesk will lead to the world in which the only limitation of innovation is our own imagination and audacity. We look forward to working with the community of visionary innovators as we are continuing to bring our ideas from the designs and simulations into the real world.

Dr. Tseliakhovich is a CEO and CTO of Escape Dynamics, leading the technology and business development efforts at the company. Dmitriy holds a Ph.D. in astrophysics from Caltech and a M.Sc. in physics from Carleton University in Ottawa. Dmitriy is also a graduate of a revolutionary post-graduate program at the Singularity University – an institution founded by Peter Diamondis and Ray Kurzweil to promote leadership and empower the cadre of young leaders to address grand challenges faced by humanity today. Dmitriy has more than 10 years of research experience in physics, astrophysics, and space engineering. His research career included work at Harvard University and Space Telescope Science Institute. His research interests include theoretical and experimental physics, physics of space propulsion and the use of exponential technologies. Dmitriy is driven by his life mission of opening space for large scale commercial, social and scientific exploration.
Let’s face it we all have those times, when the project needs to get done and there just isn’t enough time to complete it. So you work late into the night in hopes of completing it by the deadline. And some of these deadlines are very absolute, and missing it may cost your company a great deal of money or even an opportunity lost. It is times like this that your development workstation must work flawlessly. One might even say reliability and dependability are priceless.

Well meet the Lenovo ThinkStation family, not only is it more reliable than our competitors, but there is a third party study to prove it. In 2012 TBR did a repair study to find out who had the most reliable workstations. They found that Lenovo ThinkStations had the lowest repair rates, up to 24% more reliable than its top two competitors. These numbers are huge, think about what that could mean to the success of one of your projects. Up to 24% fewer hardware problems is significant, and could potentially save you time, and your company money.

Lenovo ThinkStations are fully tested and certified for Autodesk® applications, and they come with a wide range of Intel® processors including the Core™ i5, and i7 as well as the Xeon® E3 and Xeon E5 series processors. Step up to a Powerful and Reliable Lenovo ThinkStation at a price that might delight you.

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We all know it. Performance in our jobs is the key to success. However, performance in design is difficult to measure, but it is easy to spot a great design when we see them. So how do you get better designs?

Better designs require innovation, and innovation requires us to try new ideas. This means looking at many different concepts, using our own imagination and creativity as well as gathering input from others (especially customers) and incorporating those into our products.

Therefore, producing an innovative design likely requires multiple iterations. And of course, we still need to simulate the concepts to make corrections.

The more you design the closer the deadlines becomes. So how do you get a leg up?

One solution is to improve your workstation performance so your ideas can be created even faster, allowing for more design iterations.

This is where Lenovo ThinkStations can help, providing the very latest technology and high performance needed in today’s market. In some cases they could be 30 to 40% more powerful than comparable systems just 2 years older.

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Step up to a Powerful and Reliable Lenovo ThinkStation at a price that might delight you.

Find out more at www.lenovo.com/thinkstation
Whether it’s moving across town or across the country, there are always boxes to pack and trucks to fill. But what if the core of your business IS trucks and you didn’t have a choice about moving? That’s exactly what happened to Portland’s J+D Refrigeration.

With the new Milwaukie Light Rail Project scheduled for completion in 2015 in Oregon’s biggest city, some businesses had to move to new locations across the city. J+D Refrigeration was one of the businesses forced to find a new location as their old location was appropriated to make way for part of the tracks and surrounding infrastructure.

They found a location they liked in Clackamas County, but before they could move in, they had to know whether their fleet of refrigerated trucks could maneuver around the site. They called on VLMK Consulting Engineers in Portland in early 2012 to help them with the transition.

“We got involved pretty early on when they realized that they were going to be ‘dislocated’,” says Brian Dubal, one of the senior engineers at VLMK. “The local authorities told them they would have to move as Portland was building their new light rail transit system right through their existing site.”

J+D Refrigeration moved into their new warehouse facility in February 2013 with approximately 150,000 square feet with 13 loading dock doors and a weigh scale on the premises. Prior to moving in, one of their main concerns was the site grading around the weigh scale. With WB-67 semi-trailer trucks coming and going throughout the day, it was up to Brian and his team to ensure safe operations.

“They were really more worried about the trucks tipping and being at a weird angle,” says Dubal. “It was also about offsetting the weigh scale. They were worried about having that kind of issue in approaching the truck scale. It was good to be able to show them that it wasn’t a problem. They are pleased with that,” he continued.

One feature of AutoTURN Pro 3D that Dubal liked was the custom vehicle creation within the extensive vehicle libraries. While there is already a WB-67 included in the library, he wanted to add some specifications that VLMK had done previously.

“We’ve actually measured a truck turning with the wheels forward and the stock template (in the AutoTURN Pro 3D library) shows it with the wheels back,” says Dubal. “We modified the standard template because in Portland a lot of the WB-67 trucks move their back trailer wheels forward, which gives them a bit more maneuverability,” says Dubal. “It was pretty cool to be able to modify that to match the custom template we came up with a number of years ago.”

When it comes to client satisfaction, VLMK decided to follow the adage ‘Show, Don’t Tell.’ With this in mind, Dubal used the simulation playback feature within AutoTURN Pro 3D to animate the section of the site he wanted his clients at J+D Refrigeration to see. Being able to see their proposed site in 3D made all the difference.

“As soon as the client saw it, they said ‘Oh, we don’t have any problems.’ Looking at plans, most people have a tough time visualizing what something is going to look like. Being able to say ‘what is the real impact?’ and getting the right answer is key. I think AutoTURN Pro 3D is a little conservative, but that’s the way it’s supposed to be. I think that is good. If it looks fine on the screen, then I sleep well at night,” Dubal chuckles.

At the heart of AutoTURN is the vehicle swept path technology and the J+D Refrigeration site was a good candidate for analyzing different types of vehicles.

“The parking lot is separated from the loading bay area—they do have to pull onto the same main drive aisle,” says Dubal. “It’s helpful to look at the turn radius and see if there is a car coming out and a truck at the same time, is there enough room? The 2D turning simulation only tells you so much and with the 3D version you can see immediately ‘Heck no!’ and immediately change the design.”
Architecture, Engineering, and Construction companies are constantly being challenged by rising construction costs, fast-track schedules, growing documentation requirements, and project teams located around the world. To succeed in this fast-paced and competitive environment, AEC firms require an accurate and efficient way to exchange 2D designs, 3D models, specifications, contracts, and other project information. Securing and protecting this data, while sharing it with various stakeholders is now a requirement of doing business in a timely and cost effective work-flow.

