

The History of Shotcrete Equipment

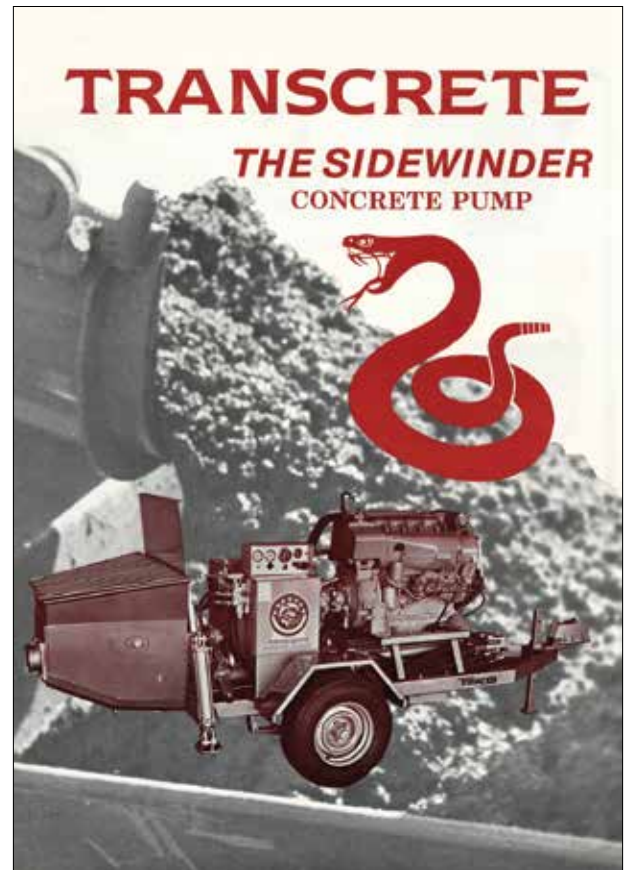
Part II: Sidewinder—Why So Great with Shotcrete Mixtures?

By Ian Hay

Transcrete specialized in building pumps for high-rise buildings and large concrete placements. The concrete used on these projects was normally low-slump, high-strength mixtures. Transcrete's formula required diesel engines developing 2 hp/yd³ (2.6 hp/m³) output with a hydraulic ratio of 4:1 between the hydraulic and concrete cylinders. The Sidewinder was designed to pump low-slump mixtures for small construction projects. As the Sidewinder was to have 6 in. (150 mm) bore concrete cylinders, we required 3 in. (75 mm) hydraulic cylinders to maintain a 4:1 ratio. However, we could not source 3 in. (75 mm) cast iron piston rings; the closest were 3.250 in. (82 mm). By sheer luck, not engineering skills, we ended up with a higher-pressure pump with a 3.41:1 ratio. Using the air-cooled 80 hp diesel and vane pump that would run at 3500 psi (24 MPa), we turned the Sidewinder into a powerhouse developing 1000 psi (7 MPa)—a higher line pressure than most concrete pumps on the market at that time. That's why the Sidewinder could handle the low-slump shotcrete mixtures.

BEYOND ARIZONA

Anthony Pools, through an Arizona contact, found out that Bennett Brothers was selling a hydraulic-powered shotcrete pump. In the Los Angeles, CA, area, Anthony Pools was using dry-mix shotcrete (gunite) because the local ready-mix



producers would not supply concrete to pool builders, as they disrupted their delivery schedules due to the unreliable mechanical ball valve pumps they used. Dick Bennett and I arranged to meet Anthony Pools management on a site in Beverly Hills, CA, where they were shooting a pool at an existing multi-million-dollar home.

It was quite a circus. Bulk piles of sand and bags of cement were dumped on the grass in front of the home. A



One of Anthony Pools' shotcrete rigs with proportional mixer, Sidewinder pump, diesel generator to run the mixer, hydraulic power to run the concrete pump, and a 350 CFM compressor

huge Ridley chamber dry-mix gun machine and 600 ft³/min (17 m³/min) air compressor were parked at the curb. Dust covered the whole area. The Anthony site supervisor called me to one side and quietly confessed that due to cement shortages at the time he was losing money with dry-mix; he had a special “cleanup” crew that followed up the next day to collect any sand left on the job as well as cement bags. “Are you sure your pump will handle wet-mix without breaking down? If so, you will save my backside!” I told him to let us know his next job location and we would provide a Sidewinder pump and the concrete supply. He seemed quite scared about the proposal so I told him we would pay for the concrete should the Sidewinder not perform.

