



The University of Texas at Austin  
School of Information

# C-Stone Technologies: Advanced Power Shift Clutch with Power Piston Module

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# Agenda

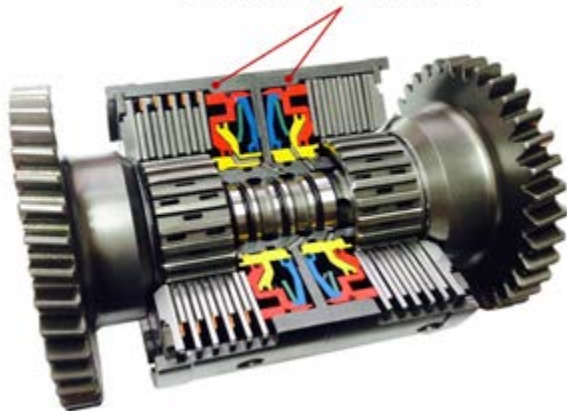
- Introduction: C-Stone's Products
- Research Questions
- Relevant Markets Overview
  - Supply Chain Overview
  - Market Size & Opportunities
  - Magic Quadrant
  - Innovation Drivers
  - Supply Chain Analysis
- Key Takeaways

# Executive Summary

- A new transmission technology could be attractive in several markets.
- Consumer vehicles, commercial vehicles, and agricultural vehicles are all mature, global markets.
- There is an appetite in these markets for innovation that results in efficiency.

# C-Stone's Product

Power Piston Modules



Advanced Power Shift Clutch  
(APSC)



Power Piston Module  
(PPM)

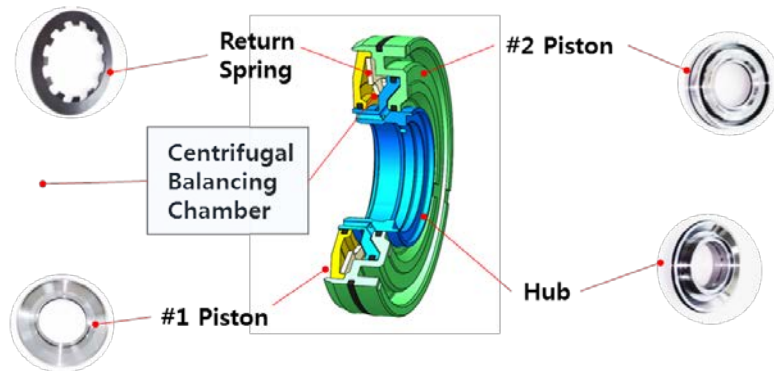
# Power Piston Module

## Specifications

- Part of a manual transmission
- Dual pistons (pre-assembled)
  - Return spring
  - Centrifugal balancing chamber

## Benefits

- Reduces space taken up by the clutch
- Lowers oil pressure
- Increases torque & heat capacity
- Reduces power loss at the pump (lower supply pressure)
- Reduces clutch assembly time



# Research Questions

- How big are the tractor, forklift, commercial vehicle, and car markets?
- Where does drive for innovation in these markets come from?
- What is the component supply chain like in these markets?
- What is the go-to-market strategy for a new transmission product?

