

Researchers see golf applications for subsurface drip irrigation

By PETER BLAIS

Subsurface drip irrigation of greens and tees could be the wave of the future, according to companies and researchers involved in the cutting edge technology.

"By the year 2000, water is going to be the major environmental issue for golf courses," predicted Karen Ferguson, vice president of Sausalito, Calif.-based Geoflow Inc., which has been in the drip irrigation business for 20 years. "Golf is an expensive business to get into. But in the next two years, we plan to go after it hard."

Geoflow is busily testing its subsurface grid of 1/2-inch drip line on turf plots in California, Texas and Hawaii. It has been installed on a green at Point Grey Golf Course in Vancouver, Canada,

and tees at the Mid-Ocean Club in Bermuda. Canyon Crest Country Club in Riverside, Calif., plans to install the system on a green sometime in the near future, according to superintendent Michael Rohwer. Netafim Irrigation Inc. of Fresno, Calif., recently installed its Techline subsurface drip system along a steep bunker face at the Country Club of Rochester (N.Y.), according to Regional Sales Manager Mike Stoll.

"The water from sprinklers was passing through the bunker and splashing sand on the faces," Stoll said. "We installed the system along with a moisture-sensing probe that checks moisture levels every 20 minutes and opens the water valve as needed. The goal is to not have to aim the sprin-

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Research conducted on this plot at the Center for Irrigation Technology at California State University in Fresno, Calif., points to numerous golf course applications for subsurface irrigation.



An irrigation technician pulls in subsurface tubing with a vibratory plow.

SyncroFlo ships 1,000th third-party tested unit

NORCROSS, Ga. — SyncroFlo has marked its 1,000th pump station to be shipped with third-party certification.

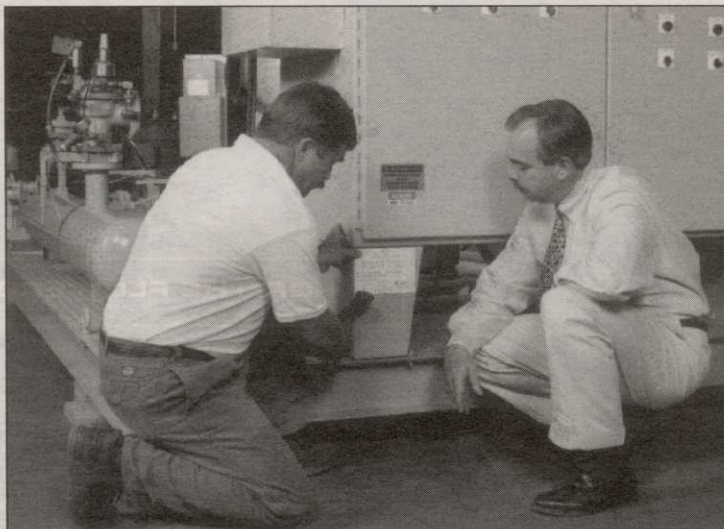
Third-party system certification is required by OSHA regulations. Compliance with these regulations lowers owner liability because operating and main-

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tenance personnel are less likely to be injured since all safety and environmental protections are included. Course designers, specifiers and contractors are also protected by third-party certification should any job site accidents attempt to place liability elsewhere.

SyncroFlo first signed on to have its pump stations third party listed in October 1992. Since then, more than 1,000 pump stations have been produced under this certification.

Specifically, SyncroFlo system components are regularly evaluated by ETL to meet the following internationally accepted standards: ANSI/UL-778 water pumps; ANSI/UL-1004 electric motors; ANSI/UL-508 electric industrial control equipment; ANSI/ASME B73.1M-1990 and ANSI/ASME B73.2M-1990 hori-



Bob Clark, SyncroFlo field service technician (left), applies the third-party certification plaque, as SyncroFlo golf sales manager David Thrailkill looks on.

zontal-end suction or vertical inline centrifugal pumps for chemical process; ANSI/SAE J745-APR87 hydraulic-power pump test procedure; ASTM F336, vol. 09.02 gaskets for severe corrosive service; and ASTM G74, vol. 14.2 dynamic-pressure testing of O-rings.

For more information, contact SyncroFlo's David Thrailkill at 800-886-4443.

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GLENDORA, Calif. — Rain Bird's Golf Division recently announced winners of The Freedom System Giveaway Contest.

The Freedom System is engineered to give golf course superintendents direct access and control over irrigation operations through a convenient handheld radio.

The six winners are:

- Manuel Delgado, Crystalline Country Club (Liano, Calif.)
- Robert K. Ellis, Indian River Club (Vero Beach, Fla.)
- Doug Falk, Indian Springs Golf Course (Litchfield, Mo.)
- Howard Hamaoa, Pearl Country Club (Aiea, Hawaii)
- Larry C. Hantle, Country

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Matching your course with the right pumping station

By DAVID B. BECK

A properly designed pump station responds to the water demands of an irrigation system with little hesitation and minimal fluctuation in pressure and power consumption.

Every golf course is unique in its pump station requirements. Site factors like elevation changes, the location and elevation of the water source relative to the pump station and total irrigated area shape the individuality of pumping systems. Down the line, the number and type of sprinkler heads, as well as variations in pipe type, sizing and routing help to more precisely define pumping needs. Finally, the way the individual irrigation systems are operated from course to course and season to season clarify site-specific pumping requirements.

When sizing a pump station, all operational and system characteristics must be analyzed and coordinated to calculate a maximum expected flow rate and total pressure requirement. Pump stations should meet, but not significantly exceed, the capacity needs of the course. Excess flow capacity is money spent on horsepower that's never used, while the pump station consumes more power than is actually required. This excess pressure also unnecessarily stresses other system components and can lead to failures later.

Sizing for Pressure

Excessive pressure in piping can be as much a problem as inadequate pressure. High pressure, usually the result of a pump station elevated above the rest of the irrigation system, can exceed pipe, valve and sprinkler pressure capacities and create a hazard with quick-coupler connections at lower points on the course.

Position and pressure requirements of all turf heads on the course are needed to determine output from the pump station. It takes energy to move water uphill, and additional pressure must be provided for irrigation water to reach the highest locations on a course. Under static conditions, every 2.31-foot change in elevation equals 1 psi in pressure. If the mainline goes up 2.31 feet, pressure goes down 1 psi. If the main goes down 2.31 feet, pressure's up 1 psi. In extreme

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