I also added a “kicker”—if we perform, they would place an order for a Sidewinder. Several days later, Dick and I turned up to the next pool job with a Sidewinder hooked to a small pickup truck and a 120 ft (37 m) of 2 in. (50 mm) hose. The Anthony Pools crew set up the hoses and operated the pump with their own crew. The Sidewinder discharged the transit mixers in 30 minutes and the pool was shot and cut in a little over 2 hours. We were given a purchase order before we left the site. In addition, management wanted a meeting with Bennett Brothers to discuss building special volumetric mix rigs for all their operations country-wide.

MIXTURE DESIGN PROBLEMS

Bennett Brothers, in a joint venture with Bob Morgan, an Orange County manufacturer of volumetric mixers, built the first of many custom Anthony rigs mounted on “lowboy” trailers. There was a huge diesel generator and hydraulic power pack to provide electric power for the mixer and hydraulic power for the Sidewinder pumping module. The rig also had dry cement and aggregate boxes that were hoisted over the mixer hopper. We found that electric-powered mixers held their output settings much better than hydraulic systems that could vary as the oil heated up.

A week before the Thanksgiving holiday, Dick Bennett called to say, “Ian, the Anthony Pools’ rig is using extra-high pumping pressures and getting as hot as a pistol.” My response was, “Dick, it sounds to me like a mixture problem.” He seemed very worried, so I jumped on the next plane to Los Angeles. Upon arrival, Dick and I met up with Anthony Pool’s supervisor to discuss the mixture problem. I checked the material they had in their bins and asked the supervisor to take me around to his sand supplier, where he replied, “What is the point in that? Sand is sand.” I replied, “Not exactly. It may not matter with gunite mixtures but with wet-mix, sand is very important! Your sand in the yard can contain a large amount of rock and coarse sand. Sand suppliers have a wide range of sands: plaster sand, masonry sand, concrete sand, stucco sand, and even sand for cats to pee in.”

We went to the sand supplier and I gathered bags of different sands and aggregates. Next, we purchased a set of material grading screens. Back at Bennett’s yard, I spread out the different sands in the sun to dry out and then made up



Close-up of the Anthony Pools rig used in Los Angeles and some in Texas



Gunite machine used in Beverly Hills by Anthony Pools when we were invited to inspect their operation. These machines were “dust producers.” In today’s market, the EPA would fine any company using such machines

cardboard boxes so I could get specific weights. I selected what I felt were the two correct gradations of sand and then issued the highly technical blending process that follows:

- When the supplier loads your sand in his dump truck, he must put two scoops of the No. 1 sand followed by one scoop of the No. 2 sand...then repeat until he has a full load. I knew that between loading, delivery to Anthony Pools' stock pile, then reloading into the mixer boxes, the sand would be mixed enough.
- The secret sand was the one that passed the No. 100 screen. You need 3 to 5% of that sand in your total amount.

As it was coming up to the long weekend holiday period, I flew back to Australia. The following week, Dick called to tell me that the mixture was great, pump pressures were very low, and the mixture would "stack well" in vertical placements. I had also increased the rock content to 2000 lb (900 kg) to reduce pressure and decrease build up in the Sidewinder S-tube.

FLY ASH

Australia had an abundance of coal-fired power plants close to major cities that were producing a large amount of coal ash that was difficult to dispose of. However, in the early 1960s, an American by the name of Peabody had a bright idea to "help" the power plants solve their waste ash problem. Peabody entered into long-term disposal contracts with the power plants to remove their waste ash free of charge. At the same time, he had his daughter packing pozzolanic cement (fly ash) into plastic bags and sending off sample bags to all the ready-mix producers.