# Research Strategies and Tools

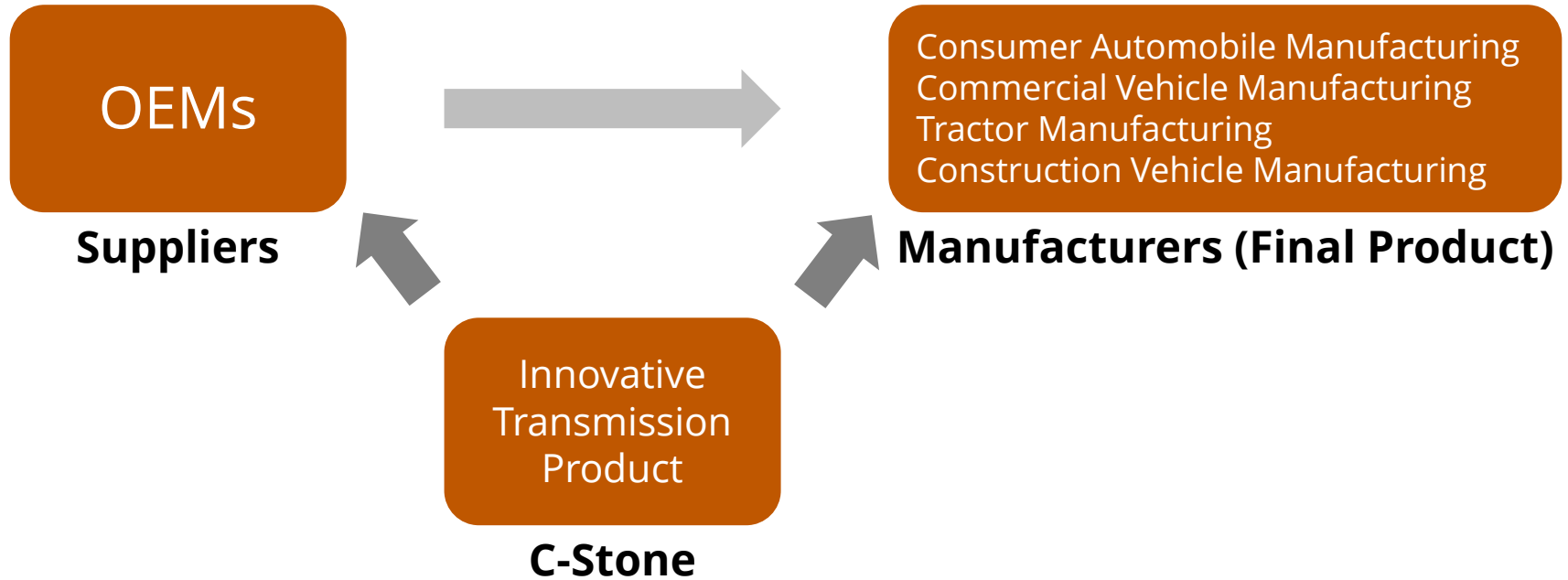
## Strategy

- Determine what secondary research can accomplish for our client.
- Provide a comprehensive and useful view of the potential for commercialization.
- Analyze and compare potential markets.

## Sources

- Thomson One (investment bank reports)
- IBISWorld (market reports)
- Business school course materials
- Auto industry trade literature
- Corporate websites and financial disclosure documents

# Possible Commercialization Routes





# Other Target Industries

- Construction Machinery and Heavy Trucks
- Industrial Machinery
- Agricultural and Farm Machinery
- Automobile Transmission Manufacturing

