The D/3® Distributed Control System (DCS) is a leading edge process control system that includes a comprehensive suite of software applications, networks, and computing hardware. D/3 features system-wide redundancy and the ability to upgrade without stopping plant operations. D/3 provides visualization and real-time access to process information, equipment status, system status, batch status, and operational logs. Reporting functions facilitate batch, production, and shift change reports. D/3 is certified to operate on the latest Windows® operating systems, and features intuitive configuration, management, and visualization tools.

**Enterprise Wide Control System**
D/3 is scalable from a small pilot plant or single unit operation to an enterprise wide system encompassing multiple production facilities. All configuration for the entire system resides on a secure master configuration server that is accessible by hundreds of simultaneous users from locations around the world.

**Continuous Control**
Easily configure complex control strategies using intuitive graphical tools, or rapidly configure thousands of points using powerful text based editors.

**Batch / Recipe / Sequence Control**
Manage sophisticated batch control strategies with powerful Sequence and Batch Language (SABL®). Built-in recipe management, equipment allocation, and batch reporting features simplify development of the most complex control strategies.

**Alarm Management**
Comprehensive alarm management features include alarm inhibit, dynamic alarm management, alarm suppression, and alarm delay. Users can dynamically change alarm classification, category, destination, or priority. They can also display, filter, and sort alarms in multiple InstAlarm™ windows. Since all alarms are managed at the Process Control Module (PCM) level, the possibility of inaccurate alarms at the HMI level is eliminated. Implement ISA-18.2 alarm management strategies using PAS PlantState Suite™ add-on.

**Data Historian and Trending**
D/3’s TrendR™ data historian can collect up to 10,000 points and store them on redundant servers. Data may be viewed on customizable console and VersaTrend™ displays, or may be exported via any standard ODBC data source.

**Object-Oriented Development**
Simplify logic development and deployment with virtual device objects that are designed, written, and tested once but can be executed in thousands of instances. Users can easily manage complex automation projects with object-oriented logical device authoring, and can graphically create master devices for pumps, motors, and valves defining normal and abnormal logic for each device type. SABL is used to automate the most complex of plant operations and Unit Relativity minimizes the amount of software to be created, tested, validated, commissioned, and maintained.

**System-Wide Redundancy**
All D/3 System components, including servers, networks, PCMs, and I/O modules, can be deployed in a redundant architecture to ensure the highest levels of system reliability.

**Ethernet Connectivity**
D/3 is built upon open standards and non-proprietary network technology. Both the backbone and I/O networks can be composed of off-the shelf Ethernet components. A single Ethernet card can simultaneously connect to multiple I/O families, including the NovaTech 8000 Series I/O, PLCs, and bus networks. Furthermore, the I/O network allows the pass-through of HART® information from field devices to the PCM without any additional wiring.

**Visualization**
D/3’s ProcessVision™ console software provides a comprehensive visualization experience that includes customizable system status, alarm, trend, batch, recipe, report, analytical, and graphic displays.
Visualize plant equipment with TotalVision®

Create control strategies with D/3 Architect

Create object oriented device logic with MDV Builder

Perform advanced alarm management with PAS PlantState Suite™ software
System Architecture

**Powerful**
No other system offers the raw horsepower of the D/3®, with the ability to handle over 50,000 I/O points, its best-in-class Process Control Module (PCM), scalable vector graphics, and comprehensive operator console software.

**Scalable**
D/3 can scale from 2 to 160 nodes, drive up to 256 operator consoles, and control processes incorporating up to 128 PCMs. A D/3 System can manage hundreds of simultaneous batches and product recipes with no performance degradation.

**Flexible**
D/3 Online Upgrade technology allows customers to upgrade to newer D/3 versions without stopping plant operations. Its Client/Server architecture allows the logical separation and organization of plant control system functions. Users can change control system strategies on-the-fly with intuitive configuration and management tools.

**Reliable**
Customers have trusted their processes to D/3 since 1982 because of its proven reliability. D/3’s powerful PCM performs critical functions typically relegated to the HMI layer on less robust systems, allowing control functions to continue even if the HMI layer is disabled.

**Cost Effective**
Each PCM can control numerous unit operations and run hundreds of SABL® programs simultaneously. Thousands of I/O points from multiple vendors can be connected via a single Ethernet I/O module, and entire processes may be simulated within the PCM. These and other features of the D/3 reduce hardware, wiring, licensing, programming, startup, maintenance, and other costs.
Our D/3 based Pipeline Control System has performed flawlessly and NovaTech helped move our control center in less than three hours.