It turned out that by using a 75% portland cement and 25% fly ash blend in a concrete mixture it would improve long-term strength and reduce their costs, plus it made our concrete pump mixture designs in Australia much more pumpable. I kept telling everyone in the United States, "you should be using a fly ash blend rather than neat portland cement for shotcrete and pumping mixtures." At that time, they all called me crazy! I later found out that it would be another 4 to 5 years before fly ash blends were accepted in the United States.



Sidewinder exported to Bennet Brothers in starting their dealership

SIDEWINDER SALES TAKE OFF

By late 1980, Action Equipment salesman, Dave Rudin, was selling five Sidewinders per week in Arizona. Marion Ryder sold pumps to Shasta Pools and Sylvan Pools in Pennsylvania. Anthony Pools was running their special rigs in Texas. Haines Gunite and Superior Gunite were running Sidewinders. The Sidewinder became the "pump of choice" for shotcrete applications. We were air freighting one Sidewinder per day to Bennett Brothers in Los Angeles. Every month, a Sidewinder would be air freighted direct to dealers in New York or Pennsylvania. Air freight cost 46 cents per pound, Australia to Los Angeles, and an extra 18 cents to the East Coast. It turned out that the additional air freight cost was about the same as road freight for shipping a Sidewinder from Los Angeles to the East Coast.

SIDEWINDER DISAPPEARS

Around late 1981, Dick Bennett was approached by Jim Leach, President of Pacific Alloy Foundries, with a "buyout" proposal. Dick wanted to know if I had any problems with such a proposal, adding a "kicker" that if the deal goes through, Bennett Brothers would be able to settle all outstanding monies owed to Transcrete. Bennett Brothers was only a startup business when they became the lead dealership for Sidewinder pumps. Once Sidewinder sales took off, it was difficult for the Bennetts to have adequate cash flow for the operation. Their bank would not commit to funding such a new operation. As a result, Transcrete provided funding for new Sidewinders, with end buyer and distributor financing. Bennett Brothers' outstanding account was well over \$500K US, so naturally I agreed to the sale.

Pacific Alloy's manufacturing skills were first class, so we agreed that they would only buy the Sidewinder pumping cell from Transcrete and do the rest on their premises. Money was never an issue, but their marketing ability was not that great. Thomsen Division, once the top pump manufacturer in the United States, had some difficulties with a management buyout, so we created a deal where Pacific Alloys would supply Sidewinder pumps to Thomsen, which in turn would be sold as "Thomsen Sidewinders." I felt that Transcrete should apply for trademark protection. We applied for and were granted the Sidewinder "snake" trademark. We found out from the U.S. Patent and Trademark Office that the Thomsen lawyers had also applied for the Sidewinder trademark. Fortunately, our application was lodged several hours before Thomsen. So much for "straight shooters." Thomsen was doing a great job; however, I could not see how a \$25,000 trailer pump could solve Thomsen's financial issues. Then, we found out that Pacific Alloy Management was developing their own clone of our Sidewinder. Needless to say, Transcrete and Pacific Alloys parted company.

SIDEWINDER CLONES APPEAR

Transcrete attended the Atlanta World of Concrete to market Sidewinder pumps under the Transcrete brand. At the show, I was approached by the President of Security Pacific, the financiers of the Thomsen management buyout. Security Pacific wanted to dispose of Thomsen, and they presented me with a proposal that appealed to me. A handshake deal was made on the amount and terms. A week after the show, I received a Telex from Security Pacific Management advising me that Putzmeister had made an offer far higher than Transcrete was willing to pay and Putzmeister would be the successful bidder. As a matter of interest, Security Pacific would be providing funds to Putzmeister so they could buy Pacific Alloy as well. Under the Transcrete/Pacific Alloy venture, the manufacturing agreement was not transferrable to another concrete pump manufacturer. A legal action was to follow.

I attended a meeting with Putzmeister and Pacific Alloy's "legal eagles" in Los Angeles. The theme was that the Pacific Alloy agreement should stand without the "not transferrable" clause, as my lawyer should not have included the clause. I explained that Pacific Alloy's team of three lawyers presented me with the Bennett Brothers buyout agreement 45 minutes from my air flight from Australia.

