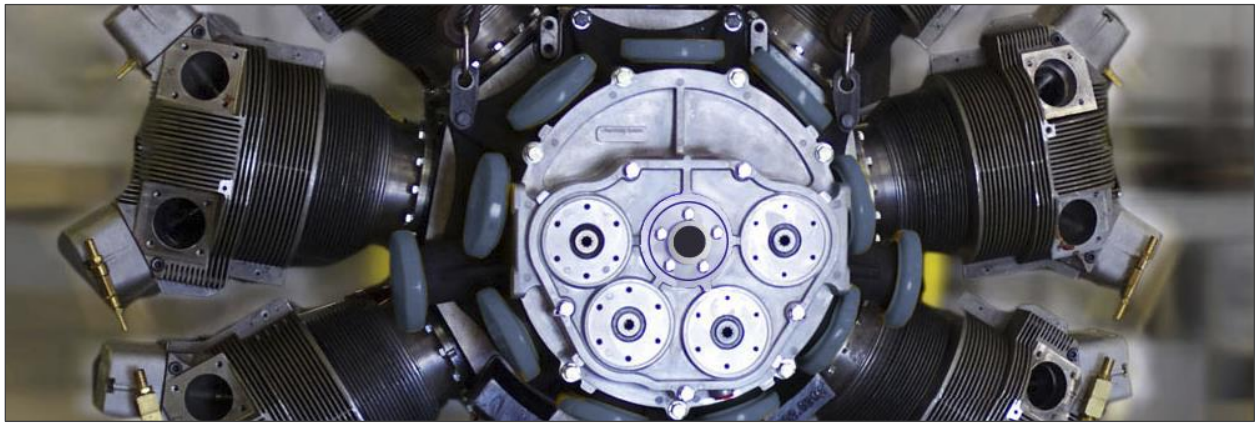
ARC930TA

Advanced Radial Configuration

Clear Energy SYSTEMS



Technical Development

A revolutionary prime mover for distributed power generation has been the focus of research engineering at Clear Energy Systems. The ARC930TA reciprocating engine began with a fundamental assessment of engine characteristics critical to power generation. The results of this inquiry—high horsepower, high efficiency, and low internal friction—led engineers away from the customary adaptation of Diesel cycle mechanics to Otto cycle purposes, and towards the rediscovery of an engine design with performance dynamics far better suited to power generation, yet wholly overlooked in the industry.

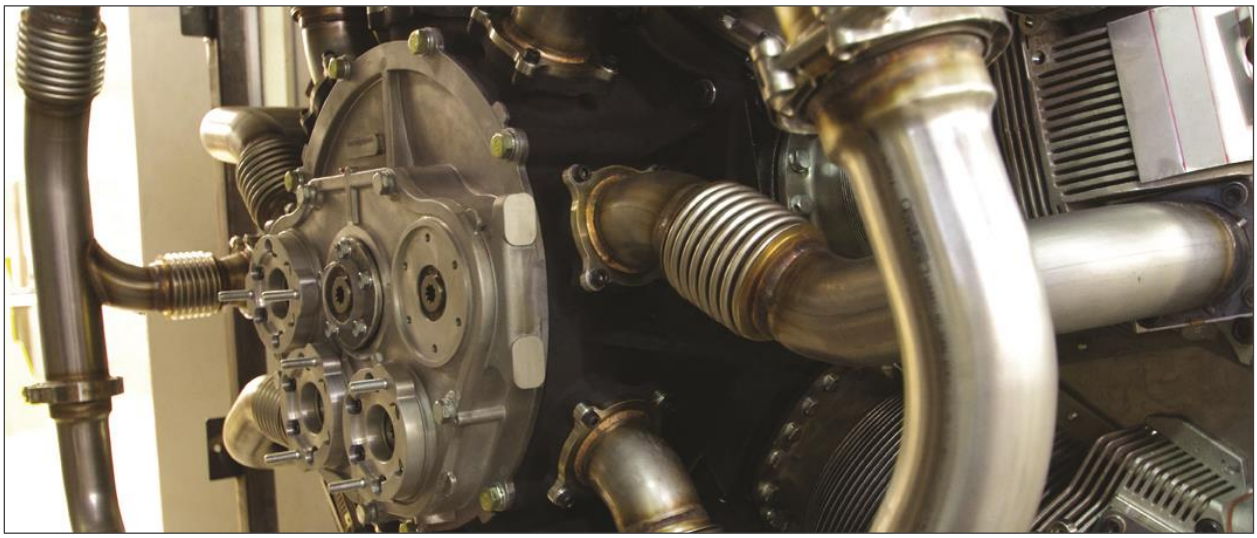
Inspired by one of the most reliable and efficient engine platforms ever developed, the radial configured, natural gas fueled ARC930TA has been completely re-engineered and industrialized for the 21st century. This wholly new powerplant is the result of state-of-the-art engineering methods, computer aided analysis, and precision machining and assembly techniques.

Radial Geometry

Only 62 inches in diameter and 31 inches in length, the nine cylinder, 30 liter radial engine weighs just 1500 lbs, yet delivers 1550 hp—comparable to inline and V-block engines many times its size and weight. Radial engine geometry permits a lighter block, a smaller, simpler and more mechanically efficient crankshaft, fewer parts and bearings, reduced contact surfaces and, therefore, a lower coefficient of friction. Master and link rod all act upon a single crank journal, and the low rod angles deliver superior transmission of cylinder pressure to the crankshaft. The crankshaft is extremely short and sturdy compared to its long inline counterparts, and supported by pressure lubricated roller bearings. As a result, it suffers no significant torsional distortion nor excessive friction.

Extraordinary Performance

Hundreds of distinct technical improvements have been built into the ARC930TA engine, including modernizations in crankshaft and rods, crankcase, cylinder heads, intake and timing systems, and electronic monitoring, diagnostics and controls. The proprietary design incorporates new bearing technology, advanced piston and ring design, contemporary metallurgy and coatings, and intricate lubrication systems to accommodate a robust duty cycle. The resultant ARC930TA delivers exceptional durability, extended maintenance intervals and long service life required for heavy-duty operations while retaining all of the advantages inherent in its original radial design—high horsepower-to-weight ratio, low parasitic losses and high operating efficiency. Air cooled and turbocharged, the 930's unique combination of features enables dependable, efficient, clean, and extremely compact distributed power generation. Air cooled and turbocharged, the 930's unique combination of features enables clean, compact, fuel flexible, and cost-efficient distributed power generation.



For sales information contact:

Clear Energy SYSTEMS

sales@clearenergysystems.com
1.480.222.7770
1245 W Geneva Drive, Tempe, AZ 85282