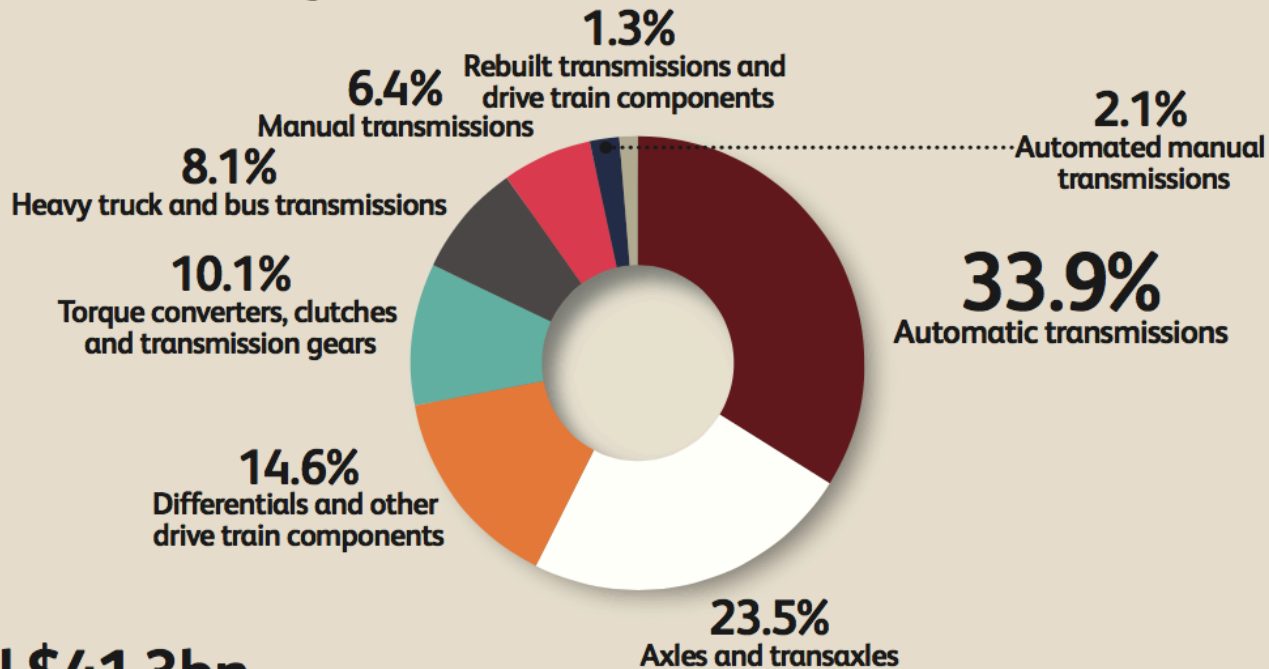
# Trade Associations

- Alliance of Automobile Manufacturers
- Association of International Automobile Manufacturers
- Heavy Duty Distribution Association
- Motor & Equipment Manufacturers Association
- Original Equipment Suppliers Association
- United States Council for Automotive Research

# Transmission Market Size

- US Clutch and Transmission Market (Eaton Corp.): **\$4B**
- US Auto Transmission Manufacturing (IBISWorld): **\$41.3B**
  - Torque converters, clutches and transmission gears account for **10.1%**, approximately **\$4.17B**.
- Global Dual Clutch Transmission Market 2020: **\$15.4B**
- Western Europe DCT Market 2014: **\$3.1B**
  - Expected 2020: **\$5.4B**

