

# Application Story

## *Electric Supercharger Used for Next Generation Cold Weather Emission Controls*

**D**uring 2015, a major class 8 truck engine manufacturer approached Ogura with a challenge; to accurately deliver air, under pressure, for a controlled burn in a diesel-particulate system cleaning cycle with a one million mile service warranty. In that application, a TX02 fitted with an Ogura electric clutch was used, driven by a poly-v belt coupled to an Ogura TX02 supercharger to deliver fresh air.

One of the shortcomings of the clutched Ogura TX02 supercharger, in that application, was that the blower shaft speed (and hence, flow) was derived from the engines accessory drive belt ratio. This meant that to control the amount of air, the engine was required to increase or lower RPM as required or a complicated air throttling valve system was needed.

Today, those same engineers who had worked on the previous challenge, were tasked with now meeting the 2021 guidelines for reduced emissions, but now at extremely cold temperatures.

They designed a new system driven by an electric motor, so air flow is then independent of engine RPM, and controlled by computer software, not engine RPM.

With pressures to 12 PSI and flows needed to 60 M<sup>3</sup>/Hr, the TX02 previously used with a clutch was the perfect candidate for this new requirement but instead of using a clutch, the customer tasked Ogura with delivering a close coupled motor/blower combination in one small lightweight package.



*Ogura Superchargers*

Their dual rotors are coated with a unique high temperature coating for long life and an excellent tolerance to external airborne contamination.

This package had to be mounted under the truck's floorboards so robustness and small size were critical. So, Ogura teamed with Parker Hannifin Corporation, Electromechanical & Drives, North America to produce a new configuration of their new high efficiency GVM Brushless 24 VDC motor.

With speeds to 7,000 RPM and flexibility to match customer needs, this new electrified Ogura TX02 supercharger has applications today in fuel cells, emission systems as well as small engine supercharging for overall higher horse powers and increased fuel efficiency.●



*Engineers were tasked with meeting new guidelines for reduced emissions, but at extremely cold temperatures*

The TX02 is a roots style blower whose internal dual lobes rotate smoothly at 90 degrees to one another. Precision beveled timing gears are used to maintain precise timing of lobes. Exceptionally close internal tolerances between rotating and stationary parts result in very high efficiencies and produce repeatable performance for many years with zero maintenance. Ogura supercharger



*Parker TX02*