Twelve Motor Teardown and Benchmark Study

2017 Tesla Model 3 Rear 2018 Tesla Model 3 Front 2019 Audi e-tron Front 2019 Audi e-tron Rear
2016 Chevrolet Volt 2016 Toyota Prius 2017 Chevrolet Bolt 2014 BMW i3

NEW

Twelve Motor Cost and Benchmark Report

email sales@LeanDesign.com for a quote

Munro conducted a side by side motor comparison capturing detailed cost and component data

Purchasers will receive a 488-page benchmark report for twelve EV motors at a fraction of the estimated value of $300,000 if purchased individually.

A. Top level side by side comparisons
B. Detailed section for each motor
C. Motor technical cost analysis
D. Appendix with additional motor information

Munro & Associates Inc.
1140 Centre Rd
Auburn Hills, MI, 48326 USA
Phone: 1-248-362-5110
www.LeanDesign.com
Description of the Motor Analysis

A. Side by side motor comparing torque, power ratings, motor types, application, part count, cost and weight

B. Each motor has a dedicated report section providing detailed dimensional data such as:
   - Overall dimensions and weights
   - Discrete part dimensions such as laminate thicknesses and counts
   - Gauss values of magnets
   - Pole counts
   - Magnet configurations

C. Complete technical cost analysis of each motor
   - Includes the stator, rotor, rotor shaft and resolver target wheel
   - Excludes motor housings, gear train and controls

D. Appendix with supplemental technical performance data and material chemical analysis

Report Delivery

❖ All reports and accompanying deliverables will be made available for easy access through a secure File Transfer Protocol (FTP) site.
❖ The report utilizes hyperlinks within a table of contents to facilitate the ability to easily navigate throughout the contents and quickly find specific data and information to meet user needs.
Motor Benchmark Report

The Benchmark Report is highly advantageous for OEMs or suppliers looking to effectively expand and compete in new EV markets.

❖ The report is a comprehensive cost analysis of each motor.
❖ This report contains descriptive and pictorial detail on every facet of the motors’ dimensional data, manufacturing and cost analysis.
❖ Those who purchase the report will receive a single report containing:
   a. Executive Summary
   b. Side by Side Summary
   c. Dimensional Data
   d. Costed Bill of Material
Cost Estimates

The costs of the motors are separated into two buckets; stator and rotor. Munro used their proprietary software and methodologies to establish a should cost to manufacture the various parts found in each of the motors. An overview of the costing methods is provided in the report. The costing methodologies have been developed by Munro over the last 15 to 20 years supporting numerous OEM’s and suppliers as well as government agencies for future rule making decisions regarding fuel economy and safety standards.

[Richman from EPA]
“Munro is recognized as being technically competent, highly experienced, knowledgeable, and creative in benchmarking and lean engineering of automotive and non-automotive systems. Costing models are thorough, covering all elements of total production cost.”
Motor Costed Bill of Material

❖ The Costed Bill of Material (CBOM) is a consolidated view of the cost information presented in the reports. A CBOM report is included for each motor analyzed.
❖ The bill of material is an indented format and includes:
  ▪ Part name
  ▪ Material
  ▪ Total Cost
  ▪ Weight
  ▪ Quantity
  ▪ Total Weight

Please note the costed bill of material is provided in pictorial / PDF format and will not be available in Excel.
FAQ (Frequently Asked Questions)

❖ Were the motors’ manufacturers involved in the study?
   No. Neither OEM proprietary costs nor any component supplier’s quoted costs were used in this study.

❖ Is there any OEM proprietary (stolen) IP in this report?
   No. All data was developed through Munro’s proven methodologies, analyzing Munro’s purchased production Tesla vehicles and OEMs’ assemblies.

❖ Are the components costed using USMCA costing centers?
   Yes, Munro includes labor, factory floor cost, taxes and SG&A for OEM or Tier Suppliers.

❖ Is this a Costing or Pricing report?
   This is a Costing Report. Pricing has too many variables.

Legal Disclaimers & Sales Condition

❖ How can I see the sample report before purchasing?
   Please contact your regional Munro salesperson. They can provide sample information in digital PDF format. NOTE: critical data will be hidden in the sample.

❖ Is Purchaser allowed to Reproduce, Distribute, Disseminate, Photocopy, Fax, or Transmit report content internally within the Purchaser’s organization?
   Yes, ONLY INTERNAL Company correspondence is authorized.
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❖ If questions arise, is a Munro expert able to visit and explain the report’s details?
   It is not included in the price of report.
   Munro will visit if the customer pays for the travel and a daily fee.

❖ If there are limited specific questions on the content of report, is it possible for a Munro representative to support phone or e-mail communication?
   Yes, please contact the local area salesperson and we will respond with our answers.