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By Gil Longwell

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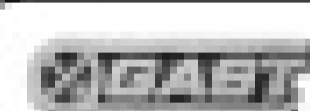


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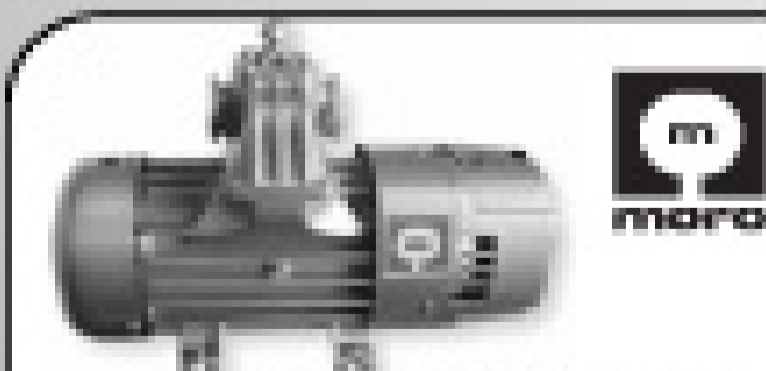


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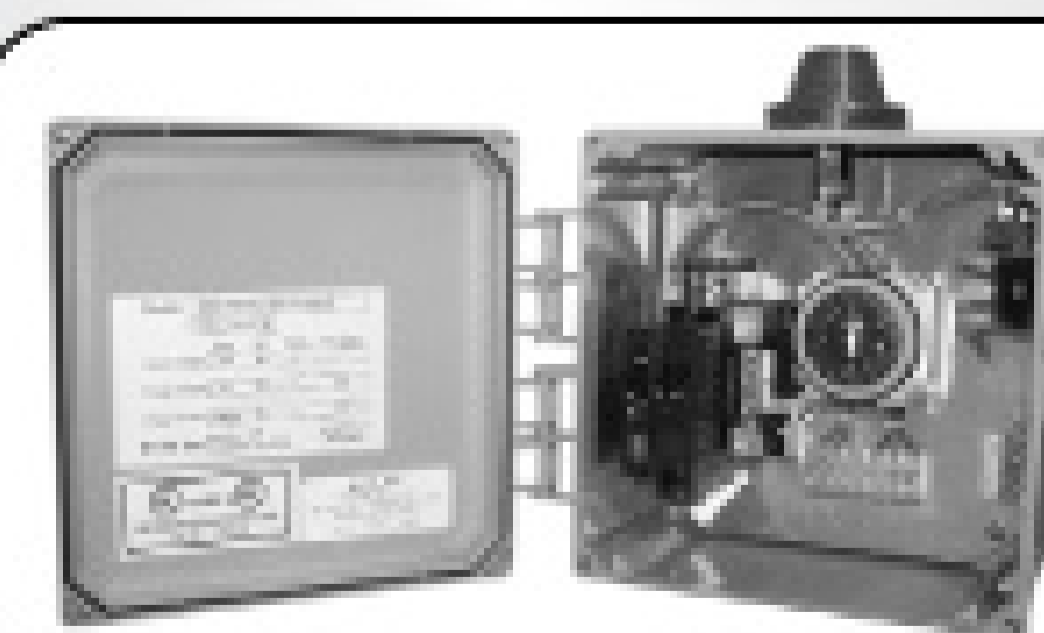
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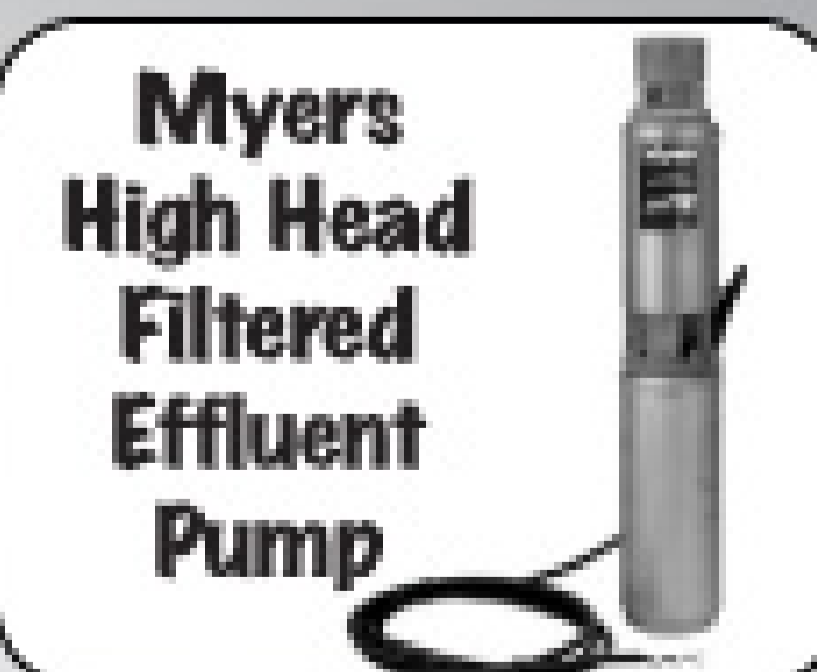
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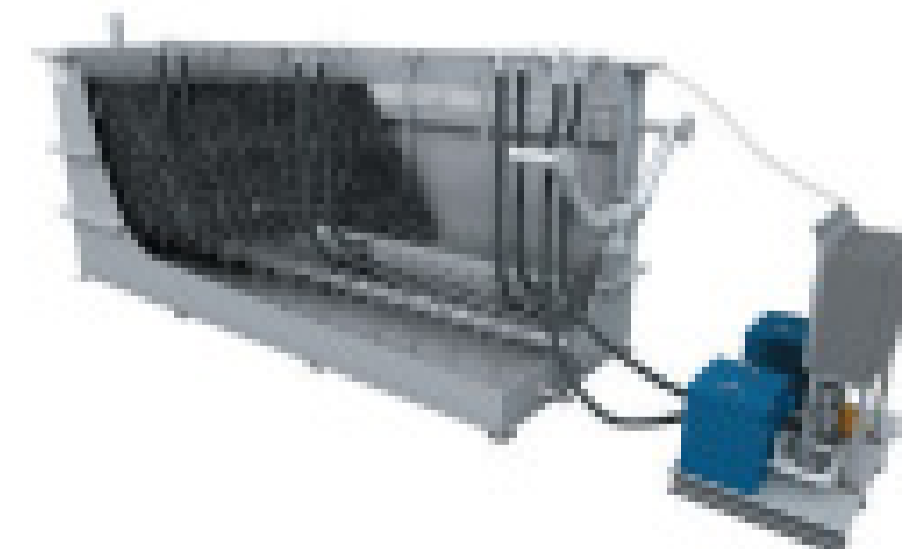
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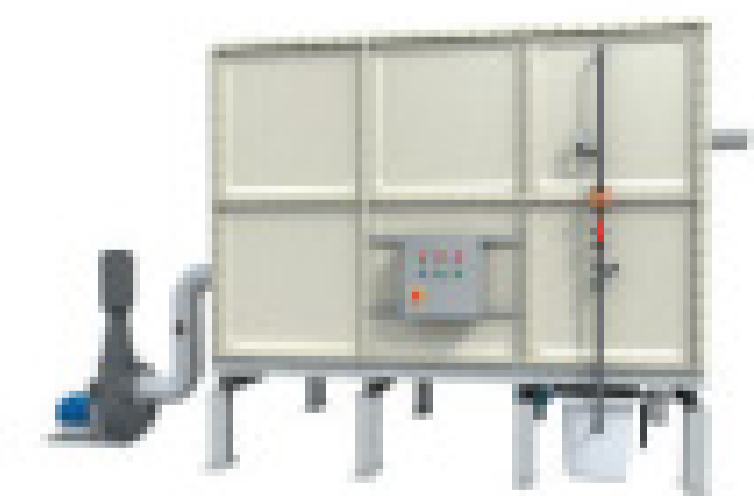
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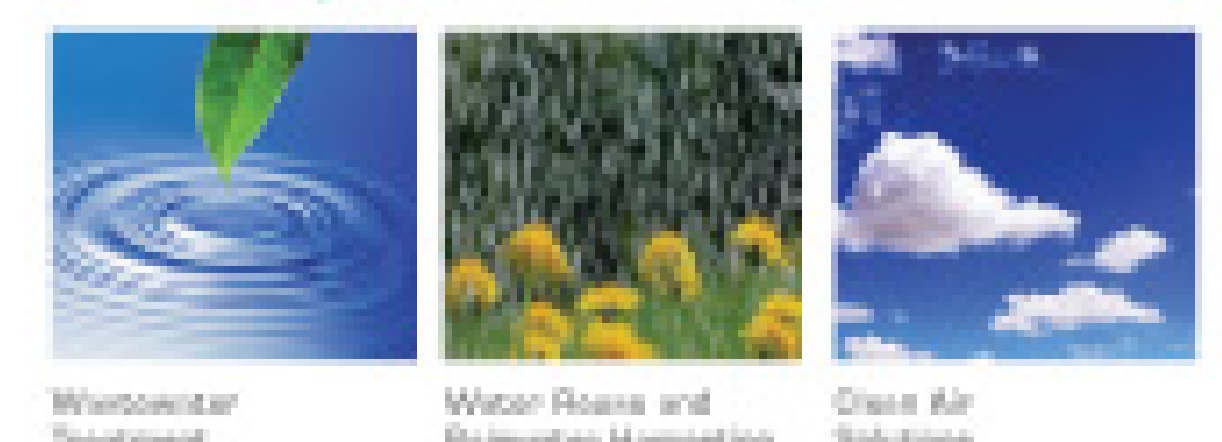
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The Power of X

There's a great deal to be said for thinking ahead to take control of your calendar, so that work doesn't take control of your life

By Ted J. Rulseh

A basic rule of saving and investing says: Pay yourself first. That is, before you spend a dime of a month's paycheck, deduct a specific amount for savings. Ideally, have it taken out automatically. If you never have access to it, you can't spend it.

Well, you can treat your time similar to the way you treat money, and the practice can be just as healthy, if not more so. After all, what's more valuable than your time? I like to call this brand of discipline the Power of X.

One thing after another

Think about how your work year goes. If you're like many business owners, there are things you want to do for your company, and things you want to do in your personal life, that you never get around to because something intervenes. Emergencies come up. An employee quits unexpectedly. A surge in business forces everyone to work harder.

Before you know it, the year is

gone, and you never attended that business seminar. Didn't take that technical college course. Never went to an NFL football game. Had to postpone that family trip to Disney World for "just one more year."

Most likely, that wouldn't happen if you treated your time the way you treat your money — that is, if you used the Power of X. As

a thick marker pen and put a bold X through selected days. I don't just do it mentally. I don't do it in pencil. I do it on paper, in bold and indelible strokes.

For example, every year there's a family vacation at a Northwoods lake cabin. So I X-out the entire first full week of August. In March, a brother and I take a Thursday and

Getting control

Suppose someone I need to interview suggests Friday, June 19. I glance at my calendar — big X. "That day's booked," I might say. "How about Monday the 22nd?" The point is that by using the Power of X, you get a measure of control over your schedule and your life.

Of course, to use this power effectively, you need to let go of the idea that you're indispensable — that every day you're away from the business is an invitation to disaster. The reality is that you have a good team. They'll cover for you while you're gone, especially if, because of those X's on your calendar, they can plan for your absences.

The point is that days for professional development, days for personal rejuvenation, and days for your family are essential. In order to get those days, you have to make their set-aside a priority.

The Power of X lets you claim them in advance, so that nothing gets in their way. All right, sometimes it takes a little steely resolve to resist giving back a day you've marked. But resist you must, because if you go a little soft, pretty soon those big, bold X's won't be much better than pencil marks.

Consider the days you claim just as important as the dollars you automatically, non-negotiably set aside as part of your investment program. By saving those days, you're investing in your professional and personal health. And that's an area where you can't afford to scrimp. ■

As with saving money, protecting your time is a matter of priorities, and you can set those priorities at any time. A great time to start is on the first day of a new year, but you don't need to wait until then.

with saving money, protecting your time is a matter of priorities, and you can set those priorities at any time. A great time to start is on the first day of a new year, but you don't need to wait until then.

Marker in hand

Here's how I apply the Power of X: Each year I take my calendar and

Friday to attend the state high school basketball tournament. June is my favorite month for fishing, and I want time for extended weekend trips to a number of favorite spots. So each Friday in June gets a big X. And so on.

The point is that days I mark with an X are sacrosanct. They are set aside — it's not negotiable. I find that if I don't do this, I end up simply scheduling things as they happen, making myself available when other people are. Before I know it, I've got a couple of appointments marked down for a day I really wanted to save. And once I notice that, my typical response is, "Oh, well ..."

Sure, I could call and change the appointments, but that's a hassle, and it's a mild insult to the other people. So I give up the day and keep the appointment. But a big X on the calendar — name your color — prevents those random intrusions.

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Dealing with Fill Soils

The keys to installing systems on filled sites are to control effluent distribution and to build in significant additional soil-treatment capacity

By Jim Anderson, Ph.D., and David Gustafson, P.E.

We get many questions and have discussions as we go around the country about fill soils and what can be done about them. If you follow this column or have taken one of our workshops, you know the first answer is to avoid or prevent situations where you install into fill soils.

We always talk about our guiding principles, one of which is KINN: Keep It Natural, N_____ (where you fill in the last "N"). However, that leaves open the question, what do I do?

Before speaking directly to that question, let us just say that in the 50-odd years of experience between us, the times we have been in the worst situations as designers and site evaluators are on fill sites. There

Killing structure

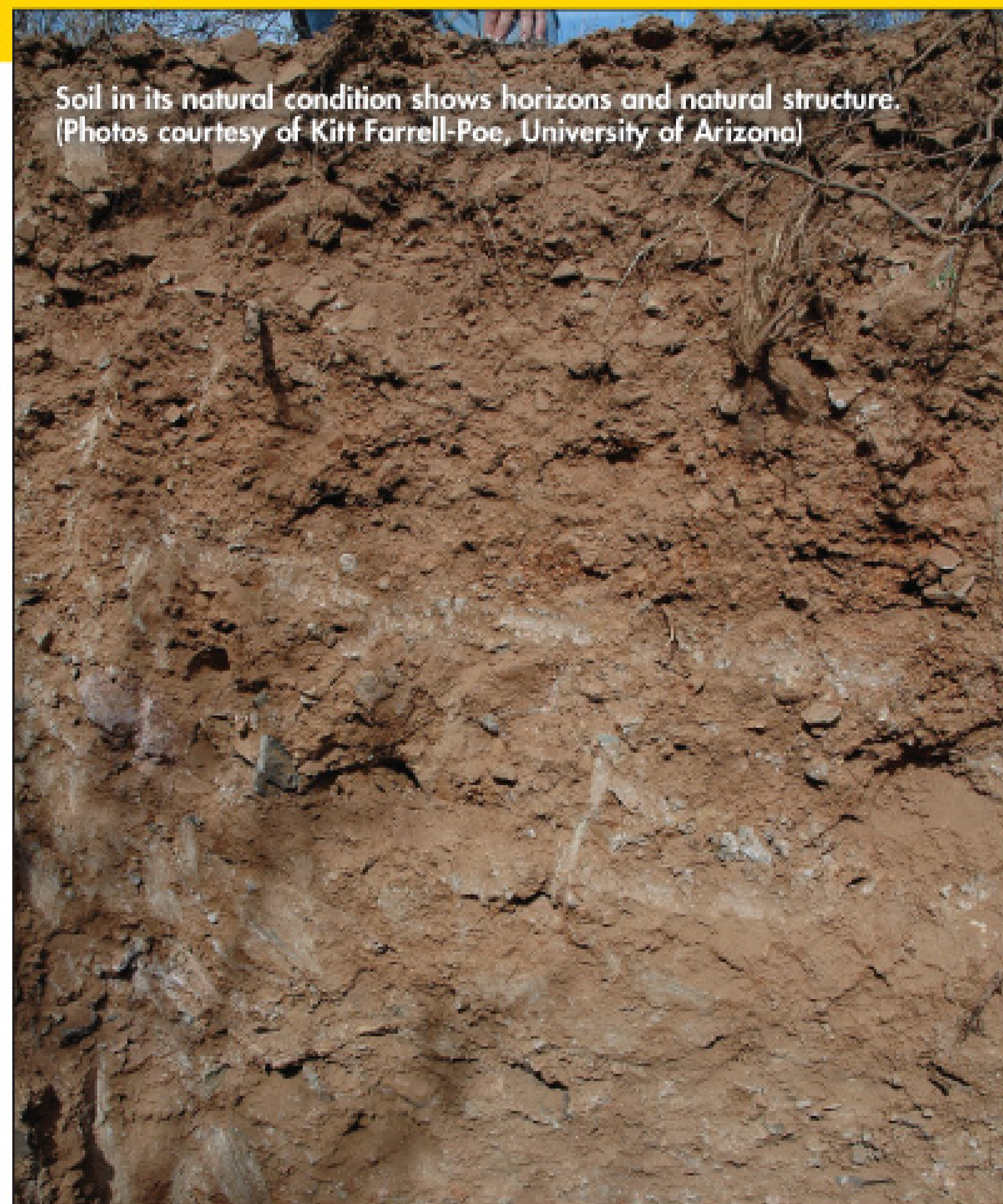
When you move any textured soil other than sand, the soil structure is destroyed. That liberates the silts and clays to migrate when water is added. The loss of pore space from destruction of the structure and the clay migration results in a loss of infiltration capacity. When this happens, it is difficult if not impossible to predict the long-term acceptance rate for soil.

