

## OTO, INC.

LAUNCHING AN INNOVATIVE, SMART LAWN CARE AND IRRIGATION SYSTEM WITH SOLIDWORKS AND 3DEXPERIENCE WORK SOLUTIONS

### Case Study



OtO leveraged SOLIDWORKS modeling, design, mechanical simulation, flow simulation, and model-based definition (MBD) solutions for initial development, and then added modeling, design, data management, simulation, collaboration, and communication solutions from the 3DEXPERIENCE Works portfolio to finalize development of its innovative OtO Lawn watering and fertilizing system, which utilizes a unique precision nozzle, Internet of Things (IoT) capabilities, weather intelligence, and safe fertilizing cartridges to automate and improve lawn care.

### Challenge:

Innovate a smart lawn care system that includes irrigation and fertilization, aimed at saving homeowners time in yard maintenance. Quickly and cost-effectively engineer and manufacture this product for the mass market

### Solution:

Implement SOLIDWORKS modeling, design, mechanical simulation, flow simulation, and model-based definition (MBD) solutions for initial development, and then add modeling, design, data management, simulation, collaboration, and communication solutions—including Collaborative Designer for SOLIDWORKS, Collaborative Industry Innovator, and 3DSwymer roles—from the 3DEXPERIENCE Works portfolio, which operate on the cloud-based 3DEXPERIENCE platform, for ongoing development as part of the SOLIDWORKS for Startups program.

### Results:

- Accelerated innovation and time to market with integrated solutions
- Cut development costs by 20 percent
- Reduced prototyping and improved performance with simulation
- Streamlined development processes, improved collaboration

OtO, Inc. founder and CEO Ali Sabti got the idea for the innovative, smart OtO sprinkler and lawn care management system that his company has developed when he found that as a busy professional, he didn't have time to take care of his lawn. He also didn't want to use harsh chemicals on his yard out of concern for his children and pets. So, Sabti built the first OtO Lawn unit for himself and several neighbors before founding the company that has sold tens of thousands of improved units across Canada and the United States.

With its unique precision nozzle, Internet of Things (IoT) capabilities, weather intelligence, and safe fertilizing cartridges, the OtO Lawn unit makes caring for a lawn as easy as connecting the unit to an outdoor faucet and setting up a watering and fertilizing schedule with the OtO app on a



**“Access to cloud-based files on the 3DEXPERIENCE platform helped us fuel innovation and get to market faster. Working in the cloud encourages collaboration among the design team and with suppliers. It’s not enough to be first to market, we also need to have the best product. Iterations on the 3DEXPERIENCE platform, using a digital twin of our product to simulate and prototype cost-effectively, is enabling us to quickly make improvements, resolve issues, and develop new features, which will help us continually improve the robustness and reliability of our product.”**

– Ali Sabti, Founder and CEO

smartphone. The OtO intelligently waters, per the schedule established on the OtO app, without waste; automatically makes adjustments for real-time weather conditions and wind; and enables users to create custom-shaped zones that perfectly match a yard's layout, so the lawn is watered, not the sidewalk.

When Sabti founded OtO, Inc., in early 2020, he realized that engineering a commercial OtO lawn product—a smart electromechanical device connected to the internet with software and learning capabilities that controls the dispersion of a fluid: namely, water and liquid fertilizer—would require design and engineering tools that would support fast development, simulation of fluid dynamics and mechanical behaviors, and optimized energy usage.

Having previously used SOLIDWORKS® design software himself, Sabti was naturally drawn to SOLIDWORKS solutions, but the company decided to evaluate all available solutions before implementing SOLIDWORKS modeling, design, mechanical simulation, flow simulation, and model-based definition (MBD) solutions for initial development, and then added modeling, design, data management, simulation, collaboration, and communication solutions—including Collaborative

Designer for SOLIDWORKS, Collaborative Industry Innovator, and 3DSwymer roles—from the **3DEXPERIENCE**® Works portfolio, which operate on the cloud-based **3DEXPERIENCE** platform, for ongoing development as part of the SOLIDWORKS for Startups program.

“We created our vision for the OtO Lawn primarily using SOLIDWORKS desktop products, including SOLIDWORKS Premium CAD, SOLIDWORKS Flow Simulation analysis, and SOLIDWORKS MBD software,” explains Director of Hardware Engineering Jeffrey Law. “Moving forward, we’ll rely on **3DEXPERIENCE** Works solutions, which operate in the cloud, to continue refining, improving, and optimizing our design.”

