



## Technology Commercialization Opportunity

### A Novel Vehicle Transmission – EconoFlow™

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#### Technology Description

EconoFlow is a novel vehicle transmission that provides the functionality of an expensive 6+ speed automatic transmission with the simplicity, weight, and production cost of a 3-speed manual transmission. EconoFlow provides a broad and continuous range of transmission gear ratios yielding extremely smooth vehicle startups and downshifting for hills and passing. The change in gear ratios occurs automatically without any expensive computer actuated hydraulic controls.

EconoFlow integrates a unique planetary gear train with a torque converter in a compact package slightly larger than the torque converter alone. By itself a torque converter provides smooth transmission functionality, but its torque multiplication range (typically 2.5:1 to 1:1) is insufficient for most transmission applications. However, with the novel integration of a planetary gear train, the torque converter's torque range is substantially expanded, to as much as 100:1.

EconoFlow can be easily modified to provide overdrive ratios (like 0.7:1) and external control for changing the gear ratio shift characteristics to achieve higher performance, lower emissions, or better economy.

**Keywords:** Vehicle Transmission, Power Transmission, ATV Transmission, Soft Starter

#### Technology Readiness

EconoFlow is presently at this level of readiness:

Idea	Concept	<b>Prototype</b>	Alpha Version	Beta Version	Released
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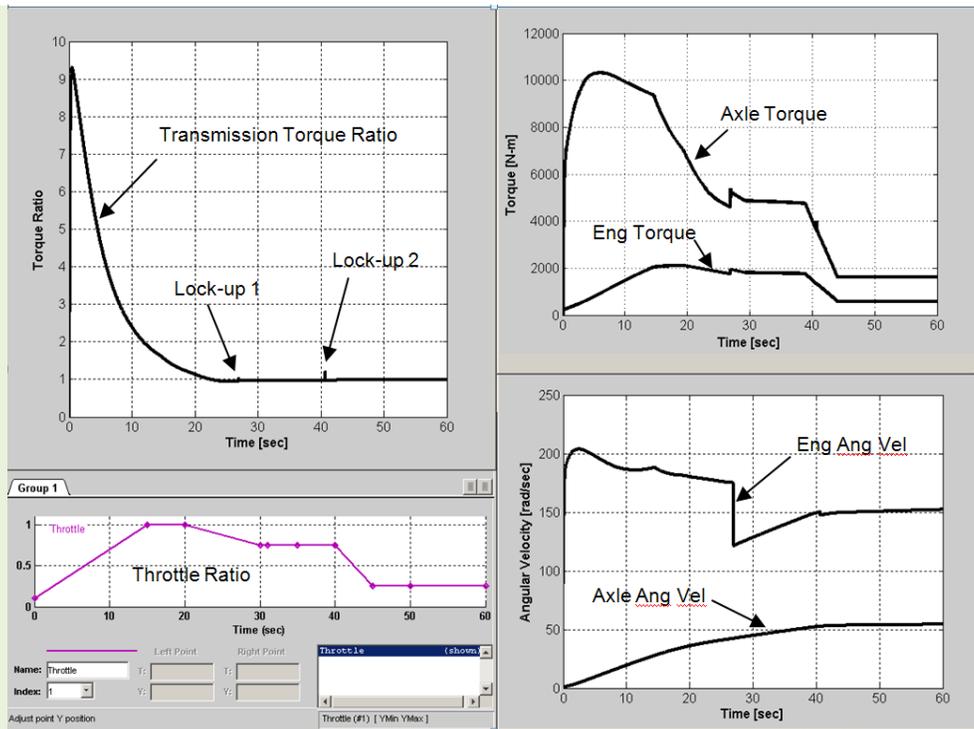
RIT developers will work with licensees to finalize the development and move EconoFlow towards a "released version."

#### Intellectual Property

EconoFlow is covered by three (3) issued patents U.S.8,460,143; 8,747,267; 8,747,268 - each entitled "Gear-Based Continuously Variable Transmission Systems and Methods Thereof."

#### Applications

EconoFlow can be used in a variety of applications including transportation vehicles, from ATVs to 18-wheelers, off-road equipment, and large factory/mining conveyor systems.



### Simulation of Truck Acceleration to Interstate Highway Speed

The above plots show a simulation using EconoFlow and a 515 HP (@1800 rpm) diesel engine accelerating a 40,000 pound truck from a standing start on level ground. Standard rolling resistance and aero drag loads are applied. The throttle ratios (with 1 being full throttle) are shown. EconoFlow has two lock-up stages, to enhance highway fuel economy.

### Target Customers

- Freight and Transportation Industry
- Manufacturing and Mining Industry Stationary Drives (Soft Starters)
- Off-road Construction and Mining Transport Drives
- ATVs and Snowmobiles

### Opportunity

RIT's Intellectual Property Management Office (IPMO) is interested in working with those parties who are qualified and interested in the commercialization of this EconoFlow intellectual property. Arrangement types include licensing the application to existing organizations or new organizations that have expertise in the field or related fields.

### Contact

Those interested in learning more about this opportunity should contact:

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Please refer to ID 2008-003; 060613