



ROSENBAUER PANTHER 6 X 6

LAND PRODUCTS

Reference Number XXX

Rosenbauer needed a customized engineering solution to meet performance requirements and changing emission standards for industrial trucks.



Customer:	Rosenbauer
Model:	Panther 6 x 6 Aircraft Rescue and Firefighting Vehicle
Engine:	750 HP Volvo D15 Euro 6
Transmission:	Twin Disc TAD81-4001 eight-speed transmission
Torque Converter:	Twin Disc 8MLW-1758-1, 17"
Electronic Controls:	Twin Disc TDEC-500 electronic control system



Twin Disc provides “bulletproof” technology for ARFF vehicles.

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Situation

Rosenbauer is the world’s largest manufacturer of firefighting technology and equipment with eleven manufacturing locations worldwide. In the United States, its Panther Aircraft Rescue and Fire-fighting (ARFF) vehicles can be found serving some of the largest airports in the nation including George Bush International Airport in Houston, LAX, and Miami International Airport.

The heavy-duty vehicles have demanding performance requirements. The six-wheel drive configuration of the Panther carries 3,000 gallons of water, 400 gallons of foam, and 500 pounds of dry chemicals. The 82,000-pound vehicle must be able to accelerate from 0 to 50 mph in less than 35 seconds and have a top speed of 75 miles per hour in order to chase airplanes down the runway in emergencies. The fire pumps are rated at 2,000 gallons per minute.

For years, the Panthers used dependable and powerful Twin Disc TD61-1179 six-speed transmissions. In anticipation of stricter exhaust emission requirements for industrial trucks both in Europe and the United States, Rosenbauer began re-working the engine and emission system design for the vehicles.

Implication/Problem

Because of the requirements of the new emission system, Rosenbauer decided to equip the Panthers with 750 HP Volvo D15 Euro 6 engines. This required the development of a new eight-speed Twin Disc transmission to accommodate the higher torque.

In addition, Rosenbauer began developing an ultra-high-pressure fire pump at the request of the U.S. Air Force. This required changes to the power take-off (PTO) clutch used in the truck to drive the higher horsepower pumps without losing any of the performance capacity.

Solution

Rosenbauer looked to long-time collaboration partner Twin Disc. For two years, Twin Disc engineers worked with Rosenbauer to develop the gearbox and the control system for a new transmission designed to accommodate more powerful, higher torque engines.

The Panthers are now equipped with the following Twin Disc products:

- TAD81-4001 eight-speed transmission**
- 8MLW-1758-1 17" torque converter**
- TDEC-500 electronic control system**

Results

The TAD81-4001 eight-speed transmission meets all of Rosenbauer’s performance and acceleration requirements for the Panther vehicles. In addition, it gives Rosenbauer a competitive edge because the vehicles offered by its closest competitor only offer seven speed transmissions.

“Twin Disc builds great products. I like to use the term ‘bulletproof.’ You put oil in it, it goes, and you really don’t have to worry about repair work.”

Steve Reedy
Vice President, Rosenbauer Minnesota, LLC

The Twin Disc improved electronic control systems help smooth out the shifts between gears and are used to limit the torque capacity in high-torque engines in situations where the transmission could be overpowered. The control system also allows Rosenbauer to continue using the TD61-1179 Twin Disc six-speed transmission, even with higher torque engines, in some applications.

The 8MLW-1758-1 Twin Disc 17" torque converter accommodates the use of an ultra-high-pressure fire pump with no loss in truck performance.