### OVERCOMING CHALLENGES, SAVING TIME AND MONEY WITH SIMULATION

In developing the OtO Lawn product, the company’s engineers relied heavily on the mechanical simulation tools within SOLIDWORKS Premium software and the computational fluid dynamics (CFD) analysis capabilities of SOLIDWORKS Flow Simulation to overcome engineering challenges, reduce prototyping, and improve product performance, saving time and money in the process.

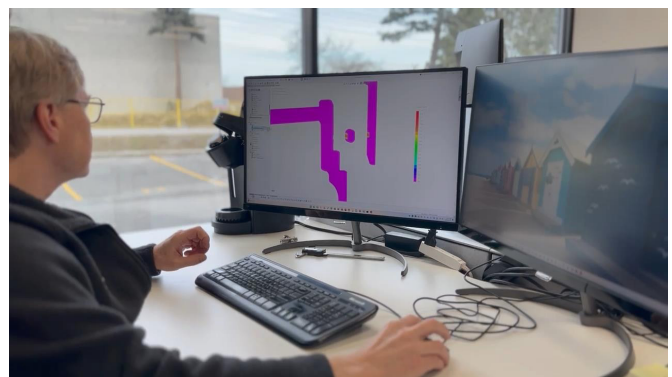
“SOLIDWORKS Premium’s built-in simulation capabilities have been essential during our design and prototyping phases, offering simple setup and integration,” Law stresses. “Using SOLIDWORKS Flow Simulation to conduct CFD studies, we explored leveraging concepts derived from hydropower turbines to curtail power consumption and examined geometries with an eye to reducing flow resistance.”

“We are also using SOLIDWORKS mechanical and flow simulation solutions to address pressure-related aspects of our design,” Law adds. “Given the nature of our product, which interfaces with spigots subject to high city pressures, often exceeding 100 psi when unregulated, these simulation studies have been instrumental in ensuring the selected materials can withstand these pressures without yielding. Moreover, these tools provide the assurance that any deflection remains within acceptable



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– Jeffrey Law, Director of Hardware Engineering



Using SOLIDWORKS solutions to complete initial development, and then moving to **3DEXPERIENCE** Works cloud-based solutions for finalizing the product, OtO was able to bring the OtO Lawn system to market more quickly while simultaneously cutting development costs by 20 percent.

limits, safeguarding against compromises to seals or dynamic components.”

### STREAMLINING DESIGN AND DOCUMENTATION PROCESSES WITH MBD

Another SOLIDWORKS solution that benefited OtO Lawn development is SOLIDWORKS model-based definition (MBD) Definition software, which uses the 3D solid model to automatically create product manufacturing information (PMI) and manufacturing instructions—3D dimensions, tolerances, datums, notes, bills of material (BOMs), and other annotations—without creating 2D drawings. “In our product development journey, we predominantly relied on desktop products to bring our vision to life,” Law notes.

“Specifically, for model-based definition, we utilized SOLIDWORKS MBD, harnessing its robust capabilities to streamline our design and documentation processes seamlessly,” Law continues. “While we didn’t delve into cloud-based solutions extensively during initial development, our focus on desktop tools, particularly SOLIDWORKS MBD, proved instrumental in realizing our project objectives efficiently and effectively.”

### ACCELERATING ONGOING DEVELOPMENT IN THE CLOUD

After completing initial development using SOLIDWORKS solutions, OtO moved to

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**VAR: : Hawk Ridge Systems, Mississauga, Ontario, Canada**

**3DEXPERIENCE** Works cloud-based solutions for finalizing the product, helping the company bring the OtO Lawn to market more quickly, and informing future research and development. “Access to cloud-based files on the **3DEXPERIENCE** platform helped us fuel innovation and get to market faster,” Sabti points out.

“Working in the cloud encourages collaboration among the design team and with suppliers. It’s not enough to be first to market, we also need to have the best product. Iterations on the **3DEXPERIENCE** platform, using a digital twin of our product to simulate and prototype cost-effectively, is enabling us to quickly make improvements, resolve issues, and develop new features, which will help us continually improve the robustness and reliability of our product,” Sabti says.

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