This means that in general you will want to build in as many safety factors as possible when you estimate the expected daily flow and the soil-sizing factors. The result will and should be a much larger system on average than would typically be designed.

If you take on a job that seems to involve using fill soils, remember first to see if the fill soils can be avoided. If not, approach design and installation very carefully, and try to build in as much additional capacity as possible.

was one system in particular where we designed a mound on a fill site. To make a long and painful story short, despite all of our best design ideas, the system failed miserably within six months of startup. So when we suggest avoiding fill soils, we are very serious in our advice.

If you are on a site that requires fill to provide adequate separation distance for treatment purposes, or to raise the system above grade because of floodplain or other setback requirements, you should require that the fill be sand. The sand should consist of a variety of



Soil in its natural condition shows horizons and natural structure. (Photos courtesy of Kitt Farrell-Poe, University of Arizona)

sand-size separates. That is, it should be a combination of fine, medium and coarse sand particles.

Ideally there should be no more than 5 percent by volume silt and clay size particles. It should not be all coarse sand or all fine sands. With coarse sand, you may not get the desired treatment in that medi-

um before your limiting condition. With fine sands, it is difficult to predict how they will accept sewage tank effluent (this is true even of fine sand soils in natural settings). A pressure distribution network should be used to disperse the effluent as uniformly as possible over the area.

Jim Anderson and David Gustafson are connected with the University of Minnesota onsite wastewater treatment education program. Dave is extension onsite sewage treatment educator. Jim is former director of the university's Water Resources Center and is now an emeritus professor, as well as education program coordinator for the National Association of Wastewater Transporters. Readers are welcome to submit questions or article suggestions to Jim and David. Write to ander045@umn.edu.

Strategies for loams

If the soil texture of the fill consists of sandy loam to loam, there are several strategies you can use. First, follow the KISS principle on any fill soil. That is, keep the system as shallow as possible. The soil



The first step in dealing with fill soil problems is being able to identify it. This fill soil shows signs of disturbance and compaction.

surface, even on fill, is subject to more freezing/thawing and wetting/drying cycles, which will promote establishment of soil pores that can conduct water.

Here, the best strategy is to chisel plow the surface when dry, establish vegetation, and leave the area undisturbed for as long as possible before beginning construction. Of course, often the developer of the property needs the system now, so it is usually not possible to leave it for more than a season without relocating the system.

After preparing the surface, the method for applying effluent to the fill soils should be to spread it out or disperse it as much as possible. This means using pressure distribution: a mound, an at-grade system, or drip irrigation. Use any means available to control the distribution and to use as much of the area as feasible for dispersal.

For finer-textured soils such as clay loams and sandy clay loams, all the same approaches apply, except that a deeper ripping or plowing of the surface is desirable. Again, this

is to promote establishment of as many soil pores and pathways as possible to improve infiltration.

Special cases

One special situation to be aware of is where the fill has been placed to fill in a depression or drainage way in order to provide a more level site for construction. Recognize that if the imported material has filled in a depression, and if there is a high water table near the surface in the depression, the water will rise within the fill and become level with the water table in the higher areas around the depression.

In other words, placing the fill may not provide all of the separation from the water table that you expect. Then you not only are dealing with reduced infiltration capacity in the fill material — you also have a saturated condition that will further reduce the capacity of the soil to accept and treat the tank effluent.

It is very difficult to determine where the surface of the water table will be in fill material. It is often not possible to use soil coloration char-

acteristics as an indicator, as you would do in natural soils. The color of the material will reflect the location that the fill was removed from, and not conditions in the present location.

Also, recognize that if the fill is placed in the drainage way, water will still seek to run from the surrounding landscape through that area. So during wet seasons, any system installed in that location will be subject to large amounts of additional water.

We often hear it said that with all the technology choices available today, we should be able to locate a system to provide treatment almost anywhere. But no matter how good the technology, if it is placed in a location that will be subject to periodic inundation, the treatment we are looking for will not take place.

If you take on a job that seems to involve using fill soils, remember first to see if the fill soils can be avoided. If not, approach design and installation very carefully, and try to build in as much additional capacity as possible. ■

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Connecticut Looks at Changes to Septic System Rules

By **Scottie Dayton**

The 2009 Connecticut Public Health Code proposes changes to septic tank and leaching system regulations. If it is passed, concrete septic tanks would need to include documentation that they reached minimum strength when shipped within 14 days of manufacture. Approved manufacturers of non-concrete tanks would have to keep updated specifications and dated installation instructions on file with the Department of Public Health (DPH).

Riser retrofits would be required only over cleanouts and outlet baffles if effluent filters were provided. Risers on tanks in paved areas would have to extend to grade. Riser and manhole extensions to grade would have to be built to prevent stormwater infiltration. The code would change single-family septic tank size requirements to 1,000 gallons for the first three bedrooms, and 125 gallons per additional bedroom.

Subsurface disposal system plans that include retaining walls would need to provide wall information and specifications, including the type of structure, groundwater control mechanisms (drains, weep holes), footings, and cross-sections showing existing and proposed grades. Walls within 50 feet down-gradient of drainfields would not be allowed to act as hydraulic barriers, and the inner wall edges would have to be at least 10 feet from the drainfield.

New language about manufacturer-authorized leaching systems under driveways and roads would require a 1-foot minimum cover over stone trenches and H-20 load-rated precast concrete structures. Manufacturers would have to keep

DPH-dated documentation on file.

Proprietary systems would need to be labeled by July 1 with identification information such as company name and model number. When the code is released, the Connecticut Onsite Wastewater Recycling Association will post it at www.cowra-online.org.

In other news, the state Department of Public Health revised its technical standards for septic systems effective Jan. 1, 2009. The updated standards can be downloaded from www.ct.gov/dph. Local health departments conducted seminars around the state to review the changes. In response to legislative action in 2008, the department also revised the notification requirements for proposed septic systems requiring an exception to rules on separation from wells. The owners of such systems must notify nearby property owners by certified mail.

California

Years after they were due, proposed changes to California's onsite wastewater treatment regulations were released for public comment in November. The regulations are the result of bill AB-885, passed in 2000 to establish a process for developing standard, statewide performance standards for onsite systems. The original deadline for the regulations was Jan. 1, 2004. They are now expected to be effective in 2010.

The text is at www.waterboards.ca.gov/water_issues/programs/septic_tanks. The state water board held a series of workshops and a public hearing for oral and written comments. Many stakeholders, who believe the rules lack legislative oversight, state that current regulations are adequate for certain areas.

Areas of concern include mandatory domestic water well testing and reporting, protocol for groundwater level determinations, soil suitability criteria and prohibitions, mandatory use of bottom-area-only for dispersal system design, supplemental treatment system effluent standards and monitoring, and requirements for systems near impaired water bodies.

South Carolina

Two revisions affecting South Carolina setback requirements for onsite systems from wells or bodies of water went into effect on Jan. 1. One rule increases the distance between the onsite system and private well or surface water from 50 to 75 feet. The other increases the setback to 100 feet between public wells, surface water, or estuaries and systems with flows of more than 1,500 gpd. The regulations are at www.scdhec.net/administration/regs/docs/61-56.pdf.

Ohio

A bill in the House of Representatives may require rural homeowners to install onsite systems costing as much as \$50,000. Based on recommendations from the state's Household Sewage Treatment System Study Commission, the bill would rescind the 2007 Public Health Council's rules that provided greater leniency to rural onsite owners.

The new version states that if the cost of the onsite system exceeds the cost of a conventional septic tank and gravel drainfield and exceeds 50 percent of the home's total cost, the owner is entitled to a variance.

The legislation would require

the council to adopt rules prohibiting property owners from using onsite systems when central sewers are accessible. Before granting onsite systems for housing developments with more than 25 lots, local boards of health would have to submit written documentation stating that sewers are not accessible.

Florida

With \$1 million appropriated by the state legislature in 2008, the state Department of Health is in the midst of a three-year project to "develop passive strategies for nitrogen reduction that complement use of conventional onsite wastewater treatment systems," according to its Web site. Preparation of testing sites for field sampling will be done in the next fiscal year. A vendor is completing an inventory of all onsite sewage systems in the state. Visit www.doh.state.fl.us/environment/ostds.

The state legislature last year also required a report on the cost of implementing a program to require septic tank inspections every five years. The report said less than 1 percent of Florida's 2.3 million onsite sewage systems are managed by operating permits and maintenance agreements. The rest are generally serviced only when they fail.

The report says more than half of systems are at least 30 years old and were installed under standards less stringent than current regulations. Repairs to such systems were not regulated until 1987 and many have been modified illegally. The report estimates a total government cost of just over \$25 million to institute mandatory inspection. The costs would be recovered by user fees. The cost to home and

business owners was estimated at \$99 million for permit fees and inspections.

Using a failure rate of 9.5 percent found in three counties with mandatory inspection, the report estimates the total cost of repairs for the private sector to be about \$164 million over the five-year program phase-in period. The study also estimated cost to homeowners over the five years just for inspec-

tions. For those with systems in good operating condition, the cost would be \$612. For those needing repairs, the average cost would be \$3,845. The report notes that those costs are "significantly less" than the cost of connecting to a central sewer system.

Visit www.doh.state.fl.us/environment/ostds/pdfs/forms/MSIP.pdf. ■



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Machine Matters is designed to help readers get the most from excavators, backhoes, skid-steers and other mechanical equipment through proper maintenance, operation and financial practices. Readers are welcome to submit ideas for this column and can send them to Ted J. Rulseh, editor, by calling 800/257-7222 or e-mailing editor@onsiteinstaller.com.

Jobsite Pressures

Proper tire inflation is an important contributor to tire life and your machine's fuel economy and performance

By Greg Northcutt

Want a quick and easy way to get the most hours or miles out of the tires on your equipment and trucks? Keep the right amount of air in them.

"The biggest threat to the life of a tire is incorrect air pressure," says Gary Nash, director of sales, Yokohama Tire Corp. off-the-road products for a broad range of construction equipment. "Tire pressure has to be just right. Not too high and not too low."

By their choices of rubber compounds, tread patterns and construction methods, tire manufacturers can make tires to stand up to cuts, shocks, heat and other stresses. But, they can't make tires that perform and last when not inflated properly.

Besides the money spent to replace tires that fail prematurely due to increased wear, internal damage or even a blowout or other sudden tire failure, improper inflation can cost you in other ways. For example, reduced traction and flotation can lower productivity and

increase rolling resistance, hurting fuel economy.

The cost of under-inflation

Most on- and off-road tires with improper air pressure have too little air. Over time, tires lose pressure at about 1 psi per month as air escapes between the tire bead and where it fits against the wheel. Pressure can also change about 1 to 2 psi for every 10 degrees F change in ambient temperature. Tire pressure also rises as tires warm up when you operate your machine.

As Nash points out, under-inflation can reduce payload capacity and cause early tire failure in several ways:

Uneven wear. Unlike a properly inflated tire in which the entire width of the tread contacts the ground, under-inflation causes the tire to run more on the outer edges of the tread, leading to more wear there than in the center and reducing gripping action.

Overheating. Under-inflation causes excessive deflection of the tread, allowing the lugs of the tread to move back and forth across the ground surface. That increases heat-generating friction. Failure of tire-reinforcing cords is another possibility as the cords and weakened rubber rub together.

Low tire pressure on dual-mounted tires can also lead to overheating, if they are deflated enough so that adjacent sidewalls sag and rub against each other.

"Once a tire overheats, the rubber can melt and revert back to its natural state," Nash explains. "In addition to causing the tread and plies to separate, overheating causes cracks in the innerliner of tubeless tires. As a result, air can leak into the casing to create knots and other weak spots in the sidewall."

Rim displacement. While this condition is not very common, the O-ring of an under-inflated tire can deteriorate from heat buildup and crack. This weakens the seal between the wheel flange and the tire bead, allowing air inside a tubeless tire to leak out.

