

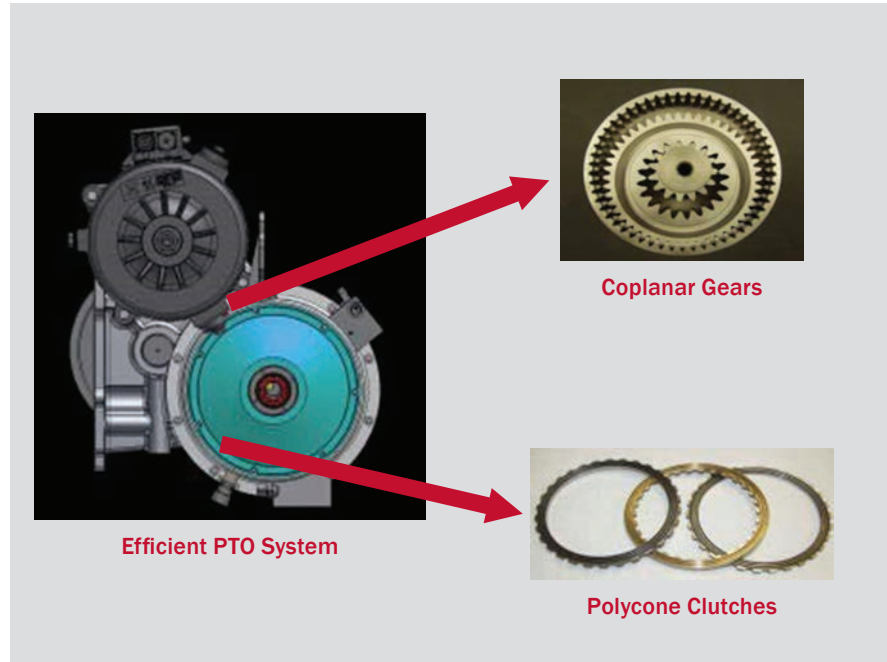
Efficient Power Take-Off Manufacturing (EPTO)

OBJECTIVE/SOLUTION:

Develop an improved manufacturing process with the goal of reducing production cost and increasing throughput for an efficient, affordable and reliable EPTO with a multispeed fan drive system and electronic controls for the Bradley Fighting Vehicle (BFV) and other Army Ground Vehicles.



Bradley Fighting Vehicle (BFV)



Achievements:

- Increased reliability and production rates while decreasing cost for BFV EPTO
- Updated Make/Buy Analysis to identify additional opportunities for reducing cost
- Implemented Parallel Line Assembly Flow Process in order to achieve higher productivity and better overall assembly performance
- Linked and balanced manufacturing processes into parallel flow lines to reduce factor floor space by 20%
- Developed Product Verification Plan to capture all physical test/demonstration activities to verify multispeed fan drive functions as intended prior to assembly with EPTO.
- Leveraged TARDEC's PTO Simulator equipment to execute performance and durability testing to validate EPTO manufacturing process
- Developed Quality Management System and reduced 100% item inspection to 10% item inspection

Benefits:

- Improved assembly line process increasing efficiency & productivity resulting in output of two EPTOs per day, which is over 100% increase in operator productivity from the original method

Benefits (cont):

- Improved efficiency of manufacturing engineers and production costs by implementing process plan improvements that allow the definition of plant-specific processes with alternate/parallel sequences of operations to decreased cost from \$150k per unit to \$10k per unit
- Reduced cost of manufacturing changes by identifying design changes earlier in the design for cost effective, and consistent manufacturing process
- Improved productivity by optimizing manufacturing processes to establish a production ready coplanar gear and polycone clutch manufacturing process resulting in a direct replacement PTO assembly ready for transition to platform

Transition and Weapon Systems/Secondary Items Impacted:

- Target transition: Bradley Fighting Vehicle (BFV) (Technology Transition Agreement in place)
- Impacts future AGV (Army Ground Vehicle) projects that are improving mobility of the Warfighter through efficient systems
- Applicable to all systems that require PTO variable fan drive. Including AMPV (Armored Multi-Purpose Vehicle), PIM (Paladin Integrated Management) and ABRAMS

Point of Contact: Army ManTech Manager, U.S. Army Research Development and Engineering Command (RDECOM), Tank Automotive Research Development and Engineering Center (TARDEC), RDTA-RS, 6501 East 11 Mile Road, Warren, MI 48397-5000