

## Kenworth T680 and the PACCAR-Kenworth DOE SuperTruck

Peter Lobner, 2 April 2020

### Introduction

With a market share of 15.2% in December 2019, Kenworth (<https://www.kenworth.com>) is tied with Peterbilt as the second largest manufacturer of Class 8 tractor-trailers for the North American market. Kenworth is owned by PACCAR, which also owns Peterbilt. The Kenworth flagship Class 8 truck is the T680 Advantage. Kenworth did not participate in the DOE SuperTruck I program, which was conducted from 2010 to 2016. Kenworth is a member of the PACCAR-led team that is participating in DOE's SuperTruck II program, which runs from 2017 to 2022.

### Kenworth T680 Advantage

Kenworth introduced the T680 in 2012. At the time, Kenworth said the T680 was the most aerodynamic truck it had ever built.



*Kenworth T680 Advantage. Source: Kenworth*

Kenworth reported the following improved aerodynamic performance for their trucks incorporating EPA SmartWay-verified trailer nose fairing, side skirts, and a trailer tail:

- A nose fairing fills the gap between the tractor and front of the trailer, shielding the trailer from the effects of a crosswind. On its own, this fairing can improve fuel economy by up to 3%.
- Side skirts provide up to 5% improvement in fuel economy.
- ATDynamics reported that its TrailerTail® is certified to deliver 6.6% fuel economy gains at 65 mph (105 kph).



*T680 Advantage aerodynamic improvements, circa 2014.  
Source: Kenworth*

See the following video, “2018 Kenworth T680: An Updated Aero Package,” (4:35 minutes) for a good description of how the various aerodynamic features work together to improve vehicle performance.  
<https://www.youtube.com/watch?v=H7G1CxTBShc>

## **PACCAR SuperTruck**

Kenworth did not participate directly in the DOE SuperTruck I program. However, Kenworth is a member of the PACCAR team, which joined the DOE SuperTruck II program in October 2017, about one year after DOE selected the four original SuperTruck II teams (all of which had participated in SuperTruck I). As explained by Michael Berube, Director of DOE's Vehicle Technologies Office, the PACCAR team was added to the SuperTruck II program per Congressional direction on the basis that they offered, "novel engine downsizing and hybridization concepts as well as advanced combustion concepts to improve engine and powertrain efficiency."

The PACCAR team also will pursue implementation of:

- Engine waste heat recovery system
- More efficient transmission and axle configurations
- Tractor and trailer aerodynamics improvements
- Weight reduction
- Predictive powertrain management for the route being driven

The PACCAR SuperTruck contract runs from October 2017 to September 2022. The team will prepare a demonstration tractor-trailer for SuperTruck II based on the Kenworth flagship T680 tractor and an industry leading PACCAR model year 2018 MX engine. Team member UPS will provide guidance on their drive and duty cycles and will provide advice on the commercial feasibility and driver acceptance of technologies developed under the SuperTruck II program.

You'll find more information on the Kenworth T680 Advantage production truck here:

- Kenworth press release: "Kenworth T680 'Advantage' Improves Fuel Economy Up To 5 Percent," 25 March 2014:  
<https://www.kenworth.com/news/news-releases/2014/march/t680-advantage.aspx>

You can read more about the PACCAR / Kenworth SuperTruck in the following sources:

- DOE press release: “PACCAR Joins Energy Department SuperTruck II Initiative,” 30 August 2017:  
<https://www.energy.gov/eere/articles/paccar-joins-energy-department-supertruck-ii-initiative>
- Article: “PACCAR Team of Kenworth, DAF Funded for SuperTruck II Research,” 6 September 2017:  
<https://www.ttnews.com/articles/paccar-team-kenworth-daf-funded-supertruck-ii-research>
- Press release: “Kenworth and UPS Collaborate on DOE SuperTruck II Program,” 24 May 2018:  
<https://www.kenworth.com/news/news-releases/2018/may/kenworth-ups-supertruck-ii/>
- SuperTruck II presentation: “Development and Demonstration of Advanced Engine and Vehicle Technologies for Class 8 Heavy-Duty Vehicle (SuperTruck II),” 13 June 2019, on the DOE website at the following link:  
[https://www.energy.gov/sites/prod/files/2019/06/f63/ace124\\_her\\_gart\\_2019\\_o\\_4.23\\_8.25pm\\_jl.pdf](https://www.energy.gov/sites/prod/files/2019/06/f63/ace124_her_gart_2019_o_4.23_8.25pm_jl.pdf)