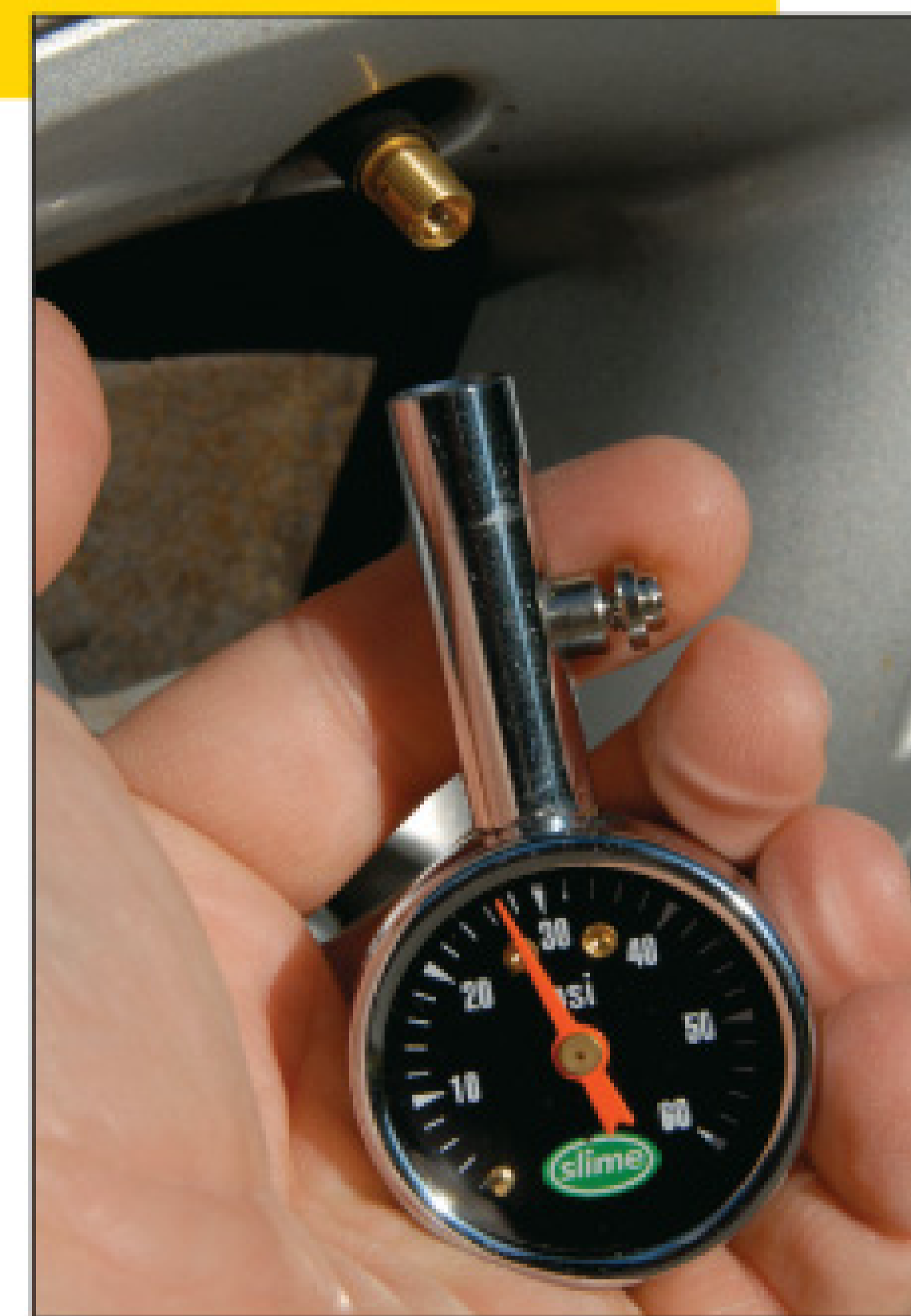
The price of over-inflation

Tire life and performance can also suffer from higher-than-recommended air pressure.

Uneven wear. Too much air in a tire increases the ground contact pressure at the center of the tire, causing more wear there than on the outer areas of the tread and reducing overall traction.

More penetration damage. "By stretching the rubber, too much air pressure reduces the ability of the tire to close around or envelop a sharp-edged object," Nash says. "This can increase the explosive force and the resulting damage should something penetrate through the tire."

More cord damage. An over-inflated tire reduces protection of the cords from uneven surfaces, leaving them more vulnerable to rupture from cuts or shocks.



Regularly checking tire pressure with a gauge can prevent many problems related to tires that are under-inflated or over-inflated. This needle-style tire pressure gauge provides easy, accurate readings at 5 to 60 psi.

Bead problems. Too much air pressure can loosen the rubber that encases the steel wires of the bead, causing it to fail as the wires rub against the wheel flange.

Check your pressure

The correct inflation pressure depends on type and size of tire, as well as the machine type, ground conditions, load, speed and other factors. So, when inflating tires, follow your equipment operator's manual. The information there



Digital gauges provide simple, accurate readings of tire pressure.

reflects the manufacturer's recommendations for your specific make and model.

How often should you check the pressure? "Much depends on how frequently you use your machine," Nash says. "If you operate it daily and the tires are set up properly, pressure won't fluctuate much from day to day. So, you may not need to check it every day. However, if you use your machine

the outside diameter of your tires to see if the tread of a tire on one side of your machine is worn more than on the other side. The tire with the larger diameter will carry most of the load and will be more prone to damage.

"If the difference in outer diameters is extremely large, the smaller-diameter tire will slip and scrape along the ground, causing the center of the tire to wear quickly,"

"To prevent problems, the operating pressure should be no more than 5 percent higher than the cold tire pressure. If it is, look for the cause and correct it. Maybe you're overloading the machine or your ground speed is too fast for the tire."

Gary Nash / Yokohama Tire Corp.

only periodically, check tire pressure every time before starting work. Extreme temperatures and poor working conditions, such as unusually rough surfaces, call for more frequent tire pressure checks."

To make sure your tire gauge is registering correctly, Nash recommends checking its accuracy periodically using a master gauge and recalibrating it as needed. To determine if your tires are inflated properly, Nash suggests checking the air pressure twice — once when the tire is cold and again at the end of the work shift.

The manufacturer's recommended tire pressure is based on cold air pressure and is designed to account for the normal increase in pressure during operation. However, he notes, checking pressure the second time can reveal any problems due to the tire or how you are operating the machine.

"To prevent problems, the operating pressure should be no more than 5 percent higher than the cold tire pressure," Nash says. "If it is, look for the cause and correct it. Maybe you're overloading the machine or your ground speed is too fast for the tire." Wait until the tire is cold before bleeding off any excess air. That prevents the tire from becoming under-inflated when it's cold.

Checking for excessive wear

It's also a good idea to measure

Nash says. "The larger tire will carry more of the load and is more apt to generate excessive heat from overloading. The difference in diameter could also damage the differential, gear box or other drive train components of your machine."

The same goes for the duals on your truck or trailer. You can use a steel tape to measure the circumference of each tire. Or, you can lay a 1 x 2 across the top of the two tires and use the vertical distance between the 1 x 2 and the tread to measure any difference in height between the tires.

For example, for a radial tire with a section width of 9 to 14 inches, the maximum allowable difference in diameter between the two tires is 0.3 inch, and the maximum difference in circumference is 1 inch.

Tables showing the maximum allowable differences for various sizes of tires and how these differences affect load distribution are on page 66 of the Yokohama *Off-the-Road Tires Handbook* (available at www.yokohamatire.com). Click "Tires" and scroll down to "Off-the-Road" and click.

"In no case, should you try to correct any difference in diameters by adjusting the inflation pressure," Nash says.

Greg Northcutt is a freelance writer based in Port Orchard, Wash. He can be reached by e-mailing this publication at editor@onsiteinstaller.com. ■



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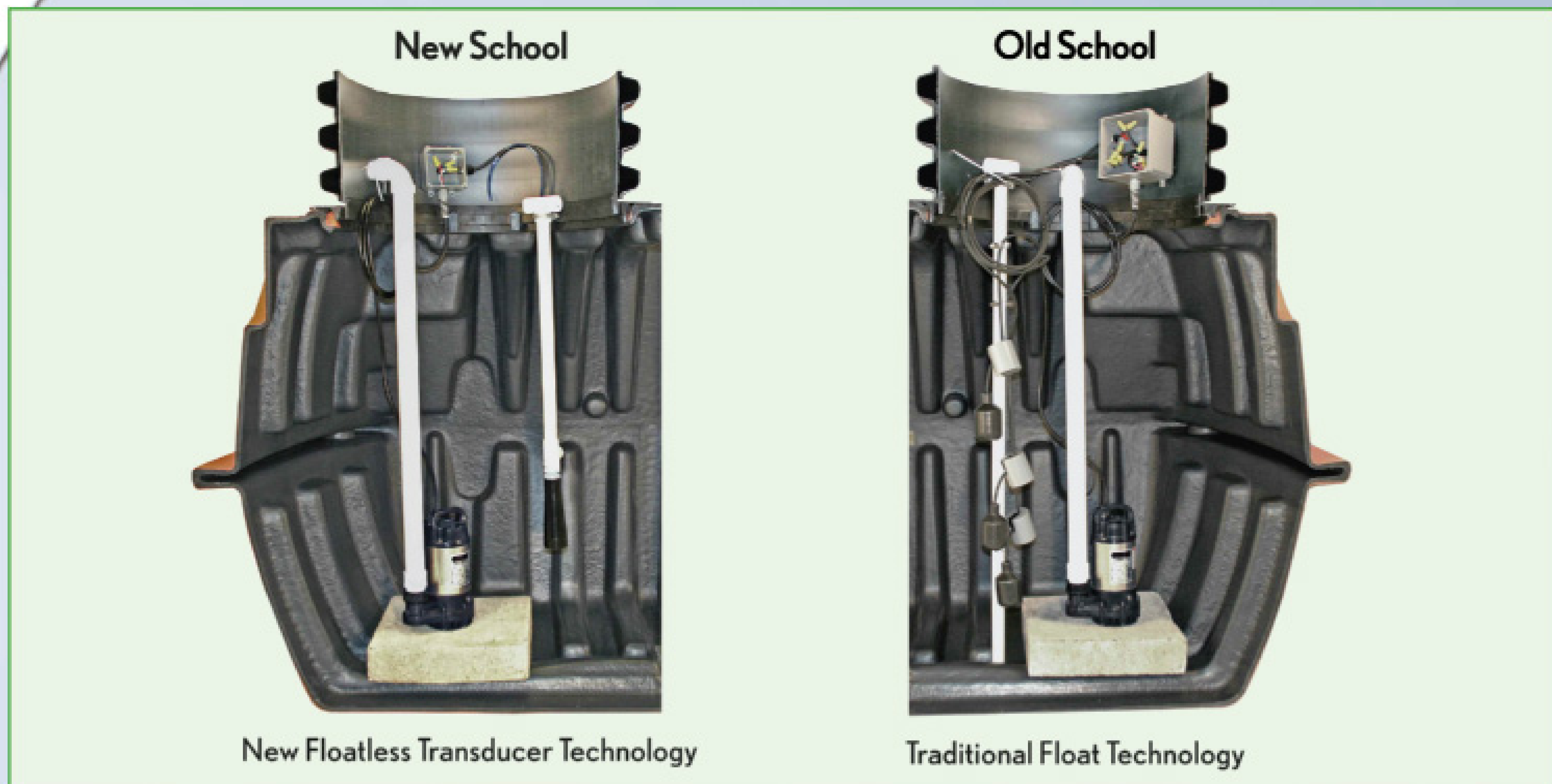
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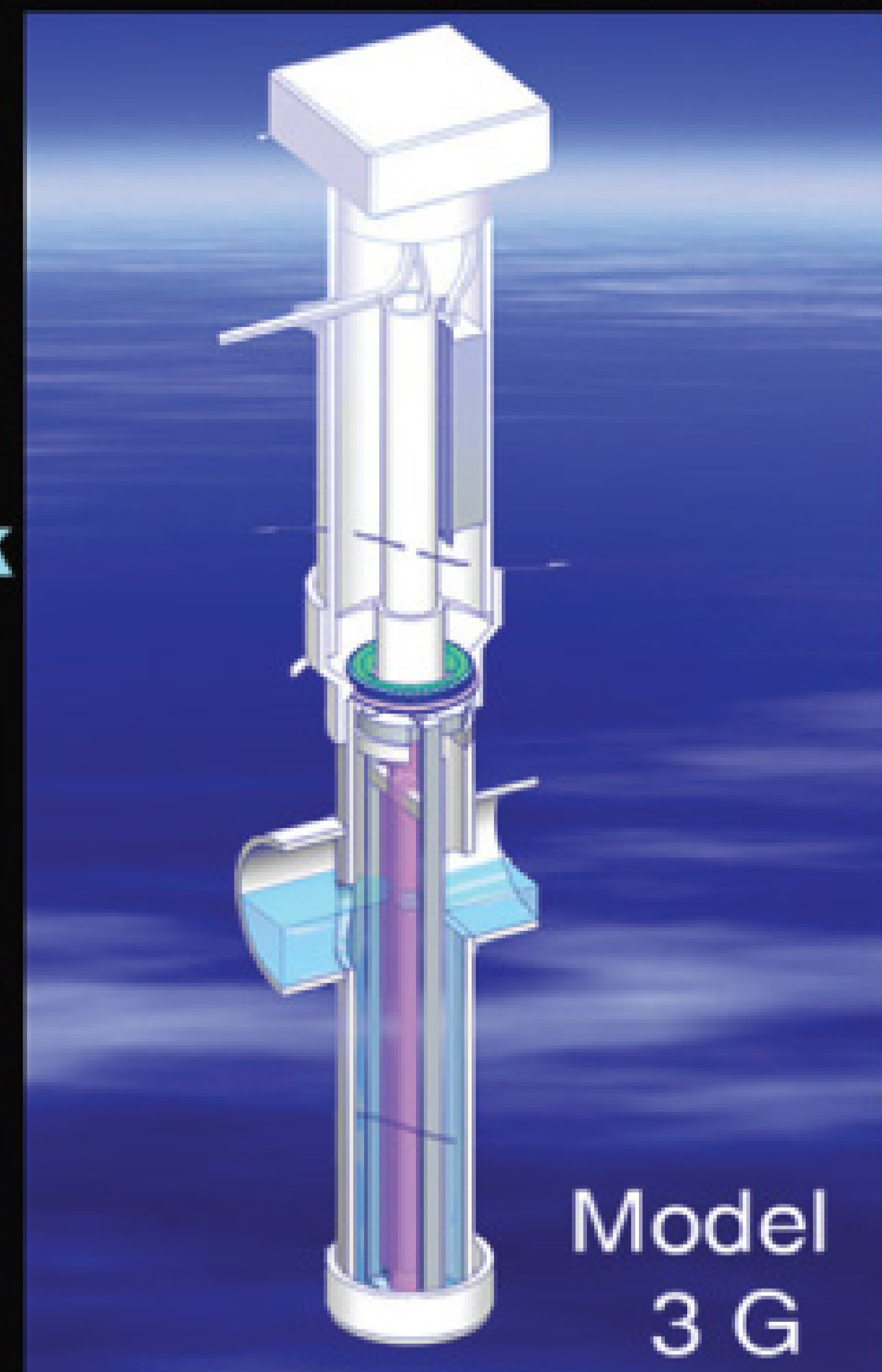
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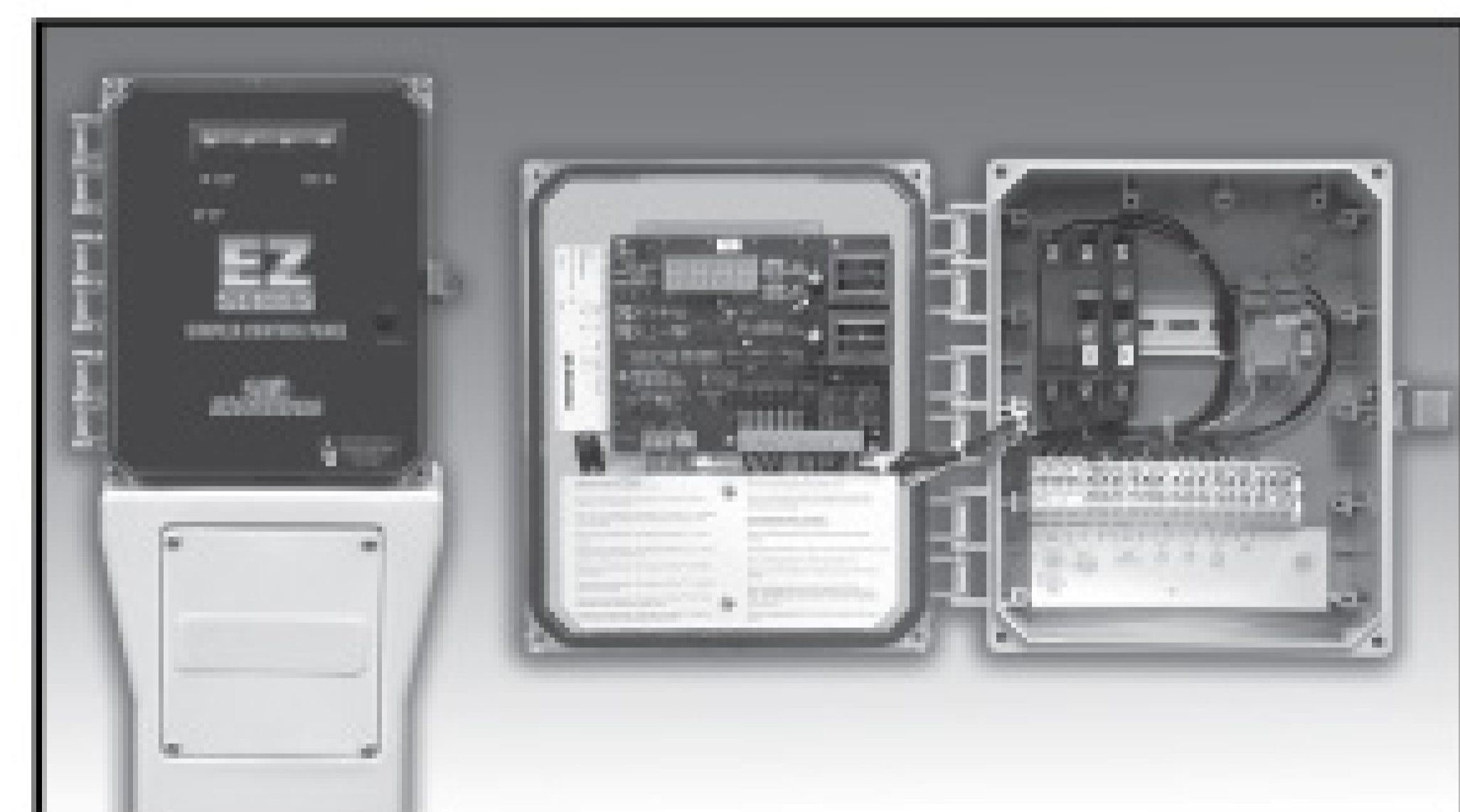
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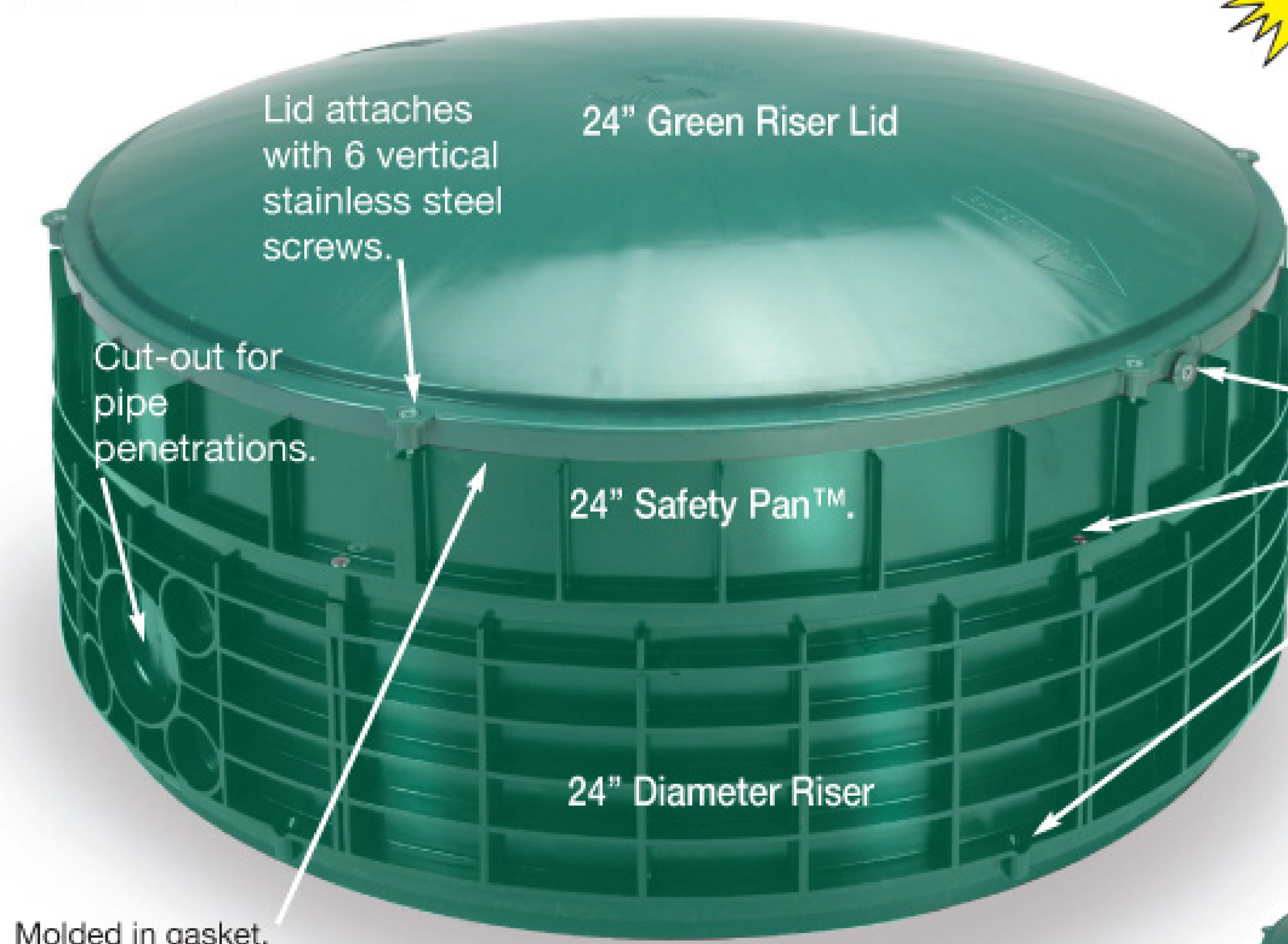
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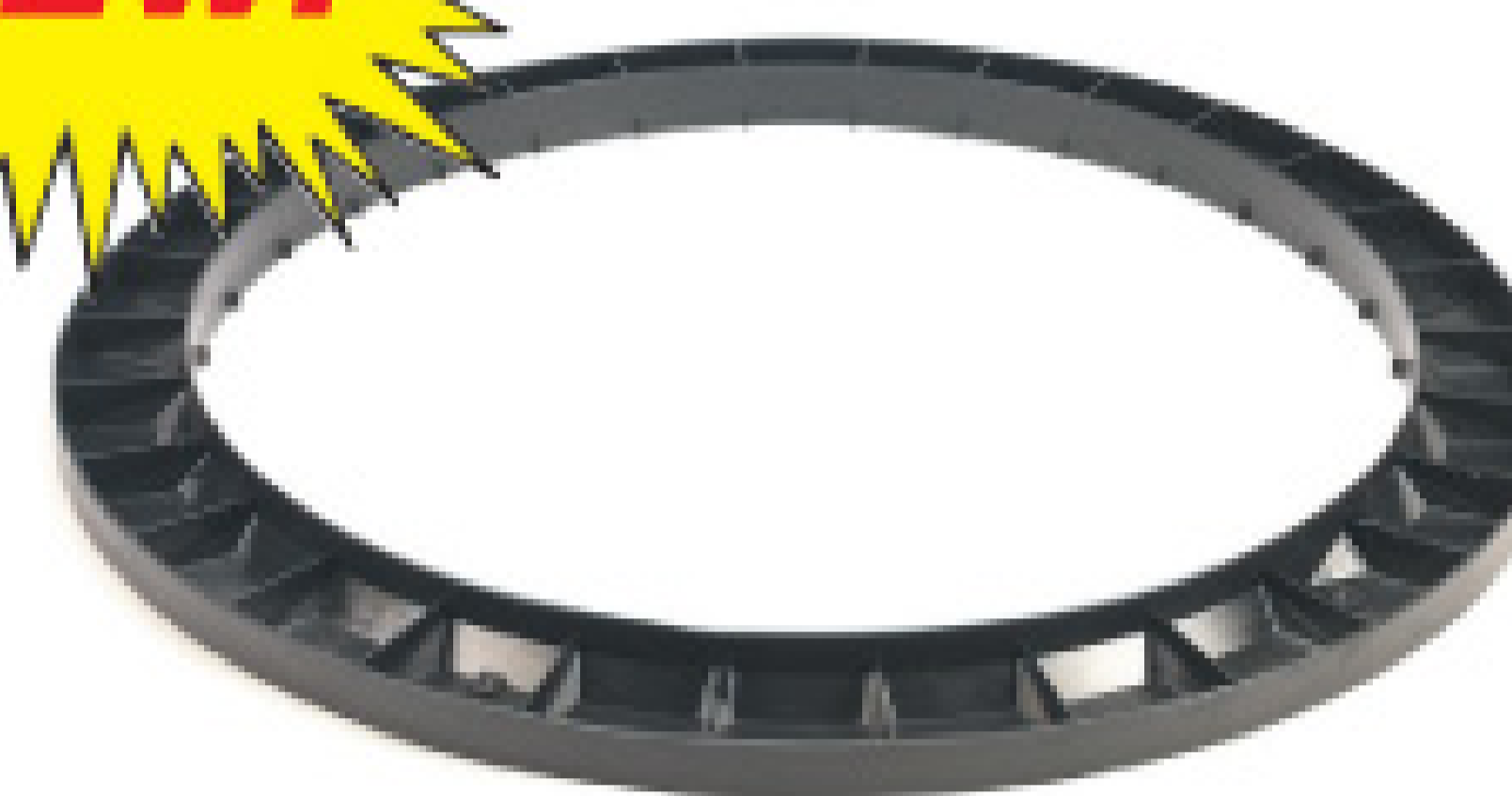
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24" Safety Pan™

