



## Better, Faster, and More Secure: Revolutionizing Biological Nutrient Removal Automation with EOSi's Cloud-Based Virtual Nitrack®

| Avoiding time consuming control system installations, replacing complicated and limited optimization technology, and expanding user accessibility and savings is a game-changer for resource-constrained and budget-pressured wastewater treatment plant operators.

### Inside EOSi's Virtual Nitrack®

EOSi's new Virtual Nitrack technology replaces the traditional PC hardware-based functionality of EOSi's industry-proven Nitrack control system with a rapidly deployable, ultra secure, and low-cost cloud-based software system for wastewater treatment plants, enabling plant operators to automate, monitor, and optimize dosing of EOSi's non-hazardous MicroC® supplemental carbon sources widely used in denitrification, enhanced biological phosphorus removal (EBPR), and biochemical oxygen demand (BOD) addition applications.

"Everybody's talking about using cloud-based data storage — but the advantages of running anything like an industrial-grade system control algorithm in the cloud are just being recognized in the wastewater industry," says Ryan Coleman, EOSi's VP Engineering.

EOSi engineers designed Virtual Nitrack to operate with a minimal site footprint with low impact to ongoing operations, to be quickly deployable for both pilot projects and long-term installation, and easily accessible by both remote and local plant staff via EOSi's user-friendly optimization management application for configuring, monitoring, and controlling supplemental carbon dosing in the wastewater treatment process. The Nitrack can even be deployed using cellular transmitters on probes, flowmeters, and feed pumps, allowing for functionality without running signal wires across the plant.

"Virtual Nitrack can be set up and running within hours," says EOSi control and instrumentation engineer David Fournier. "Deploying a cloud-based control system like Virtual Nitrack avoids spending weeks onsite at a plant installing everything necessary for a traditional hardware-based control system. Our cloud-based system also enables remote monitoring, system control, quick-response support — even the capability of remotely accessing and tweaking system code at the utility's request in response to rapidly changing operational situations and unanticipated events."

EOSi's advanced, rapid, and customizable Virtual Nitrack technology has allowed for its engineers to pioneer new ways to automate both temporary and permanent installations at little to no cost to the customer while typically saving over 20% to their MicroC cost.

## **Stress-Free Optimization Access**

“Our Virtual Nitrack application enables configuring, monitoring, tracking, and controlling all aspects of the system both locally or remotely, and includes a wide selection of data views ranging from real-time operational system parameters and process values to historical data for analyzing system performance,” says EOSi’s Fournier. “We focused on maximum useability for plant staff, enabling the app to accommodate an array of mobile devices with varying screen resolutions, so all application screens and data views are completely accessible and useable in the field using a phone or a tablet, or at a dedicated workstation.”

The app greets users with a control system dashboard overview highlighting the most critical system parameters and process values. Tank inventory and consumption data include a user-configurable low-inventory alarm. Pump overviews display pump status and enables users to start and stop pump dosing. Performance upsets or failures are highlighted with red indicators or yellow if the status is unknown, and detailed alarms assist with troubleshooting or maintenance, enabling operators to place the pump in manual mode during sensor maintenance. Denitrification efficiency, or the amount of MicroC used per lb of nitrogen removed, is tracked and trended over time so that operators can verify ongoing optimum performance.

The app’s Anoxic Basin screen displays system parameters as a process overview, highlighting control system inputs, outputs, and the set point used for optimizing feeds for chemical dosing pumps. Configurable pump properties enable operators to control and set minimum and maximum pump speed rates, working seamlessly with EOSi’s integrated pump skids that feature a special factory calibration compensation value or “calibration comp” for precisely fine-tuning the pump and optimizing the feed.

“The app enables plant staff, EOSi engineers, and the EOSi automation team to leverage Virtual Nitrack’s real-time continuous monitoring of everything happening in your wastewater treatment process,” says EOSi’s Pulsifer. “That’s the key part: the EOSi engineering team is always monitoring treatment system data and continually advising utilities on optimizing the process — which is probably the biggest benefit for our wastewater treatment customers.”

## **Industry-Recognized Innovation**

EOSi’s Virtual Nitrack was recently selected in 2024 as a finalist in Inductive Automation’s annual Ignition Firebrand Awards, a prestigious cloud-computing industry award honoring system integrators and industrial organizations creating exceptionally innovative and successful projects that leverage Inductive Automation’s Ignition cloud-software platform — with Virtual Nitrack being the only Firebrand Award finalist innovating cloud-based process automation for the wastewater processing industry.

Other water-industry solutions offered by EOSi’s sister companies within the Axius Water family of companies are actively leveraging EOSi’s proprietary process automation technologies and algorithms, notably EDI’s Digital Dynamic Wet Pressure monitoring system (DDWP) for monitoring the operational status of diffuser membranes used in wastewater treatment aeration systems.



“Today, more than 20 wastewater treatment plants across North America are successfully operating their biological nutrient removal programs using Virtual Nitrack,” says EOSi sales and marketing VP Jeffrey Prellberg. “EOSi is only company on the market that provides the combination of non-hazardous glycerin-based carbon supplements, a proven automation control system that optimizes the feed rate, and the engineering support to back it up year-round. Optimizing biological nutrient removal enables our customers to minimize MicroC costs — and we noticed long ago that any wastewater treatment operator using MicroC carbon sources and our Nitrack automation systems typically are loyal and lifelong customers for this very reason.”

