

Teledyne forges into the 21st century with diesel airplane engine technology

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(Press-Register/Mike Kittrell) Teledyne Continental Motors President Rhett Ross discusses the firm's electronic controls for piston airplane engines in front of a Cirrus SR-22 earlier this month at the company's Brookley Field Industrial Complex hangar in Mobile. Teledyne Continental is pushing to increase use of electronic controls and hopes to develop an engine that runs on diesel rather than the traditional leaded fuel. The small airplane engine of today looks a lot like the car engine of yesterday. It runs on leaded fuel and has a control that's analogous to the choke on old-style cars.

But Teledyne Continental Motors is betting that pretty soon, many of the propeller engines that it makes will have electronic controls like today's car engines and run on diesel fuel.

"We're very much an old-school company that is leapfrogging into the 21st century," President Rhett Ross said.

A unit of [Teledyne Technologies](#) of Thousand Oaks, Calif., Teledyne Continental is already making engines with electronic controls. The 450-employee unit has been battered this year by an economy that snuffed out the sales of new, small airplanes. But the firm is hiring engineers to make a push into diesel-powered engines with the hopes of opening up markets worldwide.

Ross said Teledyne Continental has bought diesel-related "technology, licenses and hardware" from an outside source. Teledyne plans to announce details in January, but even now, Ross pledges that "diesel is a commitment for the company."

"I think the opportunity for us is going to be if we can move into the diesel engine market," Teledyne Technologies Chairman and Chief Executive Robert Mehrabian told investors earlier this fall on a conference call. "That will open up the Far East market to the small airplane and also that will open up the market that we haven't participated in which is the small UAV market."

Worldwide military and civilian uses for unmanned aerial vehicles, or UAVs, are growing rapidly.

Right now, small propeller engines typically run on 100-octane aviation gas. To get the octane levels that high, lead is added to the fuel. Aviation gas is increasingly scarce at airports, especially outside North America, and the industry is under pressure to eliminate lead. It's bad for the environment, is hard to transport through pipelines without cross-contamination with unleaded fuels, and few refiners make aviation gas, said Chris Dancy, a spokesman for the [Aircraft Owners and Pilots Association](#), based in Frederick, Md.

"There will come a point where it will not be cost efficient for the manufacturers to make 100LL at the refinery," Dancy said.

Turbocharged engines for the smallest planes can run on an unleaded version of aviation gas, Ross said, and Teledyne is certifying its engines on unleaded gas. But that probably won't work for larger piston engines.

Over the long-term, diesel may be the best bet. Jet fuel, which is basically the same as diesel fuel, is available at almost all airports, Dancy said. And access to worldwide markets could as much as double Teledyne Continental's sales, Ross said.

Diesel also appears to offer better fuel economy than aviation gas. Darcy said that in one example, fuel economy appears to be twice as good.

But diesel engines present technical challenges. They had to be heavy because a diesel engine relies on compression to spark fuel, unlike a gasoline engine, which relies on spark plugs. All that pressure has traditionally meant thicker walls.

Plus, diesel engines are known for vibration issues because they typically operate at lower RPMs than comparable gasoline engines.

A German firm called [Thielert](#) launched what is the most successful diesel engine so far, basing it on a Mercedes car engine. After Thielert's founder ran into accusations of fraud, the firm filed for bankruptcy and has been reconstituted as [Centurion Aircraft Engines](#), based in Lichtenstein. The combined firm has made 2,600 engines, including 350 this year.

"No other competitor is even remotely close to this level of experience," said Jasper Wolffson, chairman of Centurion's board.

Ross, though, believes that Teledyne Continental, with its long reputation, can overcome Centurion's head start, especially given concerns that the company won't honor previous warranties.

"There's a credibility level with original equipment manufacturers because of what they experienced with Thielert," Ross said.

Teledyne is also hoping for broader adoption of electronic engine controls, an option it has been offering for 10 years.

Teledyne's electronic controls replace a traditional set-up where a magneto sends sparks through wires to spark plugs in each cylinder. That setup requires three knobs on the control panel, one to control how much fuel is mixed with air going into the engine, one to control the pitch of the propeller, and one to control the overall power of the engine.

The electronic control system replaces all that with one level that controls overall engine power. Small, programmed computers take over controlling the flow of fuel and sparking the plugs. That makes it easier to fly the plane, as there's less to distract the pilot, as well as improves fuel economy, Ross said.

"Electronic controls is basically flying just like you drive your car," he said.