24" Diameter Riser

Molded in gasket.

Available in 12", 16", 20" and 24" diameters.



Tank Adapter Ring

New - Horizontal Safety Screw.

Safety Pan™ to Riser attachment with 6 vertical stainless steel screws.

Riser to Riser attachment with 6 vertical stainless steel screws.

Patent Numbers
5,617,679 &
5,852,901; other
pats. pending.

Riser Lid

with Molded-in gasket.
Available in 12", 16", 20" and 24" diameters.

Concrete Lid w/handle

Safety Pan™

Safety Pan™ available in 16", 20" and 24" diameters.

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For septic tanks. Stackable in 6" increments. Available in 12", 16", 20" and 24" diameters.

Tank Adapter Ring

For mounting riser flush to top of tank when casting-in is not an option.

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Patent Numbers
6,319,403; D 431,629; other
pats. pending.

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ANSI/NSF
Standard 46



4" Sch. 40 &
SDR-35

EF-4
4" Filter



1500 GPD
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4" Sch. 40 &
SDR-35

244 ft. of
1/16" filtration
area.

EF-6
6" Filter

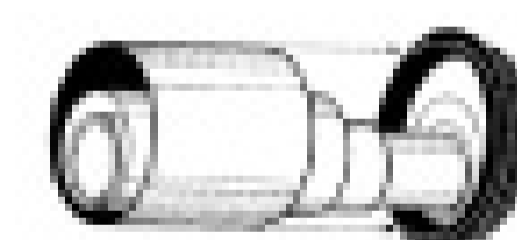
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Patent No's
4,951,914,
5,624,123
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12", 17", or 20"

Tested to 10" vacuum

Scott Kellogg and Mike Oliver of Kellogg Contracting install pipe in a drainfield. Most of the company's onsite installations are for homes priced at about \$750,000. (Photography by Peter Lawlor)

At Home in Field or Office

Kellogg Contracting grows by discovering and seizing promising niches and by taking professionalism to a level uncommon in the onsite world

By Gil Longwell

Kellogg Contracting Inc., Franktown, Colo.

OWNER: Scott Kellogg

MARKET AREA: 75-mile radius

SPECIALTY: Installing advanced treatment systems

EMPLOYEES: 5

AFFILIATIONS: NOWRA, Colorado Professionals in Onsite Wastewater

WEB SITE:
www.kelloggcontracting.com



In 2001, Scott Kellogg's dream of owning his own business became a reality when he founded Kellogg Contracting Inc.

In his high school and college years, he worked side jobs that kept his hands busy and built his muscles. After college he spent 10 successful years in his dad's insurance office, refining his customer service, communications, networking and people skills. He still uses all those skills daily, and every day his business success grows.

Kellogg started his business in Franktown, Colo., with a particular insight. "I realized that builders subbed earthmoving tasks to several contractors, and this created job-site coordination issues," he says.

His vision was to offer a unified menu of services, improve coordination, and eliminate administrative issues. He describes his approach as a "one-stop dirt shop."

Located about 35 miles southeast of Denver, and working in a 75-mile radius, the firm works mostly on onsite systems for homes in the range of \$750,000.

In that market, his customers expect and demand more from all of the building trades. "Professionalism must show in every customer contact, from the initial call through the delivery of the as-built drawings," Kellogg says.

In 2008, he added septic system maintenance services by buying an established company. Today, the installation business includes about 60 percent new installations and 40 percent repairs. The service side performs 60 to 70 pump-outs and 10 to 15 system inspections per month.

Entrepreneurial spirit

Creating the business was a natural for a young man who has a

"The days of handing a customer a proposal that is a sketch and a number on a napkin are over. Our proposals are professional in appearance. We incorporate a level of detail that actually educates the customer."

Scott Kellogg

business management degree from Ft. Lewis College in Colorado. Kellogg first knew the joy of working for himself doing "side work" during high school and college. He found it fulfilling to satisfy others' needs and work outdoors.

Kellogg knows he must show meticulous attention to quality and detail in all customer interactions.

Variety Is the Spice

Kellogg Contracting works in several counties where its employees encounter regulations that vary. The inconsistencies create some challenges, but owner Scott Kellogg finds it helps to include the local regulator in the conversation when problems come up — to help build trust and mutual appreciation.

Kellogg has learned to take the variability in stride. As statewide regulations come closer to reality, he hopes the inconsistencies will diminish. However, Colorado counties are writing new regulations to require periodic septic tank inspections and pump-outs. The service intervals vary and so does the level of enforcement.

Kellogg recognizes that new regulations create opportunities, which he has become adept at seizing. He believes businesses that resist regulations are turning their backs on business diversity and growth possibilities.

These attributes first become evident in his written proposals. “The days of handing a customer a proposal that is a sketch and a number on a napkin are over,” he says. “Our proposals are professional in appearance. We incorporate a level of detail that actually educates the customer.”

By including line-item pricing, Kellogg can avoid price shock when unexpected circumstances affect the final tally. He points to the “rock clause” that explains how the use of more rock than expected affects total project costs. Line-item pricing lets him make use of every income opportunity, while keeping customers fully informed. It addresses the what-ifs upfront and helps him avoid “eating” unanticipated costs.

Proposals for system repair work are itemized. Repair work customers shop price. “There is not a lot of room for price flexibility for these projects,” Kellogg says. “Even so, there is no reason to be less



Scott Kellogg (left) digs a leachfield with a Case 660 trencher. His firm offers a menu of services in an approach he describes as a “one-stop dirt shop.”

professional simply because it is a repair project.”

He finds communication with all involved parties essential. “Our preference is to collaborate with the designer from the outset,” he says. If unforeseen challenges arise, he is instantly on the phone to the designer and, if necessary, with the regulator, until the issue is resolved.

Regardless of the job, these attributes carry over to field work. “From start to finish, we take care to do it right the first time,” Kellogg says. “We are not a one-day wonder, and we do not want to be called back to a job because we took a shortcut or missed a detail.”

Recognizing opportunities

Entrepreneurs recognize and capitalize on opportunities many others miss. “Onsite system installation is a niche enterprise that requires specialized knowledge and techniques,” Kellogg says. “In the early years, only 10 percent of our work was with onsite systems. Less than seven years later, about 45 percent of our business is onsite system-related. We expect that percentage to increase.”

