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## In the Loop

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Reprint Edition

# In the Loop

By Jim Wilder  
Undercar Digest Editor

**Cliff Kniesly explains the benefits of the E.A.R.S. closed-loop air-compressor and air-tool technology.**



The rat-a-tat-tat of air guns being used at undercar shops and tire stores may soon be a thing of the past – thanks to the Exhausted Air Recycling System, better known as E.A.R.S. – a closed-loop air-compressor and air-tool system. The benefits of the new technology include energy savings, reduction in noise that can damage ear drums, less condensation in compressor tanks and a cleaner work environment.

E.A.R.S. is being sold by Vacula Automotive Products, maker of the popular Vacula brake bleeders, fluid evacuators, blow guns, air hoses, fittings and related products. CEJN Industrial Corp., a manufacturer of high-tech industrial products, is the parent company of Vacula. The closed-loop compressor technology was invented in Australia about three years ago by Chris Bosua. The system already is a popular seller in Australia, and the highest number of sales are to tire stores and body shops in the United Kingdom and Germany.

Cliff Kniesly, E.A.R.S. Division manager, noted that Vacula has always been known for offering “problem-solver” products, and that is one of the many reasons why CEJN bought the distribution rights to E.A.R.S. for sales in North America and South America.

“E.A.R.S. is a fairly simple concept in that it lives off the inefficiency of the compressor and the ineffi-

ciency of the pneumatic tool,” he said.

The typical air compressor draws in ambient air – the first inefficiency. A piston or screw compressor can move an air volume about 65% of the size of its cylinder, so a 10-cubic-foot cylinder could move about 6.5 cubic feet of air at 100 psi. Creating pressure creates heat, and then you lose more efficiency by putting it in a cold storage area. The typical air tool uses about 10% of the stored energy sent to it through the air lines from the compressor – another inefficiency. More than 85% of that energy is coming out the handle vent as waste.

“This air coming out of the air tool is not only wasted energy, it’s also being used to blow dirt around the shop,” he said. “It keeps everything airborne.”

E.A.R.S. uses a recycling hose that carries the exhausted air back to the intake side of the compressor.

“We overcome the inefficiency at the compressor. When we return this wasted air from the tool we can actually nearly double the amount of volume that the air compressor can produce in the same amount of time,” Kniesly said. “The compressor tank also stays dry. Whatever the moisture level is in the air and whatever type of dirt, debris or chemicals are in the air, they get sucked into the typical compressor. That also includes molds and pollens.



A variety of E.A.R.S. compressors are available through Vacula and Mac Tools. Many existing compressors can be adapted to use the technology.

“With the E.A.R.S. closed-loop environment several things change. First of all, you draw the air in, you heat it, then it goes into a cold storage tank and condensation forms. But the air that goes out to the tool is actually drier than the air that came in. The air is run through the tool and the tool is a pressure drop, which makes it act like a dryer. Now the air coming out of the tool is colder and drier as a result of the pressure drop across the tool. Now the colder and drier air is sent back through a filter. We filter it in case there is any problem with the tool, but also to remove any airborne oils or oil from the tools. Now what feeds the head of the compressor the second time around is colder, drier air.

It heats, it condenses, more moisture is removed, and in just a normal environment with a typical auto drain – not a even a dryer system – you can remove up to 70% of the moisture, just with the pressure and temperature changes. The more you recycle the air, the cleaner and drier it becomes.

“You have to think about how clean the air ultimately becomes for the technician,” he said.

The E.A.R.S. also dramatically reduces the noise that normally comes out the handle of the air tool, Kniesly said.

“In many countries around the world (Australia and parts of Europe) it is illegal to vent the exhaust from a pneumatic tool within 5 meters of the operator,” he said. “We changed the whole environment of the shop, because we can now have a normal conversation while running the air gun. The same would

hold true if the tool were a grinder or some other tool.”

Recently, Kniesly visited a tire store in Salt Lake City two days after the general manager was put in handcuffs and taken to jail for violating noise ordinances. Five miles away, Kniesly visited a military installation where a group was very interested in E.A.R.S., but for a different reason. The health and safety people said the main reason they lose technicians from their repair facility is hearing loss.

Independent tests show that the noise level of a typical air gun is about 104 decibels and E.A.R.S. lowers that to about 84 decibels.

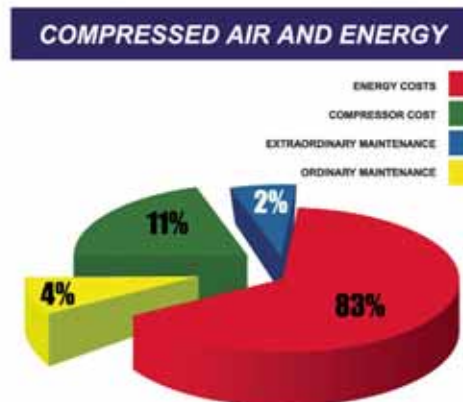
Andy Wasielewski, Vacula distribution products division manager, noted that the reduced noise level was what caught the attention of visitors to the Vacula booth during Showpower in Chicago.