However, the multitude of systems, file formats, and document sets prevent many AEC firms from collaborating efficiently. This happens throughout a project life-cycle including when they are reviewing designs, managing proposal requests, or processing change orders. Many project teams continue to use time-consuming paper-based processes and inefficient work around solutions that drive up costs, increase errors, and result in project delays.

The 3DA solution for AEC leverages Acrobat® 3D technology, and the ubiquitous Adobe® Reader® to bring people together with the information they need. The 3DA Suite for AEC was created to help AEC firms keep projects on track, on schedule, and on budget.

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About
3DA Systems Inc. develops intuitive and interactive user interfaces that allow AEC professionals to transform detailed object information from Revit® Architecture, MEP, and Structure into the most effective collaborative file format in the BIM industry.
Imagine a fully loaded Boeing 747 crashing four times a week, every week, with no survivors. Over a 52-week period, that would result in about 100,000 lives lost. That's roughly the same number of deaths in the United States each year that can be attributed to infections contracted in hospital operating rooms (ORs). According to recent estimates by the Centers for Disease Control and Prevention, these infections, also known as nosocomial or healthcare-associated infections (HAIs), can cause or contribute to 99,000 U.S. deaths annually. In addition to the devastating impact on patients' families, the fatalities and treatment of over 290,000 surgical site infections per year cost the U.S. healthcare system billions of dollars—and yet, they are preventable.

HUNTAIR, Inc. is on a mission to raise awareness about the problem of HAIs. A subsidiary of the CES Group, Inc., the largest group of custom heating, ventilation, and air conditioning manufacturers in North America, HUNTAIR designs and manufactures specialized HVAC systems used in critical industrial environments. Its CLEANSUITE® system, inspired by cleanrooms used in the semiconductor and pharmaceutical industries, is challenging the healthcare industry to rethink how air is delivered to a sterile surgical setting. Armed with computational fluid dynamics (CFD) models created in Autodesk® Simulation CFD Advanced software, HUNTAIR is showing hospitals how airflow over patients in the OR can be optimized to achieve better contamination control—and potentially, save thousands of lives and lower treatment costs annually by reducing post-operative complications due to HAIs.

The innovative design of HUNTAIR’s CLEANSUITE system allows for improved contamination control over the sterile surgical setting.

Project Summary
Imagine a fully loaded Boeing 747 crashing four times a week, every week, with no survivors. Over a 52-week period, that would result in about 100,000 lives lost. That’s roughly the same number of deaths in the United States each year that can be attributed to infections contracted in hospital operating rooms (ORs). According to recent estimates by the Centers for Disease Control and Prevention, these infections, also known as nosocomial or healthcare-associated infections (HAIs), can cause or contribute to 99,000 U.S. deaths annually. In addition to the devastating impact on patients’ families, the fatalities and treatment of over 290,000 surgical site infections per year cost the U.S. healthcare system billions of dollars—and yet, they are preventable.

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The Challenge
HUNTAIR has a history of innovation in designing and manufacturing custom air handling and cleanroom systems, and its products already have helped to improve airflow in healthcare facilities. It was the first to invent an “integrated” fan array solution—FANWALL TECHNOLOGY®—that replaces large fans with a more efficient and cost-effective array of smaller fans. Many healthcare facilities have adopted this technology because it is quiet, energy-efficient, low-maintenance, and provides redundancy—benefits that are especially important in the OR environment.

The innovative design of HUNTAIR’s CLEANSUITE system allows for improved contamination control over the sterile surgical setting.
HUNTAIR relies on Autodesk software for its custom designs of CLEANSUITE systems.

The idea for the CLEANSUITE system evolved a few years ago, when HUNTAIR was involved with an OR project for a hospital in Colorado. “I was working with an engineer who was very familiar with our cleanroom offering and our approach to contamination control,” says Kevin Schreiber, global director of healthcare for Tualatin, Oregon-based HUNTAIR. “We got to thinking, ‘Why not apply the same technology used in semiconductor and pharmaceutical cleanroom environments to the operating room? It would be the perfect application.’”

When HUNTAIR engineers began designing the CLEANSUITE system, their research quickly revealed that standard airflow guidelines for ORs, like those from the American Society for Healthcare Engineering (ASHE) and the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE), do not address airborne contaminant levels. “The ASHE and ASHRAE standards are primarily concerned with how much air is being pumped into the space, and where it’s coming from and going to,” Schreiber explains. “However, they don’t talk about air cleanliness standards at all.”

In a typical OR environment, air can flow across the biggest contaminate in the room—the surgical staff—and then over the patient. That air can contain millions of squamous cells (skin cells) emitted by every person in the OR—who are also likely carrying contaminates that they picked up from other people in common areas on their way to the surgery suite.

“Your skin is rejuvenating all day, every day. The old stuff dies, falls off, and gets put into the air—about 5 million particles per person, every minute,” says Schreiber. “These particles are less than 0.3 microns in diameter, so they’re in the bacterial range. Think about it: If a typical surgery requires about five people in the OR, that means there can be 25 million particles swirling around the patient each and every minute. This is why it’s important to make sure we’re minimizing turbulence and controlling the direction of the air in the OR.”

The Solution

Laminar flow diffusers are used in ORs to deliver temperature-controlled, HEPA-filtered air over the operating table via a low-turbulence airflow stream. But according to Schreiber, in a standard laminar flow environment with a minimum array design that includes multiple laminar flow diffusers, the air entering into the OR is far from smooth. “A laminar diffuser set in the wrong context does not a laminar system make,” he says. “There are gaps—and there’s a lot of recirculation going on.”

When designing CLEANSUITE systems, HUNTAIR performs detailed studies of all heat-emitting elements that can affect airflow in the OR.

Autodesk software is helping us prove that a solution like the CLEANSUITE system does make a difference.

—Kevin Schreiber
Global Director of Healthcare
HUNTAIR, Inc.

To eliminate the gaps, HUNTAIR’s CLEANSUITE system uses a single-diffuser design, allowing for improved contamination control over the sterile surgical setting. “With CFD simulations performed in Autodesk Simulation CFD Advanced software, you can really see the difference between how the two systems perform,” Schreiber says.

The CLEANSUITE system can deliver the same FPM (feet per minute) that is required, and can also maintain the air’s temperature from when it enters the OR all the way down to the table and the patient. The air then flows away from the patient. “In a standard laminar flow environment, the air being delivered can vary as much as 10°F due to the thermal effects of lights and people,” says Schreiber. “With the CLEANSUITE system, the temperature can be maintained. If the air is 62°F when it enters the room, that’s the temperature it is when it reaches the patient.”
Heat transfer is where things can get “a little bit complicated” when designing CLEANSUITE systems, according to Schreiber, because the OR can include so many heat-emitting elements—such as people. “We usually have to do some pretty detailed studies,” he says. “The 3D models we create have to include the table, the people in the space, the equipment, the booms, the lights, and then the heat signatures from all of those things, as well.”

