

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BAYERISCHE MOTOREN WERKE AKTIENGESELLSCHAFT and
BMW OF NORTH AMERICA, LLC,
Petitioners,

v.

PAICE LLC and THE ABELL FOUNDATION, INC.,
Patent Owners.

Case IPR2020-01386
Patent 7,237,634

PATENT OWNERS' RESPONSE

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EXHIBIT LIST

Exhibit No.	Description
PAICE 2001	Patent Owners' Preliminary Response to Petition for IPR in IPR2015-0722 Dated August 10, 2015
PAICE 2002	Patent Owner's Preliminary Response to Petition in IPR2015-00787 dated August 10, 2015
PAICE 2003	Patent Owner's Preliminary Response to Petition in IPR2015-00791 dated August 10, 2015
PAICE 2004	Statutory Disclaimer
PAICE 2005	Reserved
PAICE 2006	Response to Interrogatory 27, BMW Responses to PAICE 1st Set of Interrogatories [1-28] dated May 6, 2020
PAICE 2007	Paice/Toyota Complaint dated June 8, 2004
PAICE 2008	Paice/Toyota Amended Complaint dated July 3, 2007
PAICE 2009	Scheduling Order [Docket No. 36] from 1:19-cv-03348-SAG (USDC-DMD) dated February 25, 2020
PAICE 2010	Docket Navigator Statistics – Top Patents by Number of IPRs
PAICE 2011	Ex. J to BMW Invalidity Contentions dated June 8, 2020
PAICE 2012	Reserved
PAICE 2013	IPR2017-00232 Petition dated November 14, 2016
PAICE 2014	UK Patent Application GB 2,318,105 Cover Page
PAICE 2015	Printout of http://www.paicehybrid.com/licensing-agreements/
PAICE 2016	Declaration of Mahdi Shahbakhti, Ph.D.
PAICE 2017	Curriculum Vitae of Mahdi Shahbakhti, Ph.D.
PAICE 2018	Bosch Gasoline-engine Management
PAICE 2019	Selected Pages From John Heywood, Internal Combustion Engines Fundamentals
PAICE 2020	Selected Pages From Merhdad Ehsani et al, Modern Electric, Hybrid Electric, and Fuel Cell Vehicles
PAICE 2021	Matthew Cuddy et al., Analysis of the Fuel Economy Benefit of Drivetrain Hybridization
PAICE 2022	Selected Pages From Draft Technical Assessment Report: Midterm Evaluation of Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards for Model Years 2022-2025
PAICE 2023	Selected Pages From Assessment of Fuel Economy of Fuel Economy Technologies for Light Duty Vehicles

PAICE 2024	Selected Pages From Richard Stone, Introduction to Internal Combustion Engines
PAICE 2025	Reserved
PAICE 2026	Reserved
PAICE 2027	Reserved
PAICE 2028	Guzzella et al., Introduction to Modeling Control of Internal Combustion Engine Systems
PAICE 2029	Reserved
PAICE 2030	Reserved
PAICE 2031	Reserved
PAICE 2032	Reserved
PAICE 2033	Guzzella et al., Vehicle Propulsion Systems
PAICE 2034	Bumby, J.R. et al., "Optimisation and control of a hybrid electric car," IEE PROCEEDINGS, Vol. 134, Pt. D, No. 6 (Nov. 1987), 373-87 ("Bumby II")

I. Introduction

The Board should find that all challenged claims of U.S. Patent No. 7,237,634 (“’634 patent”) are patentable. The ’634 patent describes and claims novel control strategies and architectures for hybrid electric vehicles, which are absent in the prior art.

Varying the setpoint based on monitoring patterns of vehicle operation (claim 33): challenged independent claim 33 (and its dependent claims) monitors patterns of vehicle operation in order to vary the setpoint, which is a parameter that the hybrid controller uses as a point of demarcation for selecting operating modes, *e.g.*, choosing whether to operate the electric motor or the gas engine to propel the vehicle. The Board has already carefully considered the validity of the ’634 patent on multiple occasions and denied institution of three separate IPRs challenging independent claim 33 and its dependent claims. (BMW1060, 6-8, 16-17; BMW1061, 7-9, 14-15; BMW1062, 7-9, 15-16.)

BMW’s prior art fares no better than the art that the Board previously found deficient. First, *none* of the prior art varies the claimed “setpoint” *at all*, let alone doing so based on monitoring patterns of vehicle operation as claim 33 requires. BMW’s **Grounds 1-9** rely on Severinsky as the primary reference. But as explained in detail below, Severinsky never varies the claimed “setpoint,” and BMW’s unsupported assertion that Severinsky’s “speed-responsive hysteresis”

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