- Gilles de Kok, MPT, Integrity, ZEBRA Gasnetwerk B.V.
Hardware Features

PCM 4100 Process Controller

• Provides distributed automation and control capabilities for continuous and batch process plant operations
• Connect to over 10,000 I/O from multiple vendors
• Redundant Ethernet communications
• 250ms scan rate
• Autonomously performs all continuous, sequential, and batch control functions
• Available in 250, 500, 1000, 1500, and max tag license configurations
• Up to three I/O Communications Cards

PCM 4200 Process Controller

Same features as PCM 4100 plus:
• MTBF of 100,000 hours
• Two hot-swappable AC power supplies per PCM provide load sharing and redundancy
• Over voltage protection
• Thermal protection
• Up to five I/O Communications Cards per PCM
8000 Series
I/O Family

- Up to 64 I/O modules per node
- Up to 50 nodes per PCM interface card*
- Wide operating temperature range, -40°C to +70°C
- General-purpose and intrinsically-safe I/O within a single node
- Redundant Local Area Networks (LAN) and power supplies supported
- High channel density
- Zone 2 and Division 2 hazardous area mounting as standard
- I/O module hot-swapping even in Zone 2 and Division 2
- HART® pass through
- Integrated (per-channel) fusing and loop-disconnect facility
- Bussed field power on carriers eliminates daisy chain wiring at field terminals
- 1:6 Redundancy (one backup module per six online modules)
- Redundant D/3® field wiring

*Cannot be fully populated

Gateways &
Power Management

Orion Automation Platform and Secure Data Gateway

- Protocol converter connects legacy equipment to D/3® using standard Modbus/TCP interface
- Hundreds of protocols supported
- Custom protocols available
- Easily connect equipment such as electrical substations, wastewater plants, scales, chart recorders, and load-out facilities to the D/3

Bitronics® Meters

- Utility-grade design
- Volts, Amps, Watts, VARs and Energy
- Ethernet Communications
- Easy integration with D/3
Visualization and Optimization Features

Users can create highly-effective, object-oriented graphics and displays using our TotalVision® HMI software. D/3® ProcessVision™ console software features numerous standard displays that require no custom creation. This allows users to start system commissioning immediately after tags are created. Easily create shift reports, analyze system components, or tune PID loops using our intuitive optimization software applications. Connect to other systems and display virtually any data point using D/3’s industry standard OPC client software. Easily export data to other systems using OPC server software.

For true mobility, the D3Express™ cloud-based mobile application provides access to information anytime, anywhere via your PC, smartphone, or tablet.
Process organizations around the globe have been using the D/3® DCS to manage their critical manufacturing processes for almost three decades. These organizations include many of the largest producers of Biofuels, Plastics, Polymers, Specialty Chemicals, Steel, Pharmaceuticals, Food, Beverages, and other essential products. D/3® is also the DCS of choice for government facilities that manage uranium enrichment, nuclear waste management, and atomic particle separation.

Why do so many Fortune 100 companies and government institutions rely on D/3? Peace of mind. D/3’s power, flexibility, and reliability allow plant personnel to forget about their control systems, focus on their core strengths, and move quickly to solve problems and capitalize on opportunities.

**Faster Development**

D/3 allows customers to bring products to market faster by using Virtual Commissioning to simulate plant processes inside powerful Process Control Modules without affecting the real process control programs or databases. Virtual commissioning drastically reduces start-up times, mitigates risk, and ensures robust control system performance.

**D/3 Controls**

- 30% of the U.S. Ethanol Production
- 60% of the U.S. Polyethylene Terephthalate (PET) production
- 60% of the U.S. High Fructose Corn Syrup production
- 70% of the U.S. Tritium production
- 60% of the U.S. Lactic Acid production
- 80% of the world’s Polylactic Acid Polymer production
- 30% of the U.S. Beer production
- 5% of the U.S. Biodiesel production
- 21 CFR Part 11 and GAMP 5 Compliant Facilities

**Key Industries**

- Agro Processing
- Biofuels
- Brewing
- Food & Beverage
- Energy/Utilities
- Nuclear Fuels
- Plastics Manufacturing
- Pharmaceuticals
- Pipelines
- Polymers
- Power Generation (CHP and CoGen)
- Steel
- Specialty Chemicals

**Lower Total Cost of Ownership**

D/3 preserves your control system investment with a guaranteed migration path. Since 1982, D/3 customers have avoided the expensive redesigns, plant shutdowns, wiring, re-validation, and re-commissioning required by the periodic platform changeovers of competing DCSs.
Sample Applications

Intelligent Automation Purifies Aquifer in Zero-Discharge Plant

At a remote site, a D/3 System monitors and controls a water purification system pumping as much as five thousand gallons of water per minute. Because this customer’s manufacturing process requires ultra pure water, water drawn from the aquifer is cycled through a water treatment plant before it is used. Waste water is then recycled with a portion being returned to the aquifer and the remainder being reused in the manufacturing process.

This zero-discharge plant returns cleaner water to the environment than it takes out. Although this water treatment system operates around the clock, it is manned only during the day, thanks to D/3’s remarkable reliability. At this installation, NovaTech took the lead as prime contractor for the control system, supplying everything from the distributed control system to the final control elements.