The company has welcomed innovative and alternative onsite technologies and readily adds them to the toolbox. Drip irrigation systems using tubing from Geoflow Inc. supported by controllers from

SJE-Rhombus and electronic components from Septronics let Kellogg offer new treatment solutions.

Kellogg is recognized by Orenco Systems Inc. to install its AdvanTex



“Most customers do not recognize the amount of office work needed to support an installation. They want to see me working on their property, doing their project.”

Scott Kellogg

treatment units. The company also installs gravel-less technologies from Infiltrator Systems Inc. in gravity and low-pressure distribution configurations.

These technologies require knowledge and skills that Kellogg and his employees gain through training sessions sponsored by the Colorado Professionals in Onsite Wastewater (CPOW), a NOWRA affiliate. Manufacturer-sponsored training is another source of education.

Growth and diversity

In early 2008, Kellogg bought Douglass County Septic, a septic tank pumping and service company. “I made that acquisition in anticipation of a slowing construction market,” he says. “Homeowners will always need service and main-

Scott Kellogg backfills a header trench with a mini-excavator. In about seven years, work related to onsite systems increased from 10 percent of business to 45 percent.

tenance. I believe I can double the size of our onsite services business.”

Douglass County Septic, with a longer history than Kellogg Contracting, has a 3,800-client book of business. In both enterprises, repeat business is good. Callbacks are not, and Kellogg works hard to prevent them.

“We are considering the consolidation of our onsite services under the Douglass County Septic banner,” he says. “General excavation would remain with Kellogg Contracting Inc.” This would allow each business to focus its strengths, enable intra-company referrals and further build the companies’ client bases.

Already, Kellogg markets onsite services to homeowner associations and has secured contracts for dozens or even hundreds of homes in a single sales and marketing effort. The approach works whether the association has charge of a single community system, several cluster systems, everyone’s individual system, an NPDES-permitted small treatment plant or any combination.

Kellogg presents onsite system workshops for plumbing contractors who understand pipes and pumps but do not know soil or advanced treatment units. When plumbers recognize that there is a learning curve and a new body of knowledge to master, Kellogg hopes he will get ATU-related service referrals.

A good relationship with designers, who in Colorado are regulated by counties, is another referral connection that brings business to both of Kelloggs’ enterprises. In his service area, he is on several designers’ preferred installer lists. A designer’s referral is a “foot in the door” to a long-term relationship with a new homeowner.

Personnel strength

Kellogg doesn’t do it all alone. Dannette Steck, office manager for both companies, keeps the work flowing in the right directions. She is taking on more marketing responsibilities, including cold-calling to develop both pumping and installation work. Kellogg sees her doing more such work as he spends more time on other office and field tasks.

Mike Oliver, onsite installation



Scott Kellogg excavates a drainfield with a John Deere 624 front loader.

“From start to finish, we take care to do it right the first time. We are not a one-day wonder, and we do not want to be called back to a job because we took a shortcut or missed a detail.”

Scott Kellogg

foreman, directs the occasional day laborer and the two college students who have worked for Kellogg for several summers. Brad Metzger, excavating supervisor, spends 10 to 15 percent of his time on onsite projects and the rest on general excavating. Rafael Miranda, vacuum truck operator and onsite system repair foreman, joined Kellogg with the Douglass County Septic acquisition.

Supporting the crew is a diverse equipment roster that includes two Bobcat skid-steers (Models 863G and 873G). A John Deere 624J four-wheel-drive front loader and a Case CX80 excavator do the heavy lifting. A Bobcat 341k mini-excavator and a 1998 Case 660 trencher, with laser-directed hydraulics for elevation control, also help the work get done. For elevation control, the company relies on three Topcon lasers.

“What we do not have is a wheeled backhoe,” Kellogg says. “I prefer tracked equipment for its lighter loading rates. That lighter loading minimizes soil compaction.”

Always a professional

Kellogg’s personal history and business approach are indistin-

guishable. Without sacrificing quality or professionalism, he does what it takes to get the job done while balancing customer expectations in changing markets.

“Most customers do not recognize the amount of office work needed to support an installation,” he says. “They want to see me working on their property, doing their project.” And that is where he is most comfortable.

Kellogg’s ability to spot opportunities, recognize overlooked niches, and turn obstacles into advantages continues to lead him to business growth and personal satisfaction. ■



Mike Oliver prepares a drain manifold.

MORE INFO:

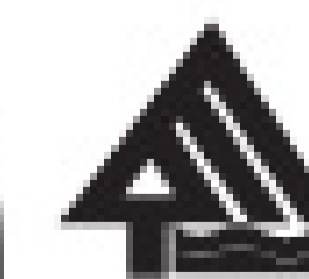
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Against All Obstacles

An Iowa contractor battles stones, drainage courses, pet cemeteries and more in building onsite systems to serve a small rural community

By **Scottie Dayton**

Mt. Carmel, an unincorporated community in western Iowa, has a church, parsonage, community center and 39 homes. Each had a septic tank discharging through a common 6-inch clay tile sewer to daylight in a farmer's field.

In 1999, the Iowa Department of Natural Resources (DNR) condemned the community, but provided no solution. The local U.S. Department of Agriculture (USDA) office would not fund a lagoon or provide a solution. In 2008, it put the project out to bid, and Dickerson Mechanical in Colfax, Iowa, won it. Owner George Dickerson Sr. worked with Jim Carroll, P.E., at the USDA to design the systems.

Dickerson's bid called for 27 individual gravity systems with their own drainfields, 12 homes hooked to grinder pumps discharging to three absorption beds, and separate gravity systems with drain-

fields for the church, parsonage and community center. Extenuating circumstances forced him to alter many designs in the field. He battled large stones, drainage ways, buried foundations, pet cemeteries and other obstacles, but completed what had been planned as a 180-day project in 97 days. All systems are working perfectly.

Site conditions

Soils are 16 to 24 inches of topsoil, then red clay with mottling. The water table is 4 to 7 feet below grade. The land is flat with some waterways.

System components

Carroll designed the 29 individual onsite systems (homes, church and parsonage) to handle 450 gpd each. Their major components are:

- 1,500-gallon concrete septic tank. All tanks have dual compartments and were made



From left, Doug McKim, George Dickerson Jr., George Dickerson Sr. and Rodger McKim get ready to lower the sewage grinder pump into the hole. (Photography by David Mast)

by Northwest Concrete Products Co., Storm Lake, Iowa

- A300 Zabel effluent filter
- Distribution box from Tuf-Tite Inc., Lake Zurich, Ill.
- 200 to 500 feet of 18-inch Envirochambers from Hancor Inc., St. Nicephone, Québec
- 11 1,000-gallon pump tanks with 3/4-hp Liberty submersible pumps.

The cluster system handles 1,500 gpd. Its major components are:

- 12 1-hp Barnes grinder pumps in 2- by 12-foot-tall fiberglass containers
- Three 1,500-gallon septic tanks
- Three 1,500-gallon settling tanks with 1-hp Liberty effluent pump in second compartment
- Three 80- by 120-foot pressure-dosed beds.

The community center's individual onsite system handles 2,000 gpd. It has:

- Two 2,000-gallon septic tanks
- A500 Zabel effluent filter.

System operation

All septic system laterals were replaced with 4-inch PVC Schedule 40 pipe. The 27 homes with gravity systems send flows from the septic tank through the distribution box for gravity distribution to the drainfield. The other 12 require pump tanks to lift the effluent to the distribution box before dispersal.

The 12 homes on the cluster system are split into three groups of four. Each group connects to a grinder pump discharging to a septic tank that gravity feeds to a settling tank. Effluent from each group is dosed to a separate absorption bed. The larger septic tanks at the community center address shock loads and loading from dishwashing water. The kitchen is only used to reheat food.

Installation

Dickerson and county supervisors held a town meeting before starting construction to introduce

System Profile

Location:	Mt. Carmel, Iowa
Facility served:	Unincorporated community
Designer:	Jim Carroll, P.E., USDA, Des Moines, Iowa
Installer:	Dickerson Mechanical, Colfax, Iowa
Site conditions:	16 to 24 inches of topsoil, then red clay with mottling; water table 4 to 7 feet below grade
Type of system:	Conventional gravity and pressure-dosed systems



A 2-inch pressure line connects the home to the septic tank.

the project. Because he would replace every lateral, Dickerson told residents to expect their yards to look as if they were bombed.

"I'm positive that honesty helped smooth the road," he says. Shortly before each installation, Dickerson visited the homeowners to explain what type of system they were receiving and answer questions.

When Dickerson's five-man crew began excavating with their two Case backhoes, they hit numerous old foundations. One of the first, from a tavern, took eight hours to remove. "The homeowner and local officials knew it was there, but hadn't told us," he says. Fortunately, Carroll County needed fill and hauled away the tons of rubble. The holes were backfilled with fresh soil.

The crew found houses with three or four septic system laterals and separate ones for showers and washing machines. All tied into the

"We were usually in the middle of an excavation when someone would run out of the house and stop us because we were approaching Fluffy's grave. The amazing thing was that we could always twist the lateral 6 or 7 feet without affecting elevation."

George Dickerson Sr.

clay tile sewer and had to be removed. An unending supply of 16-inch to 4-foot-diameter fieldstones impeded excavations.

Some yards also held departed pets. "We were usually in the middle of an excavation when someone would run out of the house and stop us because we were approaching Fluffy's grave," says Dickerson. "The amazing thing was that we could always twist the lateral 6 or 7 feet without affecting elevation." They also avoided driving over graves while backfilling.

Most of the 42 old septic tanks were crushed and backfilled. Two, however, were buried under concrete floors in residential garages with restrooms. "We put new tanks outside the structures and asked the county to arrange for their con-



George Dickerson Sr. covers the dosing field with washed rock.

nection," says Dickerson. "I don't know how I could have covered that in my contract."

One resident insisted that the system go in the drainage way to protect his dog kennels and wife's vegetable garden. After numerous discussions over several weeks, the homeowner allowed Dickerson to install the system properly and tile the drainage way. "We stopped every-

4,000 feet of chambers, and the elevation dropped 7 feet. Dickerson switched to a pressurized dose system and divided the homes into groups. His crew directional-bored 2-inch PVC mains from the pump stations to the drainfields.

Dickerson had the 3/16-inch holes in the 1 1/2-inch distribution lines milled to eliminate burrs. "I'm hearing reports that burrs created by hand-drilled holes are catching material and clogging the orifices," he says. Laterals on 11-foot centers rested on 16 inches of 1 1/2-inch washed septic rock. Orifices were 60 inches apart.

The systems performed well through a severe winter with only one alert from a faulty alarm. In January, the pressure-dose fields were buried under heavy snow, and Dickerson worried about erosion when it melted. He returned after a February thaw to find the soil in place. "We opened all the tanks and everything looked wonderful," he says. "I was so relieved."

Although residents were told not to mound snow on their drainfields or back pickup trucks on them, Dickerson photographed evidence of both offenses and will hold a town meeting to address them. He also is bidding on several similar projects.

Maintenance

Carroll County owns every system. Dickerson Mechanical will maintain them with county sanitarian Carey Kersey for the first year. County supervisors then will choose different contractors to provide maintenance. ■

thing, did the job, and got the heck out of there before he changed his mind," he says.

Something different

Endless tree roots and LP gas lines thwarted the workers. Residents seldom knew where their gas lines were, and Iowa One-Call doesn't locate them. After hitting the first few, the crew tried locating them with shovels, but the lines jogged all over.

"From then on, I shut off the gas at the tank and dug, knowing we could repair the break and relight the appliances," says Dickerson. (His company also does plumbing, heating and electrical.)

The field purchased for the cluster system's absorption bed was too small to hold the required

Pages 24 through 35 contain a convenient alphabetical directory and product category listing of manufacturers or suppliers in the onsite installing industry. Companies listed in **bold**

face, blue type are advertisers in this issue (note the page number of their ad). Please tell any of the companies you contact that you saw their listing in the **Onsite Installer Buyer's Guide**.

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twiegman@sludgehammer.net
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sales@snydernet.com
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To Dig or Not to Dig?

Installation and service professionals debate the question of whether to excavate for access to customers' septic tanks

Question:

I'm curious what the general feeling is on septic tank maintenance contractors doing the digging for access to customers' lid/tank accesses. I understand that in most cases, there is already a riser, but there are obviously die-hard folks who have not made the switch from an old buried lid. I would imagine that in most cases, it's a simple matter of hand-digging a few feet. Do you bring the shovel, or is it better to tell the customer to dig it or have it dug beforehand?

Answers:

➔ If your labor rate reflects the price of the pump truck sitting there idle while you dig, most folks will have it uncovered for you.

➔ We have to dig up quite a few. I always say I'm going to charge, but I never have. If it's someone who is capable of digging, but being lazy, I say charge them.

➔ Telling the customer to dig a hole for you isn't going to fly. It has to be part of your service. No one says you can't charge for it. In fact, charging to dig is the precise inducement a customer needs to allow you to install a riser so that the digging expense disappears every time you pump. The riser eliminates a repeating expense.

Isn't a riser a smart purchase? To my thinking, these are precisely the residential customers who have the most to offer. For example, look at the drain cleaners. Do you think the money is in cleaning drains? There is no large drain-cleaning company (that I know of) that just cleans drains or unstops blockages. That's not where the money is.

The real money is in all of the additional services that spin off of that clogged drain — jetting, sewer repair, cleanout installations, video inspections, line locating and trenchless repair. Who do you think buys most of that equipment at the trade shows?

A slow or blocked drain is the reason why customers initiate a service call, but they typically buy more than just the solution to the immediate problem. The clogged drain is generally only a symptom of an underlying problem. Plus, the new technologies offer customers more service and maintenance options than ever. It takes a trained technician to see more than the obvious.

I believe it's the same for septic system maintenance. Once you have to break ground, a series of additional services come to light — installing risers, offering aeration systems, cleanouts, pipe repair, pipe locating, jetting, bio products, scheduled maintenance programs. Sound familiar?

With the rising costs of fuel and dumping charges, it would seem to me that those who only pump have more options than ever to engage in some significant business opportunities. Pumping is the reason people call. It prompts the customer to initiate the service call. But it's not where the big profits are.

➔ It's amazing how many folks will not let me install a riser. This isn't a sticker shock issue either — they tell me no before I give them a price.

➔ People don't buy a riser. They buy the benefits of having a riser. I'm sure you know that. Here's why I would buy one:


- Easy access
- No more digging
- Easier maintenance
- No more landscape damage.

Since you already have the lids exposed, service time is the least expensive time to do a riser installation. You're getting double the bang for the digging expense. In other words, they're already paying you to dig up the covers, so now is the best time to install the riser.

➔ I suppose the idea of digging for the customer has a lot to do with a number of things. Granted, the ground should have been dug before and hopefully will have had all the rocks picked out. But if the ground is as dry and hard as it is right now where I am, a dig by hand doesn't sound like something anyone would get done in a hurry. Then, if the customer wants the tank pumped in January and the ground is frozen, well ...

