Major capital, energy investments at stake in pump stations

By DAVID THRAIKILL and BILL SAVELLE

Course operators deal with restrictive resource, energy and environmental controls by immersing themselves in the new pumping system technologies

"New water systems can represent a third of a new course budget. Systems decisions that were less than $300,000 before, are now approaching $1 million," says Dale Winchester, irrigation consultant for Palmer Course Design Company. "I know of more than one new course project that is 'dead in the water' because no one anticipated the cost to bring power to a poorly positioned pump station."

According to Gary Cozart, superintendent of Chardonnay Golf Club in Napa, Calif., "We're expecting water costs to double by '95. Energy and operating costs will not be far behind. Pump station design could make or break systems of the future."

No one expects the course owner and operator to become technical gurus, but a few decision-making guidelines may help avert disaster, or excessive system operating and maintenance costs later. "Most developers in the U.S. know the value of keeping everyone in the loop — from design through construction," says Erik Larsen, golf course architect for Palmer Design.

At Chardonnay an old site-built pumping station is still in operation on one of its two 18-hole courses, each on 160 acres. "I say old, but it was installed just five years ago," Gary says. "Ongoing maintenance costs running 40 to 50% higher than those from our new system which irrigates about the same acreage. The new Shakespeare course is controlled by a new station and the operating cost differential is marked because the new system irrigates an additional 70 acres of vineyards, too."

A good pumping system uses state-of-the-art technology to:

- reduce overall irrigation system wear and tear
- minimize maintenance
- slash energy use
- better handle alternative water sources
- accommodate future system expansion with minimal expense and effort.

Who benefits?

From an architect's perspective, "The ability to exactly specify performance to a given course need in advance, and to have it waiting on site when construction begins is a tremendous start-up timing advantage," according to Larsen. "That way, work can begin from a pond, and the unit, with phased in irrigation, can be blown out and tested as the course is being built. Germination can begin right away. By the time you've built the last hole, you're grown in!"

Not unlike the irrigation contractor, who is mainly concerned with putting a trouble-free pipe system in the ground, the superintendent must be assured adequate factory support. Superintendents introduced to new pumping technology have a healthy respect for both the system capabilities and their own obligations and limitations in maintaining them.

Experienced installers have long recognized the increased responsibility that comes with system advances.

According to Tom Tanto, "New pumping systems and technology simplify installation, but manufacturer support is now more critical than ever." For 24 years, Tom Tanto's Murrysville, Penn. firm, Tanto Construction, has installed irrigation systems up and down the Eastern seaboard and in Europe.

"Newer pumping systems are better able to handle effluent and brackish water while reducing overall irrigation system stress," he says.

"But their complexity mandates excellent support and service beyond the scope of course personnel. We are way beyond the simple electro-mechanical systems on a clock where the biggest concern was a broken pipe."

FACTORY STANDARD COMPONENTS

A packaged pumping system is the sum of its parts. Compare UL listed, ETL tested, performance and safety standards with local codes. Look for a complete pumping system design plan which details pump, driver, controller, power supply, fittings, suction and discharge connections for final system approval. Note the operating instructions, component markings and schematics pro-

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David Thraikill is irrigation market manager and Bill Savelle is a sales engineer with SyncroFlo, Inc., Irrigation Div. in Norcross, Ga.

Course owner/operator pump station selection list

To get the most pump station for your dollar, be prepared to address all of these issues with system suppliers:

TYPE OF STATION
- Vertical Turbine
- Centrifugal
- Variable Frequency Drive
- Other:

CAPACITY
- Gallons Per Minute
- PSIG (Discharge Pressure)
- Wet Well Depth
- Pump Extensions
- Wet Well Diameter
- Number Of Pumps
- Ft. Water Lift
- Inlet Pressure

ELECTRICITY
- Volts
- Phase
- HZ

Mechanical Options:
(Check Option Required)
- Non Reverse Ratchets on Motors
- Station Isolation Valve
- **INDIVIDUAL PUMP ISOLATION VALVES**
- System Relief Valve
- Dual Backflush Pilot Assembly
- Wye Strainer, Automatic or Manual
- Can Filter Screen
- Lake Screen

ELECTRICAL OPTIONS
(Check Options Required)

1. Type of Panel:
- Relay
- PLC
- NEMA Rating: 3R or 4

2. Main Station Disconnect
- Non-Fused
- Fused
- Circuit Breaker

3. Motor Fault Protection
- Fuses Only
- Fused Disconnect with Handle Through Door
- Breaker Internal
- Breaker with Disconnect Handle Through Door

4. Type of Starter (Required For Motors)
- Across the Line, Full Voltage
- Part Winding
- Wye Delta
- Other

5. Safety Alarms
- High System Pressure
- Low System Pressure
- Low Level
- Low Suction Pressure
- High Flow Rate
- Pump Failure
- Pump High Temperature

6. Flow Meter and Totalizer
7. Auxiliary Power Zone
8. Station Lighting Package
9. Remote Transfer Pump controls
10. Building Heater
11. Common Alarm Light: Remote or Station
12. Computer Monitoring Package

Pump stations

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vided. You must be assured: The factory is a single, reliable source for design, hydraulic, mechanical, electrical, safety issues associated with each irrigation pumping system; thereafter providing a network of factory trained service representatives qualified to provide on-site system service and user training.

There are precious few consultants able to independently spec out a complete course system, including precise pump system requirements. Simply asking for a 1,000-gallon pump at 100 PSI will get you bids between $60,000 and $30,000. In one case, the low bid gets you savings up front, but adds 50% to the seasonal operating costs due to other critical pumping details like pump efficiency. A simple review from a course operator's perspective can assure the best operational value from a packaged pumping system, and the fewest problems later.

Water quality report sheds important light

WASHINGTON, D.C. — The Council for Agricultural Science and Technology's (CAST) report, "Water Quality: Agriculture's Role," presents information on agriculture and the nation's water quality and provides a basis for diverse groups to come together and agree on policy measures to address current problems.

"This report should be read by all those on Capitol Hill who will be involved in the reauthorization of the Clean Water Act," said The Fertilizer Institute President Gary D. Myers. "The report recognizes the complexity of water-quality problems and that solutions must be local and site-specific and must address many factors."

The report, Myers said, demonstrates the strides made by agriculture in minimizing environmental impact.

There is one notable omission in the report. The chapter entitled "Risk/Benefit Considerations" contains no discussion of the benefits from agriculture.