I read the agreement and asked if I could go up to the diner, to have a cup of coffee, and closely study the agreement. As I reviewed the proposed agreement, I made a few amendments. I returned 40 minutes later and presented the lawyers with my amendments. Jim Leach, Dick Bennett, and the three lawyers all agreed to my amendments. My reason for not wanting to change the legal document was I was not a lawyer and Jim Leach's three legal people should have advised their client(s) as to what they were signing.

Putzmeister accepted the document and proceeded with development of the Sidewinder copy they were to market as Putzmeister "Thom-Katt." It was many years before most Sidewinder parts were designed out of the Thom-Katt.

THEY BURY SIDEWINDER

In 1984, just prior to the LA Olympic Games, Transcrete sold a Sidewinder license to the Japanese manufacturer Suguie Ltd. In 1983, I purchased a home in the San Diego area and leased an office in La Jolla, CA. Dave Stoner, Vice President of Reed Manufacturing, contacted my office and was seeking a meeting to discuss the Sidewinder. I drove up to Reed's office in Walnut, CA, to meet with Dave. Reed was manufacturing the Reed dry-mix gun machine and could see the increased popularity of wet-mix shotcrete. Reed was a division of the Shea Construction group, so I felt comfortable with their capacity to manufacture the Sidewinder. A license agreement and the sale of the Sidewinder trademark was reached on the same terms as the Japanese deal. For tax purposes, we agreed to a monthly payment rather than a lump sum. We transferred Bruck Buckner and his partner Lisa to assist Reed's manufacturing program. Bruck and Lisa stayed on the Transcrete payroll for several years and finally transferred

to Reed. For reasons best known to Reed, they proceeded to manufacture concrete pumps but dropped the use of the Sidewinder brand.

Back in Australia in 1987, Jacon Industries Pty Ltd., a Transcrete subcontractor, made an offer to buy the Sidewinder trademark and the rights to manufacture pumps. They started manufacturing pumps but did not use the Sidewinder brand. Jacon now specializes in manufacturing robotic shotcrete rigs for underground mining and tunnel applications that they sell worldwide under their own brand name.

Transcrete agreed to vacate the North American market for 5 years (and we did). Transcrete established a joint venture manufacturing plant in Los Angeles in 2002. Transcrete America Inc. moved into a larger factory in Pomona, CA, in mid-2016 and still manufactures the Trojan shotcrete pumps for the North American market. Dave Stoner asked Transcrete to design a new small, lower-cost trailer pump to tackle Mayco and Putzmeister models. In 1989, a production model Trojan was delivered to Reed. Stoner did not want to commit to ordering Trojans in large numbers. Transcrete, based on early discussions with Stoner, had tooled up to manufacture a batch of 100 Trojans for Reed and other markets. The Trojan is now the best-selling shotcrete pump in the Australian market. The North American market is very competitive with Sidewinder clones produced by Putzmeister, Warrior, Reed, Mayco, Airplaco, Schwing (S-tube model), and Olin—all with a touch of Sidewinder DNA.

THE PEOPLE BEHIND THE SIDEWINDER SUCCESS

The Sidewinder success was due to a large group of skilled people who made it their mission to sell the features and benefits of the Sidewinder for shotcrete applications: The Bennett Brothers, Al Connors and Dave Rudin in Arizona; Marion Ryder with his wide-ranging United States contacts; Fran Wilson; Bill Erwin, who attended a demo in Los Angeles whilst on Thomsen's payroll (Bill lent us a set of Allen wrenches when we had a minor hiccup during the demo); Michael Wilkman, the Northern Californian Sidewinder dealer; Pat Ingles, President of Pioneer Pumping Group who had the vision to buy a stock unit at Marion Ryder's suggestion; and finally all the dry-mix guys who switched to wet-mix. Today, it would be nearly impossible to assemble another group of people with the capacity to pull off what these gentlemen achieved in such a short time.



Born in Australia in 1941, Ian Hay has spent a lifetime in widely diverse careers, including as a butcher, selling neon and outdoor signage, concrete placement, real estate, and eventually selling the Sidewinder S-tube pump for shotcrete placement.