Now, if you live and work in an area that doesn't experience drought or frozen ground, I suppose it might not be so bad. ■

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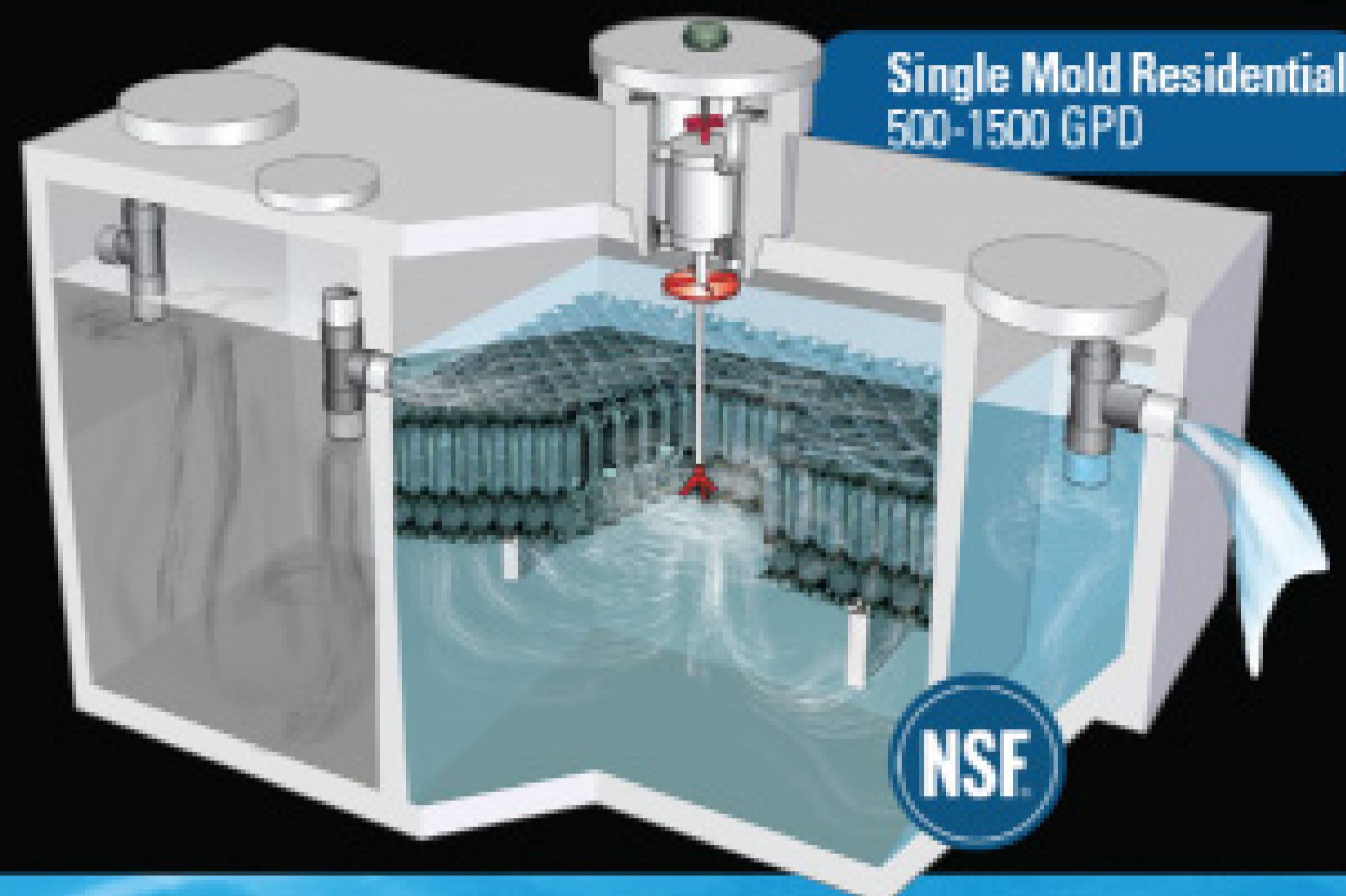
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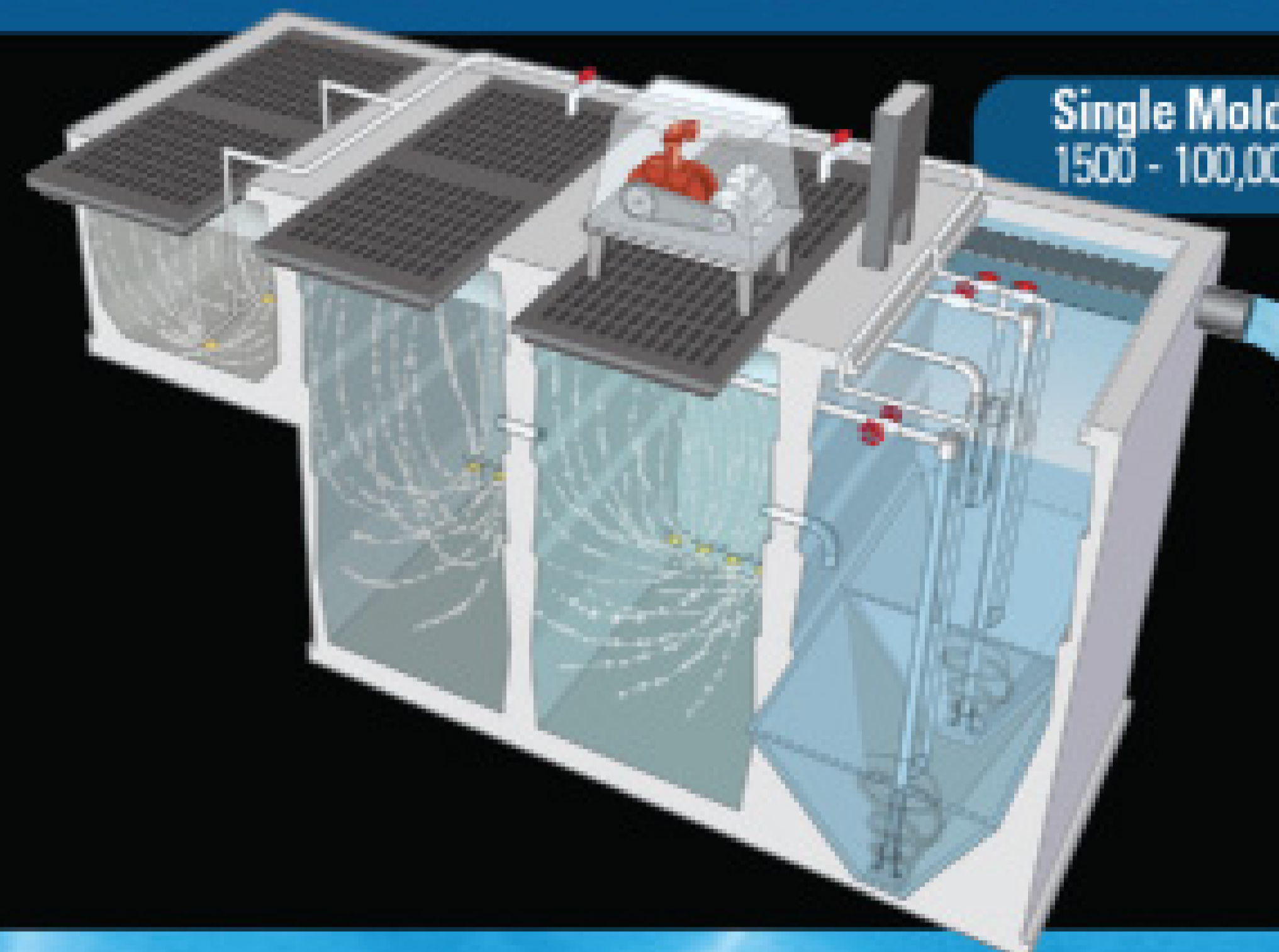
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May 2009

Blue Angel Offers Oil Detective Sump Systems 239

Oil Detective Sump Systems from Blue Angel Pumps are job-ready and designed to detect the presence of oil in various applications. The system includes cast iron and cast iron/stainless steel pump, pump controller, audible alarms, visual display lights, preset on/off, 20-foot piggy-back switch cord and UL508-approved switch. Pump options include 1/3 hp for flows up to 65 gpm at 5 feet of head or 1/2 hp for 50 gpm at 20 feet. **888/636-6628; www.blueangelpumps.com.**



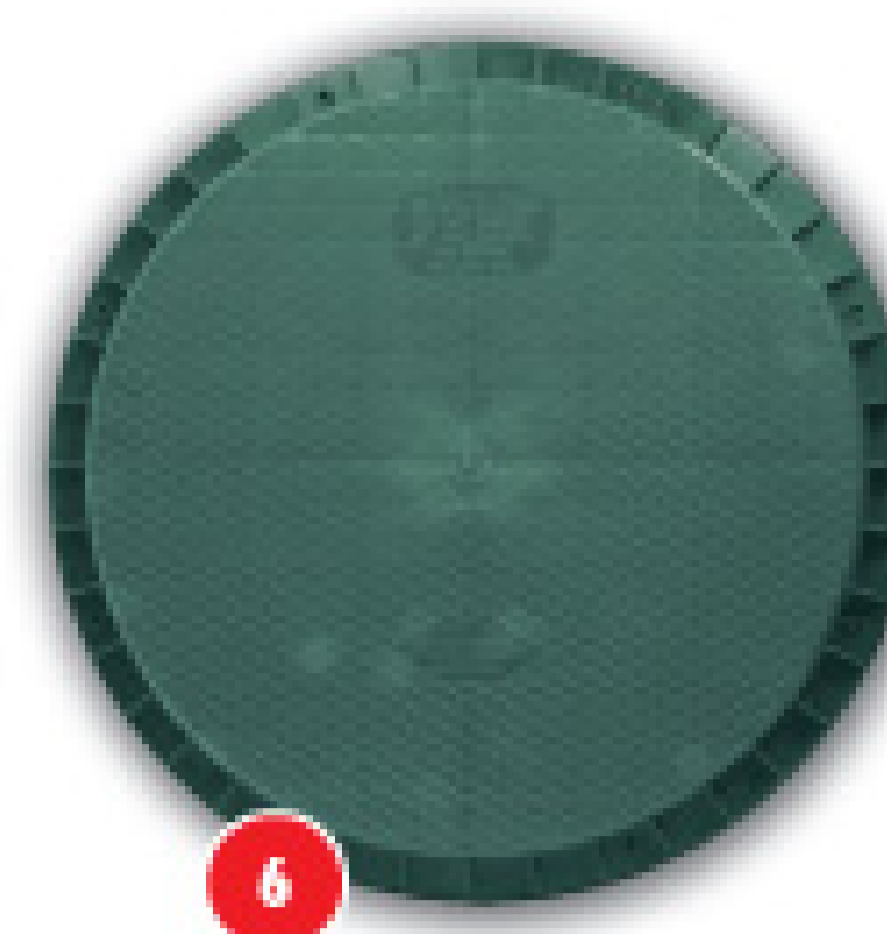
SJE-Rhombus Introduces Event-Monitoring Control Panel

The Installer Friendly Series In-Site event-monitoring control panel from SJE-Rhombus enables users to monitor up to 20,000 date/time stamped events by plugging a flash drive into the USB port located on the inner door. The panel logs any

changes made to the system settings and tracks service calls made to the panel. Events monitored include pump run times, pump cycles, alarm conditions, power outages and more. The panel features a NEMA 4X enclosure and comes complete with float switches, wiring diagrams, step-by-step installation instructions and flash drive with IFS In-Site software. **888/342-5753; www.sjrhombus.com.**

Zoeller Offers Residential Effluent Filter

The residential effluent filter from Zoeller Pump Co. features a screen that remains in the outlet tee while the filter cartridge is removed for servicing. The bypass protection keeps solids in the tank and out of the drainfield. The filter's pleated design provides 132 linear feet of 1/16-inch filtration and encourages top-down filtration for longer service intervals. A twist-lock mechanism prevents the filter from floating out of the tee, while a locking tab keeps the bypass sleeve in place during servicing. A rubber gasket ensures all effluent passes through the filter and fits standard 4-inch outlet tees. **800/928-7867; www.zoeller.com.**



Polylok Introduces 18-Inch Cover

The 18-inch, heavy-duty cover for corrugated pipe from Polylok Inc. is made to be watertight and airtight. It has been independently tested to withstand a static load of 1,000 pounds as well as center and off-center impact of 150 ft. lbs. **877/765-9565; www.polylok.com.**

Sweet Air Offers Vent Filter

The Sweet Air vent filter from Sweet Septic Systems Inc. is designed to eliminate septic odors by filtering foul air that flows through house vents. The unit fits existing 3-inch or 4-inch piping and features a twist-top for carbon maintenance. **800/622-8768; www.sweetair.com.**

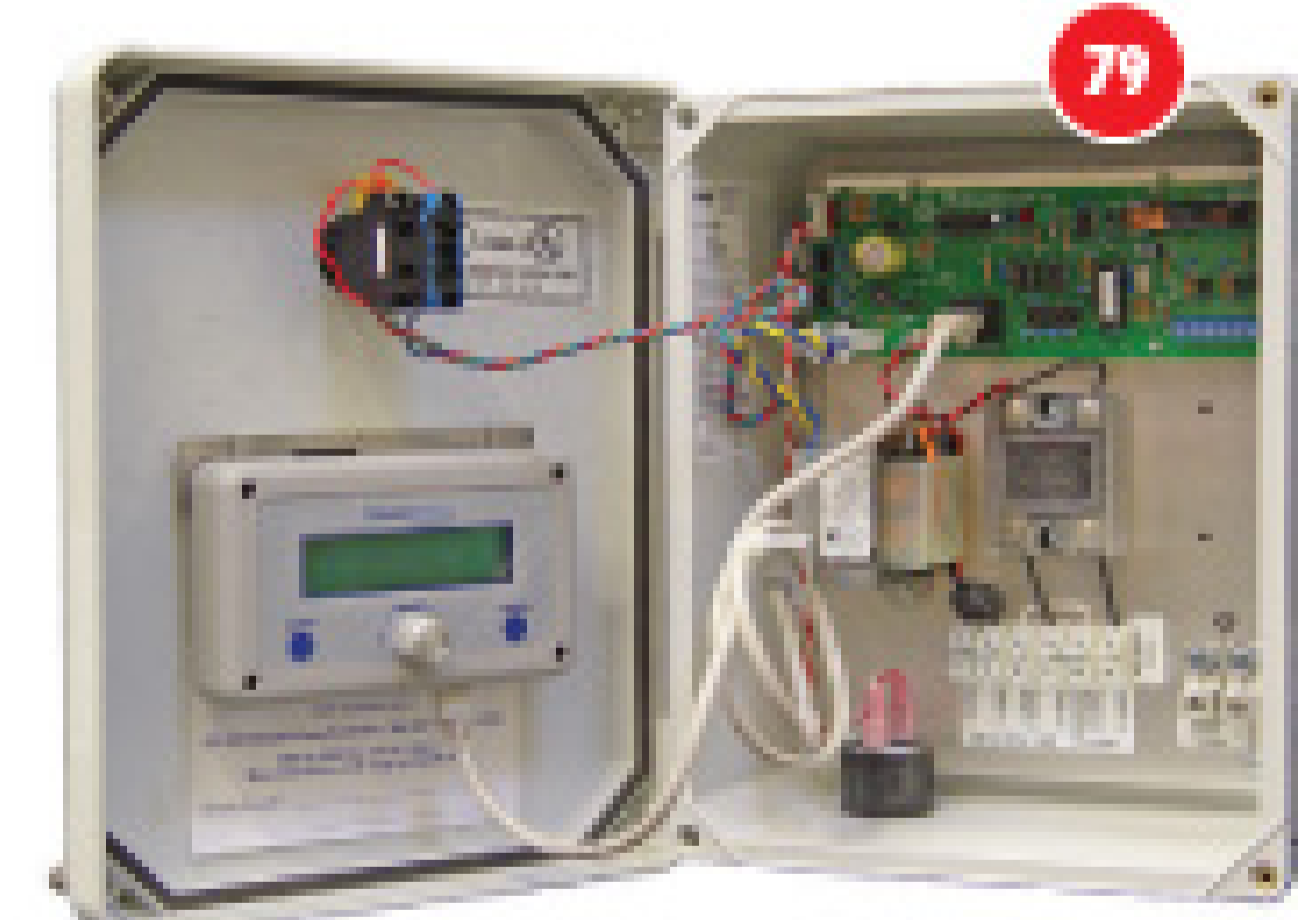


Aero-Stream Introduces Septic Remediator 240

The septic system remediator from Aero-Stream LLC is designed to reverse and maintain biomat permeability, restoring full system function in a matter of weeks by using a natural biochemical process to convert an anaerobic system to an aerobic system. Available in three models, QT800H is designed for up to three occupants, QT800HH for four to eight occupants and QT800UH for nine to 13 occupants. Measuring 13 1/2 inches square and 6 inches deep, the system operates on any 115-volt outlet. **877/254-7093; www.aero-stream.com.**

