

# SEARCHING

**Finding leaks in vinyl liner pools is a chronic annoyance for service technicians who must spend hours underwater hunting for holes the size of pinpricks. But a revolutionary new device has just hit the market that may allow leak-detection specialists to finally put away their dye-and-syringe kits.**

**BY ERIC HERMAN**

Like needles in a haystack, minute leaks in vinyl liner pools can be almost impossible to find.

Whereas gunite shells often betray leaks with telltale cracks around the main drains or skimmers and fiberglass shells blister up helpfully around the offending holes, vinyl pools offer up no visible defect to help flag a leak in the liner. In fact, the holes are often concealed within wrinkles in the liner or rendered completely invisible by the liner's decorative design.

To find leaks in a vinyl pool, technicians must spend hours diving in what are often frigid waters, hoping to find every small current of escaping water by squirting dye here and there from a syringe.

Enter Leak Trac, the first alternative to the syringe-and-dye leak detection method for vinyl liner pools — and potentially its replacement. Introduced to the market industry-wide in January by Anderson Manufacturing Inc., the revolutionary electronic device can locate vinyl liner holes quickly, thoroughly and, best of all, with the service tech standing, warm and dry, on the pool deck.

#### **LIKE A CHARM**

"Using the Leak Trac, we found a total of 22 holes in the liner of one pool — and there's no way we would have found all of those holes otherwise," says Charles Yonkings, whose

service and supply company, Deca Pools in Elyria, Ohio, was among approximately 100 firms to test market the product last year. "There's no telling how many times I would've ended up diving into that pool."

Ken Kromme, whose Cincinnati-based firm Pool Hut also got an early crack at the device, agreed. "We used it on about 50 pools and found that it was almost *100* effective," he says. "We started finding holes that you couldn't see with the naked eye even when you knew where to look."

Rave reviews like these do not surprise Lance Anderson, founder and president of the St. Paul, Minn.-based manufacturing firm that carries his name.

"It's a very simple concept," he says, "but we believe it solves a real problem in the field: locating vinyl liner leaks quickly and effectively."

Priced at just under \$1,000, the patent pending system works by introducing an electrical charge of less than 1 milliamp into the pool water. This charge, Anderson explains, seeks the least resistant connections to ground, which sends it straight through holes in the liner. The service tech then uses a probe to detect the electrical current flow in the pool water. When the directional probe is pointed in the same direction as electrical current flow, it makes a click-

# the leak problem



ing sound that increases in speed the closer it gets to a leak.

"You play a kind of 'hot-hotter, cold-colder' game with the system," Anderson says, "and it leads you directly to the leak."

The system's *current-input float* or *voltage emitter* is a 3-by-5-inch brass plate attached to a float, which is anchored somewhere near the middle of the pool. The float is wired to a battery pack that sits on the side of the pool. The battery has a grounding wire that must be clipped to a grounding point such as a nearby gate or pool ladder.

The *probe* that is used to actually trace the path of the current sits at the end of a telescoping pole and connects to a signal-processing unit worn around the neck of the service technician. Listening on earphones to the audio signals generated by the system, the tech sweeps the liner with the probe to find the leaks and then dives in to patch them — first turning the system off, for safety's sake.

### THE MOTHER OF INVENTION

The Leak Trac system was the brainchild of a retired electrical engineer and devoted tinkerer named Chris Alm. Alm had grown tired of calling in leak detection services to deal with what seemed to be a chronic leak problem in the vinyl liner pool in his Connecticut backyard, only to watch the water level continue to descend after they left. Frustrated but determined, he decided to try his hand at developing a detection system that could accurately pinpoint the elusive leaks.

"The best inventors are those people who are motivated to solve a problem but are unable to solve it in a conventional manner. For Chris, scuba diving in his pool was out of the question."

With a hunch that you could use the path of electrical current to trace leaking water, Alm built a barely functioning prototype using parts from Radio Shack. Working with a friend who promised to help find a manufacturer to develop the system, Alm began shopping around for an interested party. In April 1992,

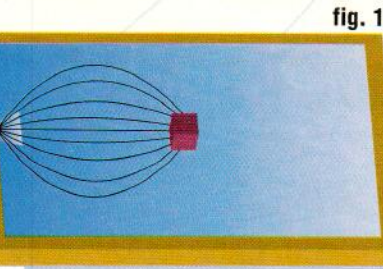


fig. 1

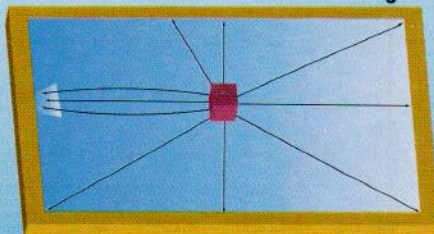


fig. 2

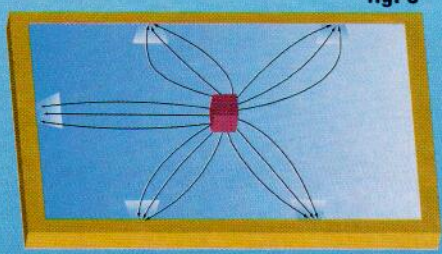


fig. 3

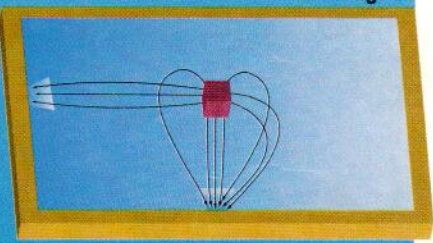


fig. 4

**These diagrams illustrate the principle behind the Leak Trac system. Electrical current introduced by the voltage emitter, shown here as the cubes in the centers of the diagrams, flows to any leaks in the liner. The curved lines represent these current paths, which are tracked by the system and translated into audible signals.**

**A single, large leak (fig. 1) will generate a wide detectable pattern. A single, small leak (fig. 2) will create a far narrower pattern. Five small leaks (fig. 3) will create several small readable tracks. One large leak and one small leak (fig. 4) will create one wide track and a much narrower one.**



they found Anderson.