More High Quality Product from the Same Plant

An engineering plastics extrusion plant looked to NovaTech to merge processing areas, including resins, compounding, storage and blending into a plant wide automation system. The D/3 System was installed to manage three extruder lines and the feeder system. Product changeovers are now done without shutting the extruders down, thanks to D/3’s extensive recipe management capability.

This customer’s D/3 System precisely controls more than one hundred product recipes for the extruder and feed systems. Off-spec extruded product was reduced by more than 30 percent per process cycle, so this customer delivers more high-quality goods and keeps his customers happier.

The three extruder lines have varying capacities, mixes of goods, extruder manufacturers, and local control systems. Existing PLCs were interfaced to the D/3 System for subsystem controls so this customer didn't sacrifice his initial investment in automation. Because this pilot program was so successful, our customer is automating the other 12 extruder lines to realize the same impressive gains.
NovaTech is a proven process automation, electric power measurement, and substation automation and integration solutions provider. We’ve outperformed in our industry sectors for the past five years because of our commitment to superior customer service, innovative products, and a level of customization unmatched by the competition.

Our solutions leverage proven technologies, open standards, and outstanding support. We offer a comprehensive range of engineering and training services, energy efficiency solutions, and best-in-class products, all designed to provide our customers with immediate returns and superior long-term value.

Distributed control technologies – measurement, communication, and control – are continuously evolving in every industry from agriculture to energy delivery. With solid experience in these key technologies, a customer-focused culture, and an agile corporate structure, NovaTech is committed to making customers’ operations more reliable, efficient, and secure.

D/3® customers can take full advantage of the latest computer, networking, operating system, and data storage technologies while maintaining original applications software. This results in lower total cost of ownership.
A History of Innovation

The D/3’s award-winning architecture was the first to integrate batch and process control into a single Sequence and Batch Language (SABL®), a sophisticated high-level programming language that aids diagnosis of process issues and reduces mean time to repair.

D/3 was one of the first control systems to embrace the now ubiquitous Client/Server architecture, and D/3 was the first DCS to use Ethernet for its critical peer-to-peer communications.

Recent innovations include:

- Online Upgrades that allow users to upgrade to newer versions of the D/3 without process interruption
- The D/3 Loop Optimizer that provides fast, accurate, and intuitive PID loop optimization
- Console software provides enhanced diagnostic capabilities and ensures maximum equipment utilization
- 8000 Series I/O modules with 1-to-6 redundancy
- Patented Procedure Management Software
- Native Ethernet I/O interfaces
- Advanced Process Control (powered by AspenTech®)
- Asset Management (powered by Endress + Hauser®)

Core Offerings

- Alarm Design and Management
- Applications Engineering
- Control System Design
- Energy and Utilities Management
- Field Engineering
- Hardware and Network Engineering
- High Performance HMI Design
- Preventative Maintenance
- Procedural Knowledge Capture
- Project Management
- Support Agreements
How Can We Help?

For more detailed information on NovaTech products, services, or customer references, contact the NovaTech representative in your area, email info@novatechweb.com or call us at 800.253.3842

Education & Training

Educational Services provides a full range of on-site, online, and classroom courses for NovaTech and Microsoft products, and OSHA Safety Compliance. D/3® and MCSE Certified trainers, with decades of instruction experience, lead hands-on classes at your facility or at any of our training centers.

Batch Management

FlexBatch® integrates recipe management and the manufacturing process so that product developers, engineers, and production staff can quickly develop, produce, schedule, and manage documented, executable recipes, reducing time-to-market and improving the bottom line.

Paperless Procedures

By integrating Standard Operating and Emergency Recovery Procedures into a checklist interface to the D/3, Paperless Procedures™ ensures safe and consistent decision-making, facilitates documentation and compliance requirements, and provides a faster way to train operators on new procedures.

Orion Automation Platform

The OrionLX™ Family of Substation Automation Platforms acquires data for energy management and “islands of automation” applications in process environments by connecting with legacy, proprietary, and unsupported PLCs, Intelligent Electronic Devices (IEDs) and converting their outputs to open protocols including Modbus TCP.
The D/3 Distributed Control System maximizes the lifetime profitability of a process plant by combining bulletproof reliability, maximum application software configurability, and a Continuous Migration Path unmatched by any other automation vendor. This balance of runtime performance and application agility allow a D/3-controlled facility to ensure product quality, speed development, ensure safe operations under all conditions, and deliver sustainable value over many decades of service. The D/3 utilizes off-the-shelf servers and network hardware along with our Process Controllers and 8000 Series I/O to create a remarkably reliable, scalable, cyber secure and fully redundant System Architecture. D/3 is the only process control system to have never forced a platform migration on its end users. We've maintained backwards compatibility for user applications while continuously incorporating new technologies and capabilities in easy-to-manage, stepwise upgrades that can be implemented without process interruption.

◆◆ The D/3 Design Team