Bord na Mona Designs PuraSAF Submerged Filter

The PuraSAF submerged aerated filter from Bord na Mona is made of recycled plastic media designed to act as biomass carriers that provide a large surface area. The filter operates in an upflow packed bed configuration that is fluidized for cleaning and desludging. In aerobic mode, the filter offers a small footprint and low head loss for BOD, nitrification and denitrification. It also can be used in an unaerated mode as a tertiary filter that approaches sand filter quality. **336/547-9338; www.bnm-us.com.**



Infiltrator Offers Aquaworx Pump Control

The Aquaworx intelligent pump control panel from Infiltrator monitors liquid levels, controls pumping time intervals, and logs events in real time. The panel uses pressure transducer technology, eliminating the need for floats and can store up to 4,000 events. The removable SD memory card makes it possible to transfer data from the panel to a computer. **877/278-2979; www.infiltratorsystems.com.** ■

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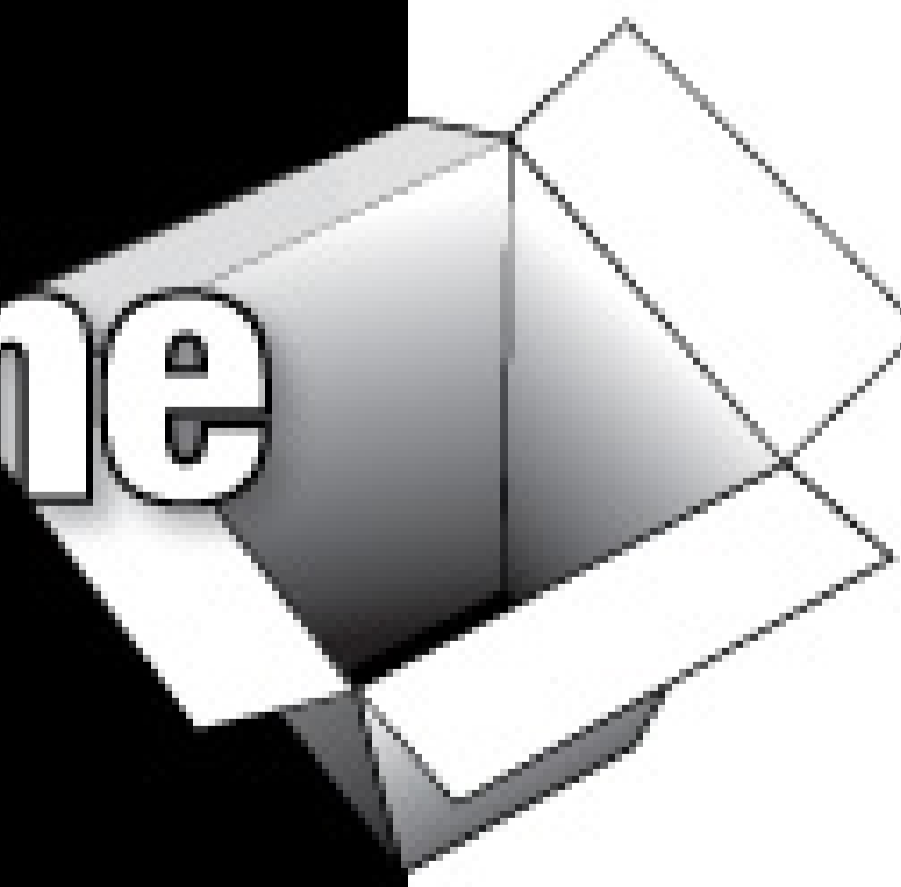
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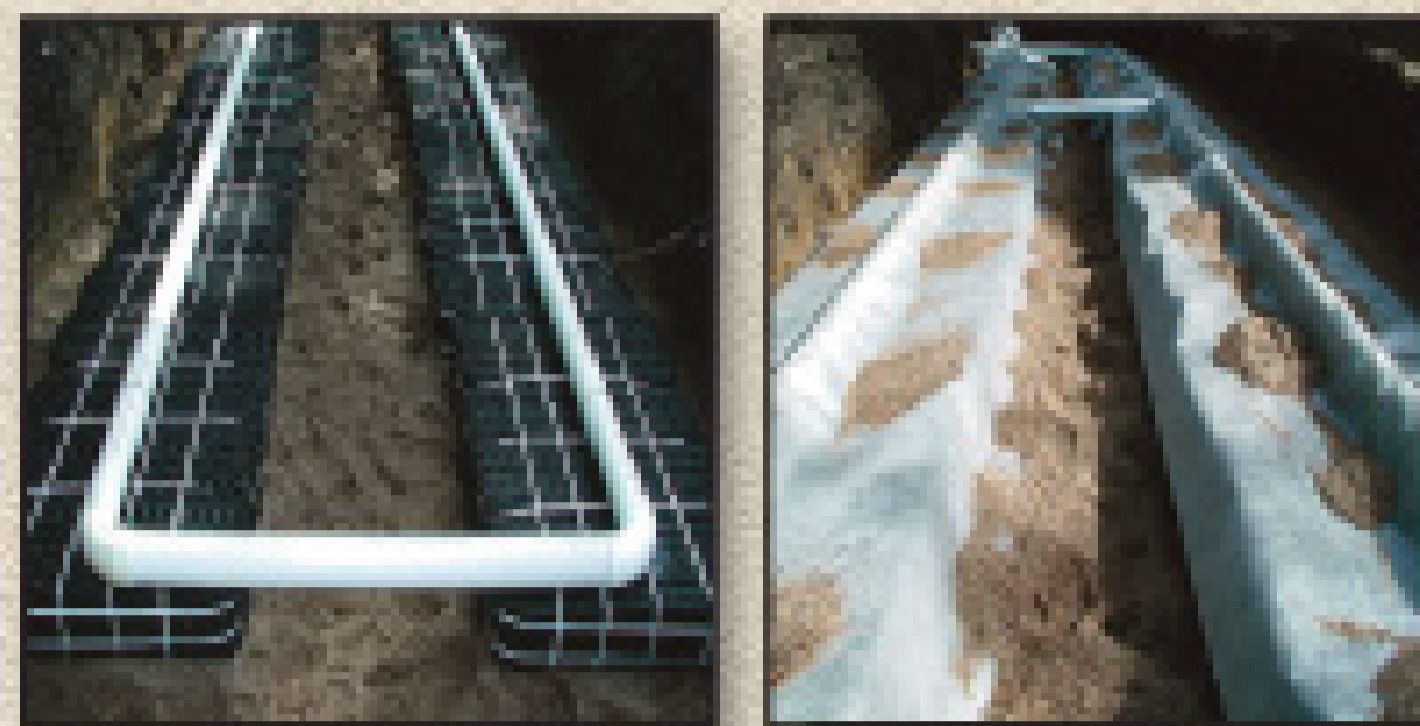
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INDUSTRY NEWS

May 2009

SJE-Rhombus Employees Receive Certification

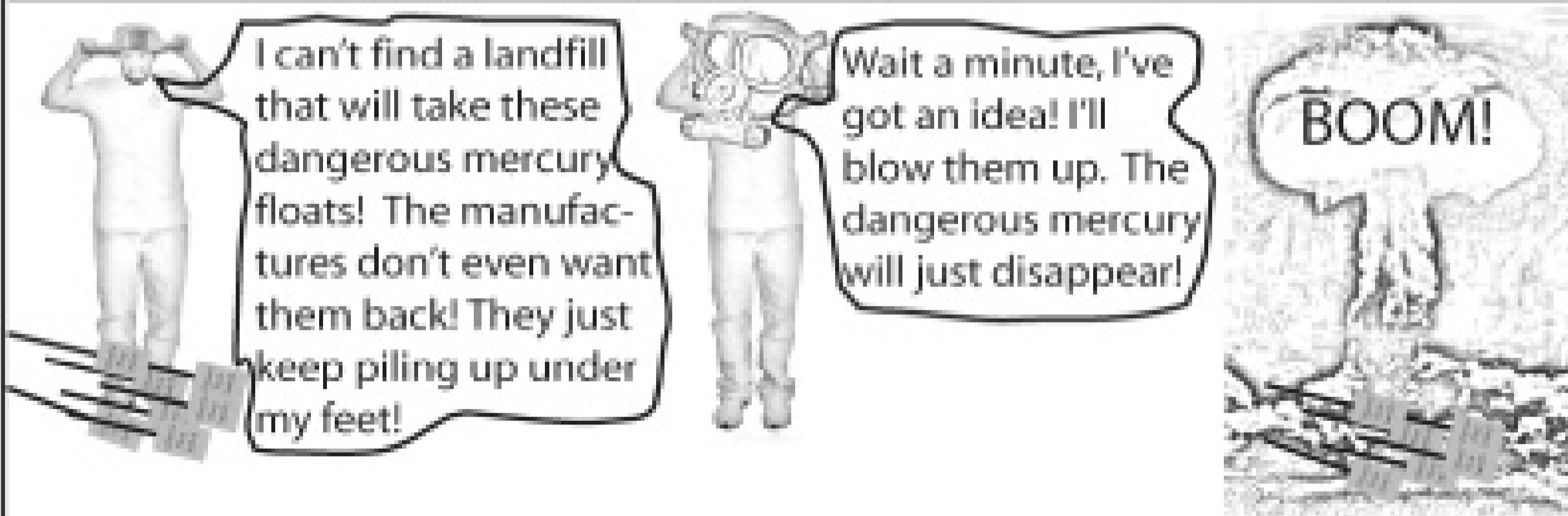
Twenty-nine employees of SJE-Rhombus were awarded IPC J-Standard certification upon completing IPC J-STD-001: Requirements for Soldered Electrical and Electronic Assemblies training. They include Jan Aanenson, Stacey Hunt, Gloria Wilm, Sandra Brill, Patty Clark, Sheila Stensgard, Shelly Lunde, Deb Smith, Lynda McAllister, Sandra Schuman, Paul Olich, Sam Esser, Tammy Quam, Jim Lilya, Donna Drewes, Jeff Greminger, Marc Overland, Mark Ostlie, Eric Osborn, Corey Steinke, Ross Bieger, Christi Allen, Pam Bobo, Marion Carstens, Dan Kendall, Duane Brown, Mike Molloy, Shari Urang and Tim Johnson.

Aqua-Aerobic Wastewater System Undergoes Field Testing

Aqua-Aerobic Systems Inc. has partnered with the Colorado School of Mines' Advanced Water Technology Center and Mines Small Flow Program to conduct field testing on the Aqua-Aerobic MBR decentralized wastewater treatment system. The research will assess the performance of the system by treating one of the campus' housing community domestic wastewater sources (about 400 apartments). The testing focuses on the optimization of the treatment process for biological nutrient removal, membrane operation and process adjustment for constant and seasonal flow patterns. ■



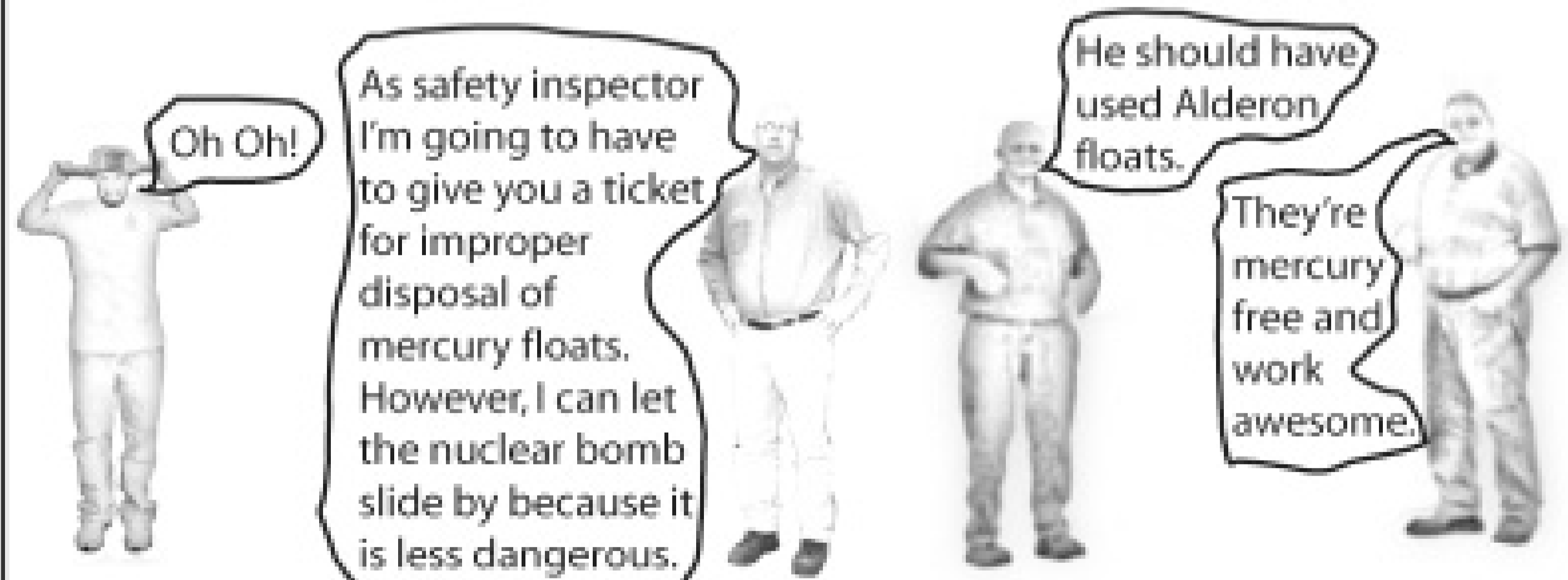
Al & Ron



I can't find a landfill that will take these dangerous mercury floats! The manufacturers don't even want them back! They just keep piling up under my feet!

Wait a minute, I've got an idea! I'll blow them up. The dangerous mercury will just disappear!

BOOM!



Oh Oh!

