

Engineering

DWG ASSOCIATES is an engineering organization possessing a wide range of process engineering capabilities in wastewater, water, solid, and air pollution technologies. Although expert in many types of pollution control technologies, DWG ASSOCIATES specializes in water and wastewater processes utilizing high purity oxygen or ozone.

The organization provides unbiased, expert engineering services for all oxygen/ozone wastewater and water treatment processes. Engineering capabilities run the gamut from simple pilot plant programs or process design reviews to complete oxygen/ozone system project designs that include process, mechanical, and control system design, specification and drawing preparation, equipment startup assistance and operator training. Our technical capabilities are supported by state-of-the-art computer aided engineering tools that are unrivaled in the marketplace.

DWG ASSOCIATES also provides a complete range of operating plant engineering capabilities including, process optimization and operating cost reduction, instrument and control system analysis/modification/design, capacity determinations, value engineering, and safety analyses. To support these operating plant capabilities we have developed industry standard full scale plant computer simulation software. This gives us the ability to quickly evaluate UNOX or OASES oxygen dissolution systems, as well as PSA/VSA and cryogenic oxygen generation systems.

HPO plant owners can contract for DWG ASSOCIATES engineering expertise directly, or we can work jointly with other engineers of your choice. In either case, our capabilities assure you, the owner, of an optimized, cost effective, and safe high purity oxygen system project or plant.



Field Services

DWG ASSOCIATES provides a full range of in-the-field services for UNOX/OASES plant owners and operations staffs. Our services are customized for the unique characteristics of your facility and include operator training programs in process troubleshooting, process optimization, operating cost reduction, the UNOX/OASES instrument and control system, oxygen generation plant turn-arounds, and safe operating practices. Our personnel have developed and conducted oxygen wastewater treatment training programs throughout the U.S., Europe, and South America. In the early 90s, our "Optimizing High-Purity Oxygen Wastewater Treatment Plants" was a popular Education Extension course at the Georgia Institute of Technology in Atlanta, Georgia.

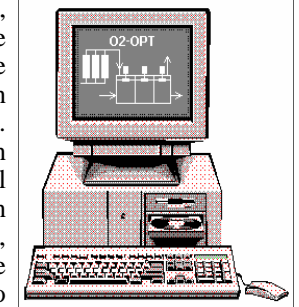
In addition to training activities, DWG ASSOCIATES develops and executes programs to determine the actual capacity of full scale UNOX/OASES plants. These testing programs quantitatively determine the load handling/hydraulic limitations of the secondary system. Typically, these programs involve stress testing the plant (or a portion thereof). However, using our sophisticated computer simulation capabilities, we can also accurately determine plant capacity without stress testing your actual facility.

As experts in high purity oxygen wastewater and water treatment, DWG ASSOCIATES provides most of the other services necessary to start and keep UNOX/OASES and oxygen generation plants on-line. We can develop and conduct high purity oxygen pilot plant programs, full scale plant startup assistance and training, and new system performance test monitoring. Or if you're feeling outgunned negotiating with the vendor of your oxygen system, we can act as your advocate. Together we can keep your facility running cost effectively.



Software

O2-OPT is a PC-based plant simulator designed exclusively for high purity oxygen wastewater treatment plant managers and owners. DWG ASSOCIATES customizes **O2-OPT** so that it turns a computer into an operating model of your plant. The user's interface is easy to understand and use because it is not a generic interface. It, as well as the background mathematical models, represents your specific plant, including the aeration basins, clarifiers, recycle sludge system, and the oxygen generation and storage systems. Ancillary oxygen processes like Dual Digestion, Oxygen Aerobic Digestion, or Ozone Disinfection can also be included, as can primary tanks, disinfection systems, and sludge handling equipment.



The **O2-OPT** simulator is calibrated to mimic the operation of your facility using your plant's operating data. A customized **O2-OPT** simulator allows your operators to accurately troubleshoot and optimize your facility's operation as well as train themselves without disrupting actual plant operations.

Additionally, DWG ASSOCIATES has **PSASim** and **CryoSim**, computerized process simulators for oxygen generation plants. Like **O2-OPT**, these simulators also turn your PC into a functioning model of your operating PSA or Cryogenic oxygen generator.

**Cost Effective Oxygen System
Operator Training, Plant Optimization,
and Plant Troubleshooting using a
Personal Computer.**

DWG ASSOCIATES' Simulators

DWG ASSOCIATES

The Organization

DWG ASSOCIATES is a nineteen year old engineering organization possessing over 30 cumulative years of domestic and foreign engineering expertise in water, solid, and noxious waste disposal. DWG ASSOCIATES' personnel routinely provide engineering and/or operating assistance at some of the largest wastewater treatment facilities in the world; including Sacramento County's Regional Plant, Boston's Deer Island Plant, and Orange County's (California) Treatment Plant #2. In addition, DWG ASSOCIATES' personnel regularly provide a wide range of engineering consulting services to the professional engineering, governmental, and industrial business communities.

DWG ASSOCIATES draws on the talents of seasoned professionals with considerable experience in the water and wastewater fields. The President, Mr. Daniel W. Gay, has 19 years experience with both large and small scale corporate entities and a total of approximately 30 years experience in the water and wastewater industry. His educational background includes a BS in Chemical Engineering and an MBA. Prior to forming DWG ASSOCIATES in 1986, Mr. Gay held numerous positions with Union Carbide Corporation and Lotepro Corporation. He was a core member of the Union Carbide engineering team that invented the UNOX System in the early 1970s.

DWG ASSOCIATES specializes in providing independent plant design, plant troubleshooting, plant optimization, plant testing, and operator training programs for the owners of high purity oxygen (HPO) water and wastewater facilities. For consulting engineers, DWG ASSOCIATES has engineering capabilities identical to the vendors of HPO systems, with a couple of significant differences - we are not selling equipment and we have much lower overhead. For the plant owner, DWG ASSOCIATES offers a full range of very cost effective field services to help ensure that the personnel and facility are running optimally. Also for the plant owner, DWG ASSOCIATES offers **O2-OPT**, **PSASim**, and **CryoSim**, customized process simulators specifically designed for the HPO plant operator.

Unlike other HPO specialists, DWG ASSOCIATES' engineering capabilities and services are designed and priced to save the HPO plant owner money. So we'll make you look good while saving you money too!

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REFERENCES

(partial listing)

- ◆ Carollo Engineers
- ◆ Sacramento Regional County Sanitation District
- ◆ White Martins Gases Industriais SA (Brazil)
- ◆ Metropolitan Sewer District of Louisville and Jefferson County (Kentucky)
- ◆ HDR Engineering
- ◆ Metcalf & Eddy
- ◆ City of Springfield (Missouri)
- ◆ CH2M Hill
- ◆ Praxair, Inc.
- ◆ Orange County (California) Sanitation District
- ◆ Black & Veatch
- ◆ Westin Engineering, Inc.
- ◆ Burns & McDonnell
- ◆ City of Yuba City (California)

DWG ASSOCIATES

Design Engineering for Wastewater and Water Systems



Independent and cost effective
specialists in wastewater and water
treatment technologies using **high**
purity oxygen and ozone.

• ENGINEERING

• FIELD SERVICES

• SOFTWARE