### Products and services segmentation (2016)



**Total \$41.3bn**

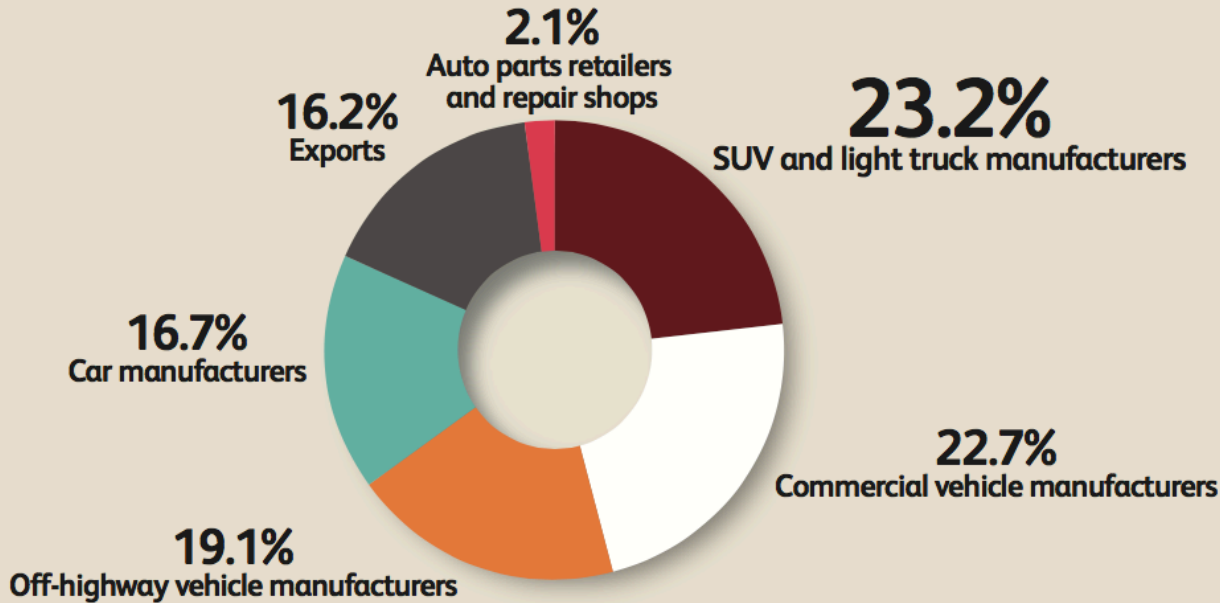
SOURCE: WWW.IBISWORLD.COM

## Supplier Product Segmentation

Automobile Transmission Manufacturing

Source: IBISWorld

### Major market segmentation (2016)



**Total \$41.3bn**

SOURCE: WWW.IBISWORLD.COM

## Supplier Market Segmentation

Automobile Transmission Manufacturing

Source: IBISWorld

# C-Stone's Market Opportunities

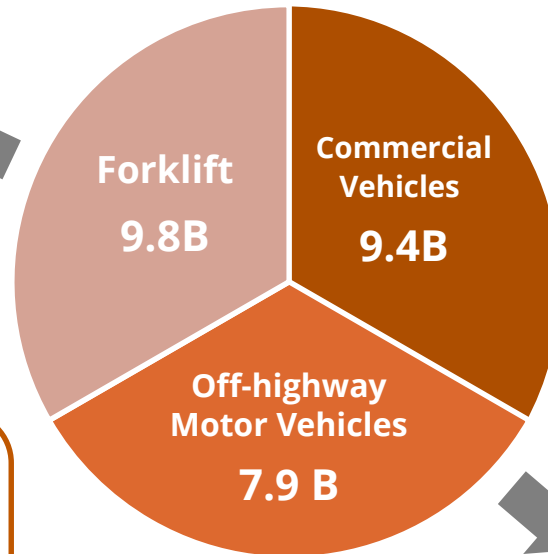
## Automobile Transmission Target Market

### Segment Trend: Growing

- Growth Rate: 3% (IBISWorld)
- Growth of construction industry → Rising demand for forklifts → Rising demand for clutch components
- Imports of forklifts have increased
- Intense competition

### Threats & Tips

- Medium to High concentration → High barriers of entry (stable relationships)
- Dropping fuel price → Less conscious about fuel efficiency
- High COG (66.7%) → Price sensitive



### Segment Trend: Growing

- Growth Rate: 5.9% (Global Industry Analyst, Inc)
- Growth of Economic & commercial business → Rising demand for transportation and logistic services
- Rising eco-awareness and demand for low carbon emission → Rising demand for eco-friendly vehicles

### Segment Trend: Growing

- Sales of off-highway motor vehicles are anticipated to grow at a stronger rate (IBISWorld)
- Environmental Protection Agency (EPA)'s emission standard → Greater requirements for fuel-efficient products

# Magic Quadrant



SCHAEFFLER GROUP



Challengers

Leaders



Ability to Execute



Niche Players

Visionaries



Completeness of Vision

# Key Innovation Drivers

- Consumer demand
- Electrification of vehicle drivelines
- Fuel-efficiency standards
- Cost efficiency & “light-weight” design principles
- Push for “eco-friendly” and recyclable materials



# Supply Chain Analysis

- The drive for innovation in the auto industry comes from:
  - Auto manufacturers
  - Tier 1 (\$10b+) suppliers
- The supply chain is global by default.
  - In our magic quadrant: 61% North America, 30% Europe, 9% Asia
  - Some manufacturers have closer relationships with suppliers that are geographically closer.
- Powertrain components, including clutches, are “less commoditized” than other parts.
  - This gives suppliers more power.

# Key Takeaways for C-Stone

- Fuel efficiency is the most attractive thing a product can offer.
- New products often enter the auto industry at a global scale.
- The transmission market is composed largely of many small players, but barriers to entry are still high.

# Further Research

- How does C-Stone's product compare to dual-clutch transmissions? Does it compete, directly or indirectly?
- Are the performance metrics provided attractive to Tier 1 suppliers?
- What is the go-to-market strategy for a new transmission product?