**Up in the Air**
A major consideration in the design of the CLEANSUITE system was placement of equipment for delivering laminar airflow. “You can’t have equipment standing on the floor in the OR because it creates a hazard and takes up valuable space,” says Schreiber. “That’s why hospitals mount things to the ceilings in ORs—equipment booms, monitors, light booms, and so on.”

For its semiconductor product, HUNTAIR had created a structural element to support automated material handling systems (AHMS)—and this got Schreiber thinking. “One of our semiconductor clients uses big robots that shoot through the facility, carrying wafers from place to place, and those all hang directly from our ceiling systems. So, I thought, why not add the mounting of these booms and other equipment in the ORs right onto our product?”

HUNTAIR’s CLEANSUITE ceiling systems are inspired by equipment used in industrial cleanrooms.

**HUNTAIR’s CLEANSUITE ceiling systems are inspired by equipment used in industrial cleanrooms.**

HUNTAIR engineers used Autodesk® Inventor® 3D mechanical design software to model the CLEANSUITE system’s modular, ceiling-hung plenum with integrated filtration, electrical, piping, and structural equipment supports. Schreiber says, “With this approach, we not only have airflow and air delivery, but also a UL-listed light fixture, and a structural interface between that equipment and the building structure. Nobody else is doing anything like it for the OR environment.”

**Inspiring Change**
HUNTAIR introduced the CLEANSUITE system in the fall of 2011. The healthcare industry is not known for being quick to embrace change—especially if it means letting go of long-standing practices—but the CLEANSUITE is already gaining support. For example, integrated managed care consortium Kaiser Permanente is now recommending that the CLEANSUITE system be used throughout its network for both new and retrofit construction projects of ORs.

Compelling CFD models that HUNTAIR created within Autodesk Simulation CFD Advanced software played a key role in influencing Kaiser Permanente’s decision, according to Schreiber. “We developed an executive summary to explain how the CLEANSUITE system is different, and why we think it works better,” he says. “Showing airflow models created with Autodesk Simulation CFD Advanced helped Kaiser Permanente’s corporate leadership understand how the semiconductor and pharmaceutical industries look at contamination control and how these practices can improve air quality in the OR and reduce HAIs.”

Schreiber adds, “Autodesk Simulation CFD Advanced helps us show healthcare facilities what is actually going on with airflow in their ORs versus what should be happening theoretically. This is really important when challenging an industry to rethink its practices.”
The Result
HUNTAIR has already built and installed more than 15 CLEANSUITE systems for healthcare providers. It is now working on designs for several other healthcare facilities, including outpatient surgery centers. “We’re really just starting implementations,” says Schreiber. “But in terms of having an impact on getting people to see how and why they should change the design of the airflow system for their OR environment, we’re really making headway.”

HUNTAIR has been asked by lawmakers in Washington, D.C., to help raise awareness of the need for air cleanliness standards for ORs—and plans to present airflow simulations created using Autodesk Simulation CFD Advanced software when making its case. “If we want to save lives and reduce healthcare costs, we need to learn from semiconductor and pharmaceutical companies and establish national standards for addressing airborne contaminant levels,” says Schreiber. “That’s what we’re after—and Autodesk software is helping us prove that a solution like the CLEANSUITE system does make a difference.”

Schreiber adds that using Autodesk software strengthens their case in another way—credibility. “That’s probably the most important thing,” he says. “We’re trying to bring this important issue to the forefront, of course, but we’re also selling a product. We have to be very careful that the data we’re providing is not biased in any way. Having Autodesk technology as a part of the process lends credibility to what we’re saying, and that’s huge.”

Learn More
The Autodesk® Simulation family of products delivers a comprehensive set of simulation software tools that are easy to integrate into each phase of the product development process. From mechanical stress, vibration, and motion to CFD, plastic injection molding, and multiphysics, Autodesk Simulation software helps solve your most challenging design problems.

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We’re trying to bring this important issue to the forefront ... having Autodesk technology as a part of the process lends credibility to what we’re saying, and that’s huge.

—Kevin Schreiber
Global Director of Healthcare
HUNTAIR, Inc.
Autodesk Excellence in Infrastructure 2013 Awards Spotlight the World’s Best Civil Infrastructure Projects

Check out the winning projects from the USA, UK, Netherlands and India

It seems these days all we hear about is an endless parade of gloom and doom stories about the world’s crumbling civil infrastructure. And the general public is getting the message. In the US, for example, a recent Harris Interactive poll revealed that Americans rank major infrastructure failures as their greatest infrastructure-related concern.

Sure, it’s important to point out where things are falling apart, but it’s equally important to promote extraordinary examples of practical, cost effective and inspiring solutions that show how the latest in technology can make a profound difference.

That’s the motivation behind the Autodesk Excellence in Infrastructure Competition, now in its second year. Hosted by Autodesk, Inc. and CGarchitect, a leading online magazine and end-user community for visualization and design professionals, the competition’s mission is to showcase exemplary use of Building Information Modeling (BIM) for civil infrastructure.

The 2013 winners are:

1st Place: HNTB for the Denver International Airport Hotel and Transit Center Program

2nd Place: iNFRANEA for Room for River Waal in Nijmegen, Netherlands

3rd Place: The alliance of Galliford Try Costain Atkins for the Liverpool Wastewater Treatment Works

Special Visualization Award: VR Real Technologies (VRRT) for its work on the DFL India Cyber City Gurgaon animation

“Each of the winning projects offers a model for the application of forward-thinking Building Information Modeling workflows and technologies for infrastructure projects,” said Lisa Campbell, vice president industry strategy and marketing, Autodesk. “First place HNTB, for example, employed Autodesk technologies to drive a BIM process from early stages of planning through design, and now into construction – engaging a large group of stakeholders from the airport to a host of design and engineering firms working to make this project successful.”

Managed by CGarchitect, and co-sponsored by Autodesk and HP, the competition’s jury of industry experts selected the winners from submissions covering a wide range of transportation, land development, urban planning, water/wastewater and energy related projects. Entries were judged based on complexity, innovative use of technology, sustainability factors and the overall value Autodesk software and BIM for Infrastructure provided to the project outcome, whether used to plan, design, build or manage infrastructure projects. The winners will be honored at the upcoming Autodesk University 2013 conference this December in Las Vegas, and will be given more than $10,000 in prizes by competition sponsors including HP.