“WDs would visit the booth for a demonstration and then come back with shop operators so they could see the closed-loop compressor system,” he said.

With energy costs continuing to rise, E.A.R.S. also makes economic sense, Kniesly said. In running a compressor, 83% of

the cost is in spent energy, 11% is the actual cost of the equipment, 4% is for ongoing maintenance and 2% is for repair costs. He said a high-volume under-car shop or tire store might spend up to \$10,000 a year running a \$2,000 10-horsepower air compressor. The cost is mostly for electricity, not the equipment.

“With E.A.R.S, if you are using pneumatic tools exclusively you can get energy savings of up to 40%,”





he said. "Most of that energy cost when using pneumatics can be recovered. It all depends on how you use air tools. Savings of 15% to 25% can be obtained easily."

The cost of using an E.A.R.S system varies depending on the shop. About 95% of all existing compressors and air tools can be adapted to the system. The new air tools with exhaust fittings are within 10% to 15% of the cost of competitive tools without E.A.R.S. The E.A.R.S compressors are American made, coming from Wisconsin, and include couplings, fittings and hoses made by CEJN, Vacula's parent company. The company is well respected and, among its long list of products, makes revolutionary coaxial hydraulic quick-disconnect couplings for Jaws of Life rescue tools. Although CEJN is known worldwide in the industrial manufacturing market and the Vacula name is known in the automotive aftermarket, there will be more crossover of the brands into the two markets in coming years, Wasielewski said.



**Magnus Waller is the president of CEJN Industrial Corp./Vacula Automotive Products in the United States.**

Both brands have units that can be plugged into a typical wall socket and work all day long.



**Instead of compressed air being released through the handle of an air gun, a second hose recirculates it to the intake side of the compressor.**

"For those buying the E.A.R.S compressor, you are likely to pay the price of a 15-horsepower compressor to get the capacity of a 20-horsepower unit, but the E.A.R.S unit will be a 10-horsepower platform," Kniesly said. "Horsepower is no longer the answer. You used to get 3.5 cubic feet of air for every horsepower; with E.A.R.S. it's 5.5 to 6.5 cubic feet of air."

As the popularity of E.A.R.S. grows, Wasielewski said the company will be looking for quality automotive warehouse distributors and industrial distributors who install compressed-air piping systems. Kniesly noted that the E.A.R.S. compressor units already are available through Mac Tool distributors under the Mac brand.



**CEJN Industrial Corp., parent company of Vacula, offers a variety of products including air hoses and fittings.**

Mainstays of the Vacula Automotive Products line include the company's DX series of fluid-handling products. Wasielewski noted that the fluid evacuator and the bleeder are what started the Vacula name.

"We were the first to come up with a vacuum brake bleeder to solve a problem for Volvo in Sweden," he said. "It was such a success at vacuum bleeding that it was brought to the U.S., where it took off. The bleeder became so popular that technicians would say they needed a 'Vacula' because the brand was synonymous with being 'the' bleeder. Vacula recently updated the bleeder with a dual throttle control that enables the technician to create a vacuum and also pressurize the canister to extract the old fluid or reinstall it simply by flipping the handle to pressurize the system. Called the DX2.5, it's a lot quieter than the original model and has a very strong patent."

The DX12 fluid evacuator, introduced more recently, holds 12 liters of fluid and is used to remove coolant, transmission fluid, engine oil and gear oil. It also can be retrofitted to become a brake bleeder. It has the same head but a different canister design. Snap-on now offers the new brake bleeder under its Blue Point brand.

The latest tool from Vacula is its Brake Caliper



The DX12 evacuator can be used to remove coolant, transmission fluid, engine oil and gear oil.

customers,” Wasielewski said. “If you sell a customer a brake-fluid flushing job over the counter and you go back to break the bleed screw loose and it’s not coming out, you’re going to break it off and it will cost you or the customer a new caliper. Or you can use

Rescue Tool (P/N 72-088-1000), which also is available through Snap-on Tools’ RWD4U program. The adapters are used on air hammers to free frozen bleeder valves.

“With Vacula being in the brake-bleeding business, this is the perfect accessory to offer



Deb Serzynski is marketing and office coordinator for CEJN Industrial Corp./Vacula Automotive Products.

this to get the bleed screw out and save that flush job. It’s going to be a big seller in the Rust Belt area and for anyone who works on street rods and antique cars. It has three adapters that will fit the majority of the bleed screws. It’s very easy to use.” **UD**



Andy Wasielewski explains that the company’s DX2.5 brake bleeder is sold under the Vacula brand and Snap-on’s Blue Point brand.



The Vacula Brake Caliper Rescue Tool is designed to remove frozen bleeder valves.



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