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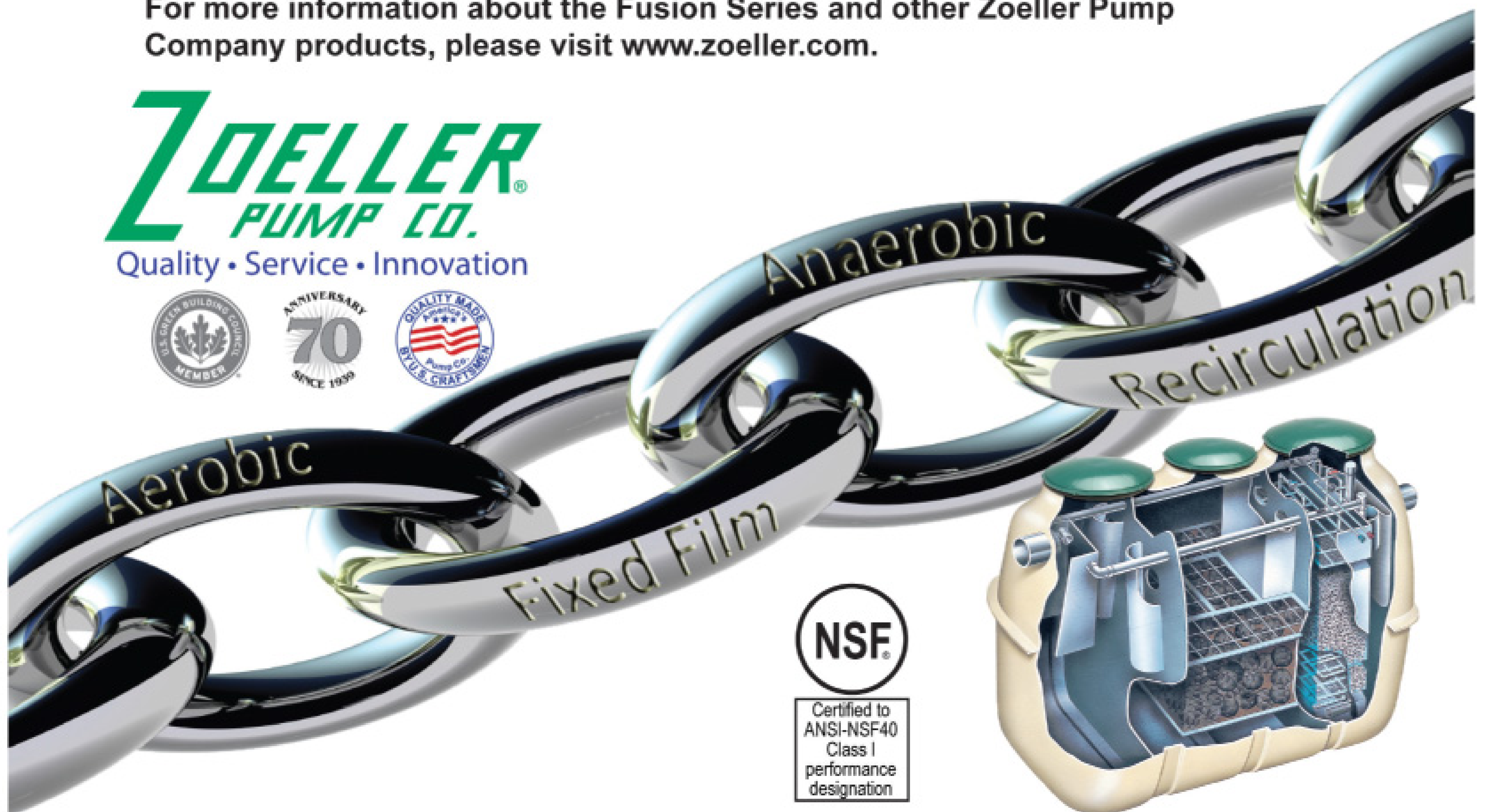
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Not in My Backyard

The Pennsylvania Septage Management Association (PSMA) is contesting an ordinance passed by Shrewsbury Township that bans land application of biosolids and includes additional fees, prohibitions on lawful activity, enforcement, and local regulatory oversight.

Town supervisors responded to a vocal minority of citizens opposed to biosolids recycling. Other municipalities and boroughs have or are adopting similar legislation.

A letter from PSMA to the state attorney general contended that the U.S. EPA and state Department of Environmental Protection have established comprehensive, science-based rules governing biosolids quality and management.

The attorney general's office is reviewing the legality of the Shrewsbury ordinance and can sue the municipality if evidence exists that the regulation unlawfully restricts normal agricultural operations. The Community Environmental Legal Defense Fund offered to defend the ruling in court.

WOWRA Presents Honors

The Wisconsin Onsite Wastewater Recycling Association honored Rep. Scott Gunderson and Sen. Mark Miller with its 2008 Distinguished Service Award for cosponsoring conflict-of-interest legislation that became law on Nov. 1, 2008.

Duane Greuel of the Wood County Planning and Zoning Department also received the award. Aaron Ausen of Dalmaray Concrete Products in Janesville and Christopher Fellner of Fellner Soil and Septic in Sturgeon Bay joined the board.

Adam Greuel won the \$2,000 Robert Lindner Memorial Scholarship, Addie Hauptert received the \$1,500 Gretchen McQuestion Scholarship, and Jordan Brull was selected for the \$1,000 WOWRA scholarship.

Florida 2008 Recap

The Florida Onsite Wastewater Association (FOWA) newsletter

states that the trend in new onsite permits is still down, but repair permits have held at around 20,000 per year. The association helped secure \$1 million from the legislature to fund a study on passive nitrogen reduction technology. The project, underway at the University of Central Florida, looks at systems that cost-effectively reduce nitrogen loading. FOWA intends to contract for a multiyear project to look further into the issue.

The Department of Environmental Protection will fund a complete inventory of onsite systems in Florida. The inventory is critical to the association's plans to improve onsite management and maintenance. The group asks licensed septage haulers to provide electronic records on pump-outs by calling Elke Ursin or Kara Loewe at 850/245-4070.

Coming Onsite Storm

North Carolina Septic Tank Association will hold its first Outreach Symposium on Aug. 12-14 at Greenville Convention Center under the theme of "The Coming Onsite Storm." The event brings together national speakers and vendors from traditional onsite wastewater technologies and emerging stormwater technologies.

Symposium topics will include regulatory issues that will confront development in the next decades. The event replaces the regional CEU classes normally offered in the eastern part of the state. Call Monica Rhea at 704/739-5849 or visit www.ncsta.net.

Job Creation

The 2008 Year-End Economic Report released by the National Small Business Association (NSBA) states that the leading contributor of net new jobs to the U.S. economy — 93.5 percent in the last 20 years — was small business (companies with less than 500 employees).

According to the ADP National Employment Report, upon which NSBA based its findings, the first

net decline in small-business employment since November 2002 occurred in October 2008. Before the December decreases in jobs, small-business growth in 2008 accounted for 245,000 jobs, while large business showed a net loss of 313,000.

Just for Fun

Author Luke Barclay unearthed more than 40 of the world's best views from lavatories. His book, *A Loo with a View: From Waterloo to Honolulu — an Illustrated Guide to Panoramic Privies*, features open-air toilets with sweeping vistas, urinals where men watch live international sports through the window, and even a restroom with a view of the highest point on earth. The book is available in bookstores, online and from www.looswithviews.com.

CALENDAR OF EVENTS

Aug. 5-8

Florida Onsite Wastewater Association Conference, Ocean Center, Daytona Beach. Call 407/830-4381 or www.fowaonsite.com.

Aug. 28-29

Georgia Onsite Wastewater Association Conference, Marietta Conference Center, Marietta. Call 678/646-0379 or visit www.onsitewastewater.org.

Oct. 20-21

Delaware Onsite Wastewater Recycling Association Technical Conference, Dover Downs Hotel and Casino, Dover. Call Ben Miller at 302/226-2844 or visit www.dowra.org.

Oct. 22-23

Ontario Association of Sewage Industry Services Rural Wastewater Treatment Expo, Hamilton. Call 877/202-0082 or visit www.oasisontario.on.ca.

TRAINING & EDUCATION

Web-based Aggregate Course

Registered contractors may sub-

scribe to the Florida Onsite Wastewater Association Web-based course, "Judging Aggregate Quality," and earn six CEU hours. The course provides an understanding of the fundamentals of aggregate and its function in onsite systems. The post-test will be administered in person at various testing facilities. Contact FOWA at 407/937-2228 or www.fowaonsite.com.

NAWT

The National Association of Wastewater Transporters has these sessions:

- June 12 – Vacuum Truck Technician, Monterey, Calif.
- June 16 – Inspector Recertification Training, Flagstaff, Ariz.

Call NAWT at 800/236-6298 or visit www.nawt.org. For Arizona classes, contact Kitt Farrell-Poe at 928/782-3836 or e-mail kittfp@ag.arizona.edu.

Alabama

Licensing classes are the joint effort of the Alabama Onsite Waste Water Association (AOWA) and University of West Alabama (UWA). Courses are at UWA Livingston campus unless stated otherwise:

- June 3-5 – Basic Installer
- June 25-26 – Continuing Education, Dothan

Call 334/396-3434 or visit www.aowa.org.

California

The June training schedule for the California Onsite Wastewater Association is:

- June 12 – NAWT Vacuum Truck Technician, Monterey

Call MaryAnne Bobrow at 916/727-2692 or e-mail maryanne@cowa.org.

Florida

Courses are at the Florida Onsite Wastewater Association's Training Center in Polk City:

- June 2-4 – Onsite Technologies from A-Z

- June 15-16 – Basic Florida Soils, Master III
- June 17-18 – System Design and Function, Master I
- June 19 – System Materials and Regulatory Requirements, Master II

Contact FOWA at 407/937-2228 or www.fowaonsite.com.

Iowa

The Iowa Onsite Wastewater Training Center has an Aerobic Treatment class on June 17 at Ankeny. Call Annette Adams at 515/964-6464, option 5, ext. 6464, or visit www.iowwa.com.

Kentucky

The Kentucky Onsite Wastewater Association has a class on Diagnosing and Preventing Failures/Overcoming Site Limitations for six CEUs on June 17 at the Bluegrass Community Technical College in Lawrenceburg. Call 270/715-0043 or visit www.kentuckyonsite.org.

Minnesota

The University of Minnesota Extension has these classes:

- June 2-5 – Advanced Design and Inspection of Onsite Systems, St. Cloud
- June 9-11 – Basic Design of Onsite Systems, Brainerd
- June 12 – Soils Continuing Education, Cloquet
- June 16-17 – Inspecting Onsite Systems, Waseca
- June 18-19 – Soils, St. Cloud
- June 25 – Soils Continuing Education, Pipestone

Call Nick Haig at 800/322-8642 (612/625-9797) or visit <http://septic.umn.edu>.

New England

The New England Onsite Waste-

water Training Program at the University of Rhode Island in Kingston has these workshops:

- June 2-3 – National Operation and Maintenance Service Provider Program
- June 11 – INSP200 Examination
- June 25 – Bottomless Sand Filter Design and Installation
- June 25 – Soil Basics for the Onsite Wastewater Contractor (Mark Stolt)

Call 401/874-5950 or visit www.uri.edu/ce/wq. Contact Mark Stolt at 401/874-2915 or mstolt@uri.edu.

Virginia

The following courses by the Virginia Onsite Wastewater Recycling Association and Virginia Center for Onsite Wastewater Training (VCOWT) are at Blackstone unless stated otherwise:

- June 1-5 – Onsite Design Camp II (VCOWT)
- June 3 – A to Z of Onsite Wastewater, Charlottesville (VOWRA)
- June 3-4 – Effluent Dispersal Systems (VCOWT)
- June 17 – Proprietary System Training (VOWRA)

For VCOWT classes, contact Debbie Campbell at 434/736-2011 or visit www.southside.edu/programs/wastetreat. For VOWRA courses, contact Jeff Barr at 703/771-5250 or visit www.vowra.org.

Wisconsin

The Wisconsin Onsite Wastewater Recycling Association is holding a Certified Private Onsite Wastewater Treatment System Evaluator Course May 18-19 in Minocqua. Call 608/256-7757 or visit www.wowra.com. ■

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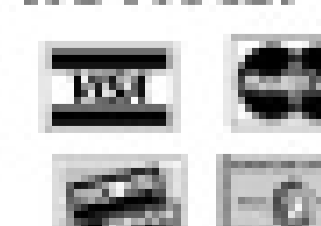
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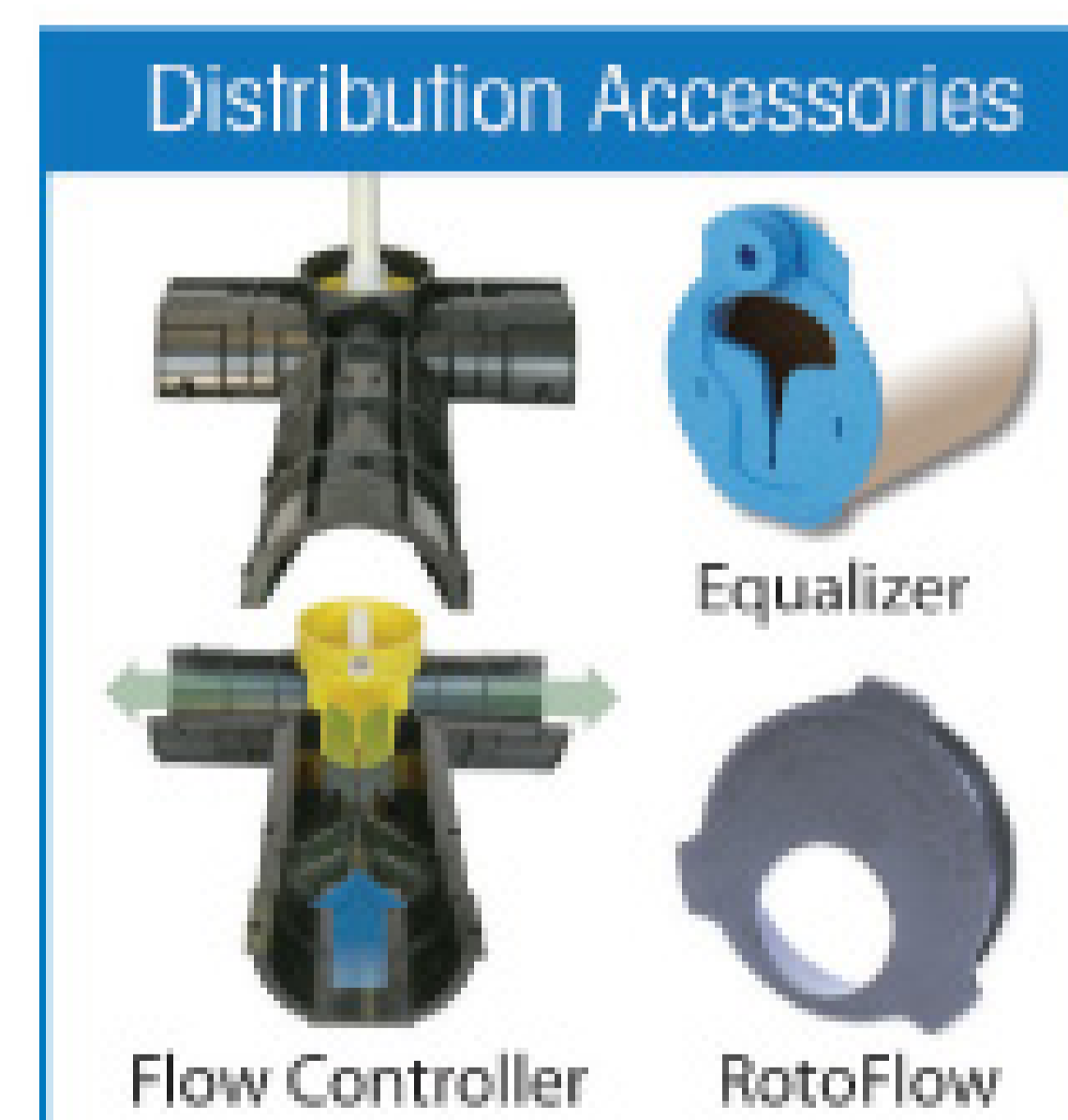


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