More Information
• Denver International Airport Hotel and Transit Center Program
• Room for River Waal
• Liverpool Wastewater Treatment Works
• Cyber City Gurgaon Animation

* “U.S. Infrastructure: Microdesk Survey Highlights Americans’ Concern Over Failures,” September 24, 2013
1st Place: HNTB for the Denver International Airport Hotel and Transit Center Program

2nd Place: iNFRANEA for Room for River Waal in Nijmegen, Netherlands

3rd Place: The alliance of Galliford Try Costain Atkins for the Liverpool Wastewater Treatment Works

OpenAsset BIM - Revit Family Content Manager

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Not your average stove
BioLite creates electricity-generating biomass stoves with Autodesk software to improve public health

By simulating many stages of product design and performance with Autodesk Simulation CFD and Autodesk 3ds Max design software, we were able to evaluate the relative impact of different design directions, reduce the number of physical prototypes we had to construct, and avoid overbuilding. That helped us save considerable time and money.

—Jonathan Cedar
Founder, CEO and Director
BioLite, Inc.

Innovative Clean Tech Products
Co-founded by Alexander Drummond and Jonathan Cedar, BioLite develops and manufactures innovative, low-cost biomass stoves that make cooking with wood as clean, safe, and easy as with modern fuels. Using patent-pending technology, the company’s stoves convert heat from burning wood into electricity, a portion of which powers an internal fan that creates airflow and dramatically improves combustion efficiency. Stove owners can use excess electricity to charge cell phones and other devices via a USB port on the stove’s exterior power module.

While working full-time, Drummond and Cedar worked nights and weekends to develop a functional prototype of their initial product offering, the BioLite CampStove™, for recreational markets. Much to their surprise, that prototype won the top prize for lowest emissions at the 2009 ETHOS stove conference, a gathering focused on designing wood stoves for the developing world. “That experience opened our eyes to the larger potential impact of our technology,” says Cedar, CEO and director of BioLite.

A World Health Crisis
“Every day around the world, roughly three billion people eat meals prepared over smoky, open fires,” says Cedar. Smoke from these fires has disastrous health impacts, causing almost two million deaths per year. So serious is the problem that United States Secretary of State Hilary Rodham Clinton recently created a partnership led by the United Nations Foundation to distribute 100 million cleaner and more efficient stoves by 2020.

Some companies have tried to increase combustion efficiency—and, therefore, reduce harmful emissions and particulates—by adding fans to stoves, but their solutions required electricity from an external source, limiting their usefulness in the developing world, where rural electrification rates are quite low. To address these issues, BioLite designed the BioLite HomeStove. Designed to survive three or more hours of daily, family cooking for up to five years, the HomeStove can generate enough electricity to charge a basic cell phone and LED light, in addition to powering the stove’s fan unit.
BioLite HomeStove consumes 50% less wood than traditional cook fires and reduces smoke emissions by 90%

**Balancing Cost, Performance, and Durability**

Creating high-performance stoves requires the use of durable materials with high levels of embedded energy. However, when BioLite and the Stanford University Engineering School conducted a lifecycle analysis of one of the company’s stoves, they found that its performance benefits far outweighed the energy usage associated with its manufacturing.

To balance performance, durability, and cost, BioLite performed multiple design iterations and initially created only physical prototypes, a process that is both time-consuming and expensive. To reduce costs and save time, BioLite used Autodesk® Simulation CFD software—a component of Autodesk® Sim 360™—to digitally simulate heat transfer within the CampStove and, later, the HomeStove. The design team also used Autodesk® 3ds Max® design visualization software to create photorealistic digital prototypes of the stoves, allowing the team to evaluate stove aesthetics. “By simulating many stages of product design and performance with Autodesk Simulation CFD and Autodesk 3ds Max Design software, we were able to evaluate the relative impact of different design directions, reduce the number of physical prototypes we had to construct, and avoid overbuilding,” says Cedar. “That helped us save considerable time and money.”

“Autodesk Sim 360 gives us the ability to run multiple simulation studies in the cloud in the same amount of time that it used to take us to run just one single-variable study,” says Matt Nowicki, senior product engineer at BioLite. “That really opens up the game for us and helps us understand much more of the system, much faster. It’s impressive how easy, valuable and seamless this capability is for our company.”

BioLite acquired Simulation CFD and 3ds Max Design at a very low cost through its membership in the Autodesk® Clean Tech Partner Program. In future design cycles, BioLite plans to use other Autodesk software, including the Autodesk® Product Design Suite Ultimate and various simulation software products.”

**World-Changing Benefits**

The BioLite CampStove is available on the company’s website. BioLite plans to roll it out at large-scale retailers throughout the developed world in the near future. “We are investing revenue from our early sales in the recreation market into the development of a commercially viable business plan for the BioLite HomeStove in the developing world,” says Cedar. “We intend to ship one million cook stoves over the next five years.”

According to Cedar, each HomeStove can reduce smoke and particulate emissions by up to 90 percent when compared to cooking over open fires. Before rolling out the HomeStove on a commercial scale, however, BioLite is conducting global pilot programs.

In Ghana, BioLite is working with the Canadian government and Columbia University on a program funded by the National Institutes of Health that will quantify emissions reductions and attempt to better understand the relationship between smoke and particulate exposure and children’s health. BioLite is conducting other pilots in India, Uganda, and Kenya. Eventually, BioLite hopes to expand into other areas, such as communications and refrigeration. “Our ultimate goal is to deliver clean, affordable energy access to people all around the world,” says Cedar.

For more information

To learn more about the Autodesk Clean Tech Partner Program, visit autodesk.com/cleantech.

Learn More about Autodesk Products

- Autodesk® Product Design Suite Ultimate: autodesk.com/productdesignsuite
- Simulation 360 software: autodesk.com/sim360
- Simulation CFD software: autodesk.com/simulationcfd
It’s easy in our busy world of project deadlines, client meetings, site visits and project planning sessions and everything else we need to balance on a typical day in construction, to take the tools we use every day for granted. Sometimes we miss that one thing that could save us hours of work, or suffer the frustration of just saying “there has to be another way”? Here are some tips and tricks for your that I hope can save you time, enable a new workflow you weren’t aware of, or maybe avoid a couple new grey hairs from cropping up.