Anderson saw Alm's invention — and watched it fail miserably in an informal demonstration. "Still, I thought it was a strong idea," he recalls, "and I told them to come back when they had a working system."

"Being in my position, I've seen a lot of proposals for various new products," he says. "But in this case, it seemed to me that they were onto something useful."

Anderson remained in contact with Alm, offering input and encouragement during an 18-month development period. In November

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1993, Alm returned with an improved prototype that was able to successfully locate leaks in a test pool. Still, Anderson reports, the system was full of bugs and remained far from marketable.

### FROM THERE TO HERE

Anderson believed that the system was worth developing for market, however, so throughout the summer of 1994, he and his staff worked carefully at plugging the leaks in the system's performance.

"One of the main problems was that there are several places in a pool where current can seek ground *other* than leak holes," says Anderson, "and the system can't differentiate between those paths and the ones going through a hole in the liner." Specifically, he notes, lights, ladders and skimmers all offer easy paths to ground that can cause a reading that sounds like a leak.

During this trial-and-error period, Anderson's staff developed a number of techniques for masking those paths and isolating the ones created by water leaks. "One of the things we came up with, for example, is an insulating cover that fits over the light," says Anderson. "We also came to realize that you've got to do things like take the ladder out of the pool or, if it's not portable, cover it with insulating material to shield it from electrical leakage. That way, you can isolate the current paths that actually travel through a hole."

Confident that he had a winning product, Anderson debuted the product at the National Spa & Pool Institute's 1994 International Expo in New Orleans. "At that point, we wanted to gauge the interest and begin looking at ways people in the field would want to apply the system to their work," he says. "We wanted to show the product, but I still thought we were a long way from making it widely available.

"For the first year, we limited sales to 100 people," he explains. "We selected customers geographically on a first-come, first-served basis so that these initial buyers would be the first in their respective markets to own a Leak Trac."

In exchange for that exclusivity, Anderson made it clear to those initial buyers that they were purchasing a product still in the final developmental phase.

"I wanted to establish a partnership and generate excitement about the product without creating a false expectation

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for its performance in case there were minor bugs that needed to be worked out," he explains. "What we did was offer them the exclusive arrangement and promise free system upgrades in exchange for their patience and feedback. I wanted to make sure the lines of communication were wide open."

### LESS TIME WET

The staged release of the product couldn't have worked better, Anderson reports. Soon after the first units were shipped, the system's users began showing Anderson with positive feedback.

One of the main benefits reported is the elimination of repeat visits. Leaks hidden by elaborate liner patterns or by shadows that fall in the pool during the time of the test can easily evade even the most careful visual inspection — but not the Leak Trac.

"Without using this system, I'd say you end up going back more than once at least 60 percent of the time," says Kromme. "And customers can get very frustrated when they have to keep calling you back. But with this system, you go out once and can almost always find *all* of the leaks.

"In fact, there have been a couple of cases where we found so many holes, the customer decided to just go ahead and buy a new liner," he adds.

The other primary benefit cited by Leak Trac's users is the reduced time they spend swimming around in customers' pools searching for evasive leaks. "Before, you could spend literally hours going over every square inch of a liner," says Yonkings. "Even then, you'd still miss some."

Of course, because most vinyl repairs are done with water in the pool, the Leak Trac does not completely eliminate the need to take a chilly dip. "But the time you spend in the water is productive time," says Steve Bowie, vice president of JTS Pools in Peru, Ill. "You find the leak and then you go right down to it and patch it."

Finally, users also report that simply using the device impresses their customers. "It looks high-tech," says Bowie, "so you end up leaving a positive impression on the customers. They also tend to trust the information you're giving them a little more."

### A SERVICE ASSIST

For all of these accolades, Anderson and his customers agree that Leak Trac is merely one tool in the technician's leak-detection arsenal.

"The *equipment* is not the leak detector," Anderson says. "It's the *person* using it. We make it very clear that you still need to go through all of the steps eliminating other leak possibilities.

"Before you break out the Leak Trac, for example, we still recommend performing a pressure test on the plumbing," he says. "Our device doesn't replace the work you need to do gathering information about the pool. It eliminates wasted time and frustration, but it doesn't really change the leak detection process all that much."

Anderson also points out that Leak Trac is not intended to be used in a gunite pool because the gunite shell itself functions as a ground. "Even with a liner, if you don't properly shield the other paths to ground, you might have trouble finding the actual leaks," he says.

"It's like any other tool," adds Kromme. "If you know how to use it properly and understand its limitations, then it can be a big help." ■