1. Leverage a Model with you Autodesk® BIM 360 Field™ workflows.

BIM 360 Field enables several Field Management programs to be implemented and managed, one being commissioning of equipment. The traditional workflow for commissioning leverages mainly 2D information, and the creation or importing of project information into an Equipment Database. This can be time consuming, or even manual, if the data you need is coming from paper specifications or detail sheets in a plan set. Instead, consider using a model! Using a model means that we can use great tools for adding and synchronizing BIM data and objects to our equipment database for use in the Commissioning and Handover programs with our favorite “do-everything” construction management tool; Autodesk® Navisworks®! For those that haven’t seen this capability yet, you are missing out on a huge benefit of leveraging your BIM in the field via the equipment database (more on that in a moment) and of course, Mobile viewing of models on the iPad. It goes way beyond just viewing though, so let’s take a look.

Ok, first the really cool stuff; here is a Navisworks 2014 model loaded on the iPad in BIM 360 Field. Here we have a great suite of measurement tools that work in three dimensions, allowing us to pull or verify field measurements with intuitive gesture based commands. Also note all the “I” from the BIM is there for us to consume in the form of all the object properties that make Building Information Models so valuable. We can do other cool things while we are here; need to quickly see a piece of equipment in context, say another pump that’s a bit hidden from the current view by a column. No problem, just select it and choose the isolate object shortcut:

Easy to orbit around and see that pump in context without all the other models getting in the way. It’s a quick and simple way to get the BIM to the field personnel who need it the most, and it’s a valuable asset, not just a pretty picture.

2. Digital Notepad

We are finding less and less reasons to use paper on the modern project sites we work on today, and taking notes while you are in the field isn’t any different. For any Autodesk BIM 360 Field user, they have all the tools they usually need to perform QA/QC inspections, track Safety programs, and Commission equipment. But what happens when you just need to jot down some thoughts, or need to take some notes from that impromptu meeting with the supers during a coffee break? Well that’s what the Notebook in BIM 360 Field is for! Simply select the Tools button from the bottom margin and open the Notebook.

Quickly tap out your notes and take advantage of the save and Open In functions to quickly email them or share with project stakeholders as needed, or simply keep on file for recall at the opportune time!

3. Manage Site Photos

With the prevalence of more mobile and digital devices on building sites today, and many of them with built in cameras, it’s inevitable that great (and sometimes not so great) site photos will be taken.

Figure 1.1 – Viewing a model with an iPad using Autodesk BIM 360 Field

Figure 1.2 – Isolating an object in a model with an iPad using Autodesk BIM 360 Field
with a digital device. A newer feature on Autodesk BIM 360 Field allows you manage these photos more easily, as well as connect them to your daily workflows for issue tracking and quality inspections. Using the built in camera on the iPad, we can quickly take a photo of a site condition, and manage it with all of the project photos in one simple interface.

We can easily see the photos that have been taken and saved to the project, as well as take new ones with the built in camera on the iPad. Once we have a photo, we can easily attach it to a new issue, and track the appropriate information for action. Here we have an issue with the vinyl cladding that was delivered, and the spacing for the mounts. We can quickly snap a picture of the material, mark it up to communicate the exact problem, and then save it to an issue for management within our BIM 360 Field workflow.

4. Using Barcodes to track equipment and locations
With the complexity of projects today, and just the sheer number of “moving parts” most building project have, more companies are implementing tracking systems to better manage materials and project components throughout the construction process. BIM 360 Field has enabled these systems via a barcoding workflow. This enables a project stakeholder to attach a 2D or 3D barcode to an object, and then assign that barcode to an entry in the equipment database. Very useful for tracking the delivery and installation of equipment, but did you know that you can also assign a Barcode to a physical location too? This means that when inspecting rooms or specific areas of a building during construction, you can use a barcode to manage all of the information for that location with a simple scan. Here is an example of a use case. Say you are inspecting for room close-outs, and need to work quickly through a floor of rooms. When performing the inspection for room 2-398, all you need to do is scan a barcode that is attached to the wall, and a list of all the issues that are associated with that specific location automatically opens. Now you can review what’s been done, what’s outstanding, and easily re-inspect of approve the issues. Then just move to the next location, say 2-399, scan its location barcode, and the list for that rooms will open, and you can carry on quickly and efficiently.

5. Sketches in BIM 360 Field for Web
The iPad application for BIM 360 Field has some very easy to use yet powerful sketch capabilities for documents, pushpins and photos. When sketching on attachments in BIM 360 Field for Web, you can use the same sketch tools as seen on iPad and
WoodEngine


Compatible / Supported Operating Systems: Windows XP, Window Vista, Windows 7

Supported Languages: French, English, Italian, Czech, Russian

The integration of WoodEngine inside AutoCAD Architectural allows the user to share the same single 3D model for the different building steps. The complete structure, foundations, walls, floors and roofs can be modified at any time.

The Log module uses a wizard to create log home buildings in any shape of log, automatic from the architectural wall input. The right assembly is set automatically according to the walls intersection. Extra machinnings (Cuts, Bolts, Grooves ...) can be added quickly and easily.

The Timber Frame wall wizard works with user defined styles. Intelligent variants in detail design are drag and drop from the tool palette (Extremities, Lintels, Beam Pockets, Openings ...). The panels 2D Manufacturing drawings are made quickly and with automatic dimensioning.

The Floor module helps the user to frame floors and their different components (Joists, Decking, Hangers...) according to his personal rules and knowledge. Floors properties can be impacted directly by the walls types (Load bearing, Internal ...).

The flexible tool box for carpentry joints allow an intuitive and efficient application of machining (Saw cuts, Dovetails, Take off, Markings, Free profiling of ends, etc.) on any piece.

The integrated CNC generator creates machine control files for a wide range of automated production machinery (Hundegger, Weinmann, Randek, Schmidler, Bostitch...).

Using the most recent AutoCAD Architecture features, WoodEngine offers a wide range of powerful timber design tools.

FEATURES & BENEFITS

◆ Multi-level apartment design is made easier with WoodEngine's copying, mirroring and labeling tools.
◆ All kinds of wood construction (timber frame, carpentry and log home) can be designed with WoodEngine.
◆ The fully automated and intelligent CNC machine export enables automatic error correction.
◆ WoodEngine’s integration with the MiTek 20/20 roof framing software gives you many advantages, including the ability to frame attic internal walls accurately and speedily.

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Supported Languages: English

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FEATURES & BENEFITS

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ElumTools™

Supported Autodesk Products: Revit 2014 One-Box, Architecture, MEP (previous releases available for 2013, 2012)

Compatible / Supported Operating Systems: MS-Windows: 8, 7, Vista, XP

Supported Languages: English

ElumTools™ is the first fully integrated lighting analysis Add-in for Autodesk® Revit®.

The concept of ElumTools as a Revit Add-in is based on the ability to leverage content already present in the Revit model allowing the lighting software functionality to be simplified to only those tasks necessary for the accurate modeling of light.

The calculation of lighting results requires surface geometry and properties such as reflectance and color, luminaire locations and associated photometry. ElumTools is able to extract the surface geometry from Rooms or Spaces as defined in Revit, or if necessary, from individual elements selected using Revit commands. The Surface reflectance and color can be interpreted from the Revit materials properties and mapped to more suitable values if desired. Luminaire (lighting fixture) families already present in Revit are consumed by ElumTools and photometric file associations can be created if not already present.

The final step in preparing the model gives the user the ability to assign point locations for the computation of illuminance (fc/lux) to any surface or workplane of interest.

With these steps in place, ElumTools is ready to compute the selected geometry. Revit defined Rooms or Spaces can be computed individually or as a group if they contribute light to one another. The calculation process utilizes the industry standard radiosity method and computed results are presented through a physically accurate, interactive visualization.

The point-by-point illuminance results can be enabled directly in the Revit model views of your choice and all statistics are available to Revit scheduling tools for summary and inclusion in the BIM model.

FEATURES & BENEFITS

◆ Luminaire Manager – Prepare Revit lighting fixture families for accurate lighting calculations with control over source position and aiming, lumens and related light loss factors.
◆ Layout Assistant - If lighting fixture locations are not previously located to meet lighting criterion, ElumTools can predict fixture quantity and location and place them in Revit accordingly.
◆ Materials Mapping – Map Revit materials to ElumTools materials for accurate reflectance and transmittance properties.

◆ Calculation Point Placement – Place calculation point grids on Room or Space work planes, or any planar face such as walls or table tops.
◆ Calculate by Room, Space or selected geometry – Rooms or Spaces can be computed individually or in groups if they exchange light. Selected geometry option allows for any geometry to be computed.
◆ Interactive radiosity visualization – Calculated results are automatically rendered and can be interactively navigated in RGB or Pseudocolor.
◆ View and schedule results – Calculations can be shown in any Revit view and all statistics are available to Revit schedule commands.

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Compatible / Supported Operating Systems: Microsoft Windows 8, Windows 7 & Windows XP (32bit/64bit)

GTXImage CAD Series: Windows Stand-Alone version

Supported Autodesk Products: Based on the AutoCAD OEM engine, GTXImage CAD Series V14 supports AutoCAD 2012, AutoCAD 2011, AutoCAD 2010 including earlier versions.

Compatible / Supported Operating Systems: Microsoft Windows 8, Windows 7, XP and Vista, (32bit/64bit)

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- **GTXScanClean™ is protected by U.S.Patent No. 7,016,536

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PRICE

Contact GTX Sales for further details on the software products.

*Other versions are available for previous AutoCAD releases.
3AM Solutions (UK) Limited

ProjectExplorer for AutoCAD Civil 3D

Supported Autodesk Products: AutoCAD Civil 3D 2013, AutoCAD Civil 3D 2014

Compatible / Supported Operating Systems: Windows® 8 (64-bit) Professional edition or Windows 7® (64-bit) Enterprise, Ultimate, or Professional edition operating system

Languages: English

Explore. Validate. Report. Be better informed about every design decision you make in AutoCAD Civil 3D with ProjectExplorer - an exciting new plugin from 3AM Solutions. Featuring a powerful, user-configurable report generator - as well as a unique, continually updated on-screen report view and a range of integrated design validation tools - ProjectExplorer is the Ultimate Companion for AutoCAD Civil 3D.

FEATURES & BENEFITS

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Supported Languages: English, French, German

From 2D or 3D design simulations through to professional 2D or 3D presentations

- Completely overhauled to be more intuitive and user-friendly yet still as technically advanced as their predecessors PathPlanner R4 and PathPlanner R4 Pro, SWEPATH (2D only) and SWEPATH+ (2D and 3D) use vehicle kinematic models developed over more than 20 years in the industry. With the ability to fully account for vehicle speed and recommended steering rates in both forward and reverse vehicle turn manoeuvres, these are the most accurate swept path solutions available when it comes to assessing designs such as intersections, roundabouts, narrow streets, parking facilities, loading bays and more.

SWEPATH

Offers all the technical tools required for accurate swept path and vehicle turn simulation, including:

- A library with standard design vehicles from various countries in Australasia, North America and Europe plus selected commercial and specialized transport vehicles
- Tools to create customized or modify existing vehicles and trailers
- Independent steering definition for large special transport vehicles
- Advanced options for creating and editing paths using existing drawing geometry and grips
- Options to display vehicle body, swept surface and wheel tracks and/or filled surfaces
- Ability to animate movements directly in CAD

SWEPATH+

Extends core functionality to include an array of additional features, including:

- Realistic 3D vehicle models for generating 3D swept paths just as easily as when working in 2D
- Vertical clearance functionality to check headroom and ground clearances
- AVI movie creation, including scheduling of multiple simulations with linked start and stop times

FEATURES & BENEFITS

- Edit and fine-tune paths using ‘grips’ to ensure that simulations meet exact project requirements
- Define oversized loads as well as independently steered axles on semi-trailers to generate complex manoeuvres involving special transport vehicles such as wind turbine blades and other extraordinarily large equipment
- Alternate between 2D and 3D, define colours, allocate layers, show/hide simulations and complete other project management tasks, all from within the same dialog
- Create customized vehicle and trailer combinations using both standard design and user generated vehicles and trailers
- Analyse vertical (overhead and ground) clearances and identify potential conflicts with ease, without the need use heavy 3D models or complex terrains
- Create AVI movie clips of multiple simultaneous 2D or 3D animations, without the requirement for additional video capturing software

SUPPORT & TRAINING

Annual support and upgrade/update subscriptions (Software Maintenance Agreement) available. Training available. Call or visit the website for further information.

WHERE TO BUY

Buy PathPlanner R4 directly from Simtra or through a local reseller. Call or visit the website for further information.

CONTACT INFORMATION

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Krokslättens Fabriker 30
Mölndal
431 37 Sweden
+46 (0) 31 60 43 60
+46 (0) 31 68 14 80
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www.simtra.com
Transoft Solutions Inc.

**AutoTURN Pro 3D: Vehicle Swept Path and Turning Simulation Software for Roadway and Site Design Projects**


**Supported Languages:** English, French, German, Spanish, Italian

AutoTURN Pro 3D is the leading CAD software that simulates 3D vehicle turning maneuvers on surface and mesh object terrains. Incorporating the trusted AutoTURN engine together with the patent pending process of generating a three-dimensional vehicle swept path envelope—engineers, architects, and drafters can design and analyze in 3D while accounting for the effects of different terrain, obstacles, and vehicle parameters.

**DESIGN. ANALYZE. VISUALIZE. ALL IN 3D.**

Going beyond simple vehicle swept path checking capabilities in a two-dimensional plane, AutoTURN Pro enters the realm of true 3D design and analysis. Engineers, architects, and drafters can confidently work on multifaceted projects and complex design situations in a 3D environment involving vertical and underside clearance checks, detection of obstacle collision, and traversing challenging terrains.

**FEATURES & BENEFITS**

- Place adaptive simulations either centered or offset left/right with smooth turning transitions on user-drawn paths made from lines, arcs, polylines, AutoCAD® AutoCAD® Civil 3D® alignments or complex chains.

- Generate complex vehicle simulations with standard or specialized transport vehicles including independent rear steering systems.

- Use national design vehicle standard libraries for: USA (AASHTO, Caltrans), Canada (TAC), Europe and Australia.

**SUPPORT & TRAINING**

Technical support and training are available. Call to inquire or visit the website for more information.

**WHERE TO BUY**

Buy directly from Transoft Solutions or through an authorized reseller. Visit the website for more details on purchasing AutoTURN Pro 3D.
NEXUS 2.0: CAD Software for Roadway Intersection Design and Planning


**Supported Languages:** English

NEXUS is the premier intersection design solution for new construction and rehabilitation projects offering vehicle operations, geometric design, and safety performances together in one comprehensive package.

**THE FASTEST, MOST EFFICIENT WAY FOR DESIGNING ROADWAY INTERSECTIONS.**

NEXUS was developed to give transportation engineers a software tool that greatly assists in the creation of intersection geometrics and channelization details based on operational needs and vehicle swept path. With the patent pending Vehicle Envelope Method of design, NEXUS incorporates all the key elements in the intersection design process including design vehicles, capacity conditions, sightlines, conflict points, and conceptual grading — providing instant feedback so engineers can quickly and easily produce highly effective and safety oriented intersection layouts.

**CONNECTING ENGINEERING PERFORMANCE AND PRODUCTIVITY.**

NEXUS allows engineers to monitor and evaluate the performance of the entire intersection design as real-time changes are made. The key benefit to the user is the speed of generating the geometry and surface drainage in a single and efficient tool. In addition, the extensive editing functions make design refinements quickly and easily.

**FEATURES & BENEFITS**

- Visualize different design alternatives faster by working with a set of over 450 predefined leg templates for a specific project.
- Generate Autodesk® AutoCAD® Civil 3D® surfaces, vertical, and horizontal alignments. Civil 3D® objects (such as corridors) are updated dynamically using the NEXUS grading model.
- Generate intersection layouts with pavement markings and edges using methods including: defining the lane configuration; importing capacity data; selecting a predefined leg template; or using an intersection template.
- Develop a grading model and establish the drainage pattern in 3D even in base CAD applications. Vertical profiles provide immediate feedback on cross slopes and alignment slopes.
- Edit and refine the basic intersection design right from the initial layout. Make changes to the alignments of legs, lanes, and lane configurations as you design.
- Initialize a design based on capacity data by updating the intersection from capacity conditions imported from HCS (Highway Capacity Software) data or other manually inputted information from other traffic analysis software.
- Determine the different conflict points in an intersection where vehicle paths cross, merge, and even diverge. From the conflict point diagram, see where potential accidents can occur to assess the safety performance of the intersection.
- Evaluate vehicle movements by displaying AutoTURN compatible design and checking vehicle simulations within a NEXUS intersection.

**SUPPORT & TRAINING**

NEXUS Intersections technical support and training for are available. Call to inquire or visit the website for more information.

**WHERE TO BUY**

NEXUS Intersections can be purchased directly from Transoft Solutions or through an authorized reseller. Visit the website for more details.
TORUS 4.0 : Roundabout Design and Planning Software


Supported Languages: English, French, German

TORUS is technologically advanced CAD software for designing modern roundabouts based on either design vehicle tire tracking or regional design rules. TORUS redefines the way roundabouts are designed by minimizing the number of cycles in the design process while also incorporating speed, design vehicle and sight distance checks.

WORK WITH THE MOST ADVANCED ROUNDABOUT DESIGN SOLUTION.

The latest version of TORUS introduces the new Vehicle Sensitive Design approach that uses enhanced customization of vehicle swept paths to model roundabout geometry. Transportation engineers and planners can now define a specific design vehicle to govern important roundabout geometry such as splitter island shape, outer edge paths and truck apron width. This provides more flexibility allowing for uniquely designed roundabouts that meet site constraints and vehicle requirements.

FEATURES & BENEFITS

◆ Using vehicle movements, engineers can now extend a roundabout’s central island to guide vehicles into the proper circulating roadway lanes.

◆ Engineers can use a suitable design vehicle’s swept path to shape a custom truck apron. This technique is ideal for roundabout projects where a mountable truck apron is only needed along one side of the central island.

◆ TORUS can now generate Autodesk® AutoCAD® Civil 3D® surfaces, vertical, and horizontal alignments. Civil 3D® objects (such as corridors) are updated dynamically using the easy-to-use grading model in TORUS.

◆ Generate area reports to check the total amount of space taken up by a new roundabout site plan. Different sections of a roundabout can be reported on including: footprint, roundabout, inscribed circle, central island, circulatory roadway, truck apron, and splitter island envelope.

◆ Unique integration with SIDRA INTERSECTION allowing key SIDRA vehicle capacity data to be imported and synchronized with the current TORUS roundabout, updating its geometry to suit.

◆ Model roundabout grading with contours lines, crown alignments, and cross slopes to review drainage patterns in 3D.

◆ Fastest paths for a roundabout can be calculated, drawn and automatically updated based on offsets from reference geometries.

◆ Generate different types of sight lines including: approaches to crosswalk, yield line, and circulatory lanes.

SUPPORT & TRAINING

Technical support and training are available. Call to inquire or visit the website for more information.

WHERE TO BUY

Buy directly from Transoft Solutions or through an authorized reseller. Visit the website for more details on purchasing TORUS Roundabouts.
Design, Model, and Manage Municipal Water Distribution Systems

AutoCAD, Civil 3D, Map, etc.

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Windows 7 & 8, Vista and XP

Your Water System Design, Modeling, and Management done Accurately, Quickly, Easily and Cost Effectively.

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FEATURES & BENEFITS

◆ Simplicity of One Single Drawing File: All of your data is saved entirely within the AutoCAD drawing.
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◆ Accurate Calculations: Transparently uses the industry-proven EPANET engine for water network simulation modelling hydraulic analysis
◆ Innovative Scenario Engine: Allows you to easily create “limited only by your imagination” Scenarios. Alter any Hydraulic Objects Properties based on Time or on Changes in any Properties of any Objects. Add any scenario into current scenario.

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WHERE TO BUY

www.HydrauliCAD.com/AboutUs provides program, pricing, contact and trial information

CONTACT INFORMATION

HydrauliCAD Software
Vancouver, Canada
604 542 8410 (PST) Telephone
www.HydrauliCAD.com
GibbsCAM® - CNC Programming Solutions


Compatible / Supported Operating Systems: Windows XP, Windows Vista, Windows 7, Windows 8,

Supported Languages: English, Finnish, French, Chinese (Simplified), Chinese (Traditional), Czech, Dutch, German, Italian, Japanese, Korean, Polish, Portuguese (Brazilian), Russian, Spanish, Swedish, Turkish

Breadth of Capability
GibbsCAM’s breadth of programming capabilities supports production in 2-5 axis milling, high-speed machining, turning and advanced machining requirements including multi-task machining (multiple spindles/turrets), swiss and 3- through 5-axis multi-surface machining. Modules can be seamlessly added, expanding GibbsCAM’s capabilities while protecting your investment.

Intuitive Graphical User Interface
GibbsCAM’s graphical user interface was designed for machinists by machinists, resulting in a user environment that is both familiar and efficient. This manufacturing approach ensures that GibbsCAM’s powerful functionality is also extremely easy to learn and use. GibbsCAM’s free-form interaction style allows you to move easily between geometry creation, toolpath creation, process visualization/verification and post processing. Integrated 3D cut part rendering allows visual verification of the process at any time, preventing costly errors before material and machine time are wasted.

Ease-of-Use
GibbsCAM’s ease-of-use, programming efficiency, speed and short training time makes GibbsCAM, the CAM industry’s ease-of-use leader, the best tool for programming your parts.

Autodesk Interoperability
An ongoing recipient of Autodesk’s AICAP certification since the inception of the Autodesk Inventor Certified Application Program, GibbsCAM also supports directly reading data from a full range of Autodesk mechanical design products—from AutoCAD and AutoCAD Mechanical to Autodesk Inventor. A custom add-in is available for Autodesk Inventor which allows models to be directly transferred from the Inventor session to GibbsCAM.

FEATURES & BENEFITS
- Comprehensive range of wireframe and advanced surface and solid modeling capability supports manufacturing modeling requirements, including mold cavity construction.
- Full associativity between geometry, process and toolpath automates easily updating processes based on changes to the part model or process parameters.
- Automated and interactive feature recognition increases efficiency and can be used in conjunction with Hole Wizard function to program compound hole features.
- Integrated 3D process simulation reveals programming errors before valuable material or machining time are wasted. Virtual setup and machine simulation save machine time and avoid costly mistakes.
- Post processor options offer do-it-yourself approach, APT CL (for legacy posting systems) or factory-built, customized posts for what-you-see-is-what-you-machine output.

SUPPORT & TRAINING
GibbsCAM is supported through factory supplied Technical Support Engineers and web-based support center along with support from local Resellers.

WHERE TO BUY
GibbsCAM is sold worldwide through Resellers. Local Resellers can be identified at www.GibbsCAM.com.

PRICE
Pricing depends on specific product configurations. Quotes provided upon request after determining specific product needs.

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CH-2842 Rossemaison, Switzerland
+41 32 421 98 70 Telephone
Sales@GibbsCAM.com
www.GibbsCAM.com
PASS: Plant Analysis Software Suite (Hydrosystem, Safety Valve, START, PASSAT, Nozzle-FEM)


Supported Languages: English, Russian

HYDROSYSTEM software performs flow rate, pressure drop and heat loss calculations, and nominal size selection for process and power piping, heating, gas-distributing and other pipe networks with gas, liquid or multiphase flow. Fluid properties and phase equilibrium can be calculated based on fluid composition using embedded thermodynamic libraries or Simulis Thermodynamics from ProSim.

START software evaluates stress for process and power piping, gas and oil transmission, and heat networks. Stress and fatigue strength analysis is performed for pipe elements including buried pipelines according to different standards. Pipelines with various types of restraints and expansion joints under static, cyclic and seismic loading are evaluated. The software can automatically select spring supports and their properties.

PASSAT software allows strength and stability analyses for horizontal and vertical vessels, column apparatuses, storage tanks, shell and tube and air cooled heat exchangers under static and seismic loads in order to evaluate bearing strength in operation, test and assembly states.

Nozzle-FEM software performs finite element analysis of vessel nozzles for the purpose of estimating their stress, stiffness and allowable loads. A finite element mesh is generated automatically for arbitrary shell, head and nozzle dimensions. Calculated nozzle flexibility can be automatically used in START software.

Add-on PASS software provides pressure relief system analysis (Safety Valve), piping and equipment insulation design (Insulation), residual life estimation (Resurs), fluid properties calculation (STARS).

FEATURES & BENEFITS

◆ PASS interoperability is always our priority. We provide integration of various PASS components, as well as data import and export to various CAD software, including AutoCAD Plant3D.

◆ PASS licensing policy is flexible. The main programs consist of several modules. Users can choose the desired module configuration for licensing or lease. Different license types (local and network, permanent and temporary) and bundles are available to make the cost/functionality ratio attractive to customers.

◆ PASS software is an informal standard in Russia and former USSR countries. The software has been continuously improved for over 30 years.

SUPPORT & TRAINING

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WHERE TO BUY

Available from NTP Truboprovod and our resellers. World-Wide Distributor: CEA Systems (www.cea-int.com)

PRICE

From $2000

CONTACT INFORMATION

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+7-495-2259434 Telephone
+7-495-3685065 Fax
marketing@truboprovod.ru
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Supported Languages: English

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FEATURES & BENEFITS

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♦ Merge- Easily combines model data with additional 2D and 3D data from other sources into a single PDF document. Fully communicate with everyone on your extended team, no matter where they are, and never worry about whether they have the right viewing software. Everyone has the Adobe Reader, and they know how to use it.

♦ Custom- Create and reuse rich, engaging 3DPDF templates. Customize pre-set templates and include unique background images, company logos, Title blocks, add hyperlinks, and set paper size. Templates expand the use of your valuable 3D data outside of the design environment.

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SUPPORT & TRAINING

You don’t need to learn a whole new set of conventions. Our development team is intimate with Autodesk products require no learning time.

WHERE TO BUY


PRICE

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Supported Languages: English

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FEATURES & BENEFITS

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www.trainingtutorial.com

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