CONTENTS

Introduction of new technologies
Development of HF120 Turbofan Engine .................................................. Etsuo NODA ............ 1

HF120 Turbofan Engine Development Test for Type Certificate
.................................................. Ryosuke SHIBATA•Katsuama ISHIKAWA•Ryo KODAMA
Shuu TAGUCHI•Hidehiko NAKATA ............ 7

Verification of High Altitude Performance and Characteristics for HF120 Turbofan Engine
.................................................. Katsumasa ISHIKAWA•Norio KASAI
Norifumi IKEDA•Ikuo TAKAMATSU ............ 14

Aerodynamic Technologies for High-efficiency and High Specific-flow-rate Fan and Centrifugal Compressor
.................................................. Hisato TANAKA•Mineyasu OANA ............ 22

Structural Design and Verification of HF120 Turbofan Engine
.................................................. Junichi IKEDA•Takafumi TANAKA•Ryuji SANO ............ 28

Application of CFRP Stator to HF120 Turbofan Engine
.................................................. Michihide ANAKURA•Shuu TAGUCHI•Shuichiro YOSHIDA ............ 33

Development of High Reliability Control Software for HF120 Turbofan Engine
.................................................. Makoto TEZUKA•Shohei SUGIMOTO•Keisuke KAWAI
Hideaki JINNO•Yuta AKAI ............ 38

Styling Design of 2014 Model Year ODYSSEY
.................................................. Katsuaki HAYASHI•Ryusaku SENDA•Wataru MURAKAMI ............ 45

Development of New 50 cc Scooter Dunk .................................................. Makoto MITSUKAWA•Shiji HIRAYAMA
............................ Mamoru OTSUBO•Yasushi TATEISHI ............ 53

Development of HSL2511 Large-sized Snow Thrower
.................................................. Kenta KOHIGASHI•Tsutomu MIZOROE•Takashi HASHIZUME
Shohei URANO•Jun SONG ............ 65

Development of High-Access Survey Robot for TEPCO’s Fukushima Daiichi Nuclear Power Station
.................................................. Hisashi SUGIURA•Takafumi FUKUSHIMA•Mitsuhide KURODA
Ryosuke ISHIZAKI•Takashi MATSUMOTO ............ 73

Study on Application of Engine Load Estimation Method Using Crank Angular Velocity Variation to Spark Advance Control
.................................................. Hirotaka KAWATSU•Ryosuke IBATA
Tetsuya KANEKO•Kenji NISHIDA ............ 86

Simulation of Oil Separating Behavior for Engine Breather System ..... Makoto HAGA•Takumi KASAHARA ............ 98

Model-Based Development Technologies to Support Increasingly Complex Power Train Systems
.................................................. Hidekazu ARAKI•Kanako SAIJO•Ryosuke OGUCHI
Masayuki FUNAKOSHI•Kensuke YAMAMOTO ............ 107

Driving Simulator for Power Plant Controller Development
.................................................. Satoshi KODO•Shigeki FUJIMOTO
Takashi ONO•Tetsuya SUZUKI ............ 117

Development of 8-Speed DCT with Torque Converter for Midsize Vehicles
.................................................. Shoji MACHIDA•Noriyuki YAGI•Kazunori MIYATA
Masayuki SADAKIYO•Tomoya OKAJI•Tomonori YAMANE ............ 125
Technology to Predict Input Force to Engine Mount at Rapid Start of MT Vehicle

Yasufumi JO · Takahiko MURATA
Masaki OKUMOTO · Satoshi YAMASHITA · 132

Development of Active Control Engine Mount System for Reduction of Resonance Vibration at Engine Restart

Tatsuhiro YONE · Hideyuki OKAMOTO · Takashi YAMAGUCHI
Shintaro FURUI · Hirotomi NEMOTO · 138

Control Parameter Optimization for Reduction of 2nd Order Vibration in Hybrid Drive Mode of SPORT HYBRID i-MMD

Tatsunori TSURUTA · 144

Design of Floating Seat for Control of Seat Resonance Frequencies

Kengo YABE · Toru INAGAKI · Takashi KONDO · 151

Predictive Simulation of Flow-induced Noise using CFD

Katsutomo KANAI · Hideki KATSUYAMA
Yuichi FUSHIMI · Norikazu YAMAMOTO · 156

Development of Component Based Middleware for Intelligent Robot Software

Makoto SEKIYA · Norio NEKI
Zenta MIYASHITA · Nobuyuki ONO · 165

System Design Process in Compliance with ISO26262 Using Model-Based Design

Hiroki SAGAMI · Shinji HIRONAKA
Ryooji MORI · Takuyuki MUKAI · 173

Development of Configuration Management System for ISO26262

Hitoshi TAKUMI · Yasuo KUROSAKI · Hiroshi ISHIDA · 181

Development of MEA with Built-in Oxygen Sensor for Measurement of Oxygen Concentration around Fuel Cell Cathode Electrode Layer

Masahiro MOURI · 190

Verification Test Results for Solar Hydrogen Station in Japan

Nobuyoshi YOSHIDA · Aoi MIYAKE · 200

Project for Locally Rooted Design Development in Field Tests of Next-Generation Personal Mobility

Tadahiro YAGUCHI · Kazunori HARADA · 207

Technical papers

Study of Optimization of Reciprocating Parts for General-purpose Engine with Aluminum-alloy Connecting Rods

Masami OKUBO · Masato SUZUKI · 214

Advanced Ignition Control Technology for HCCI Combustion

Kiminori KOMURA · Masanobu TAKAZAWA · Teruyoshi MORITA · 220

Identification of Brake-drag Mechanism in Coasting-down Mode and Proposal of Brake-drag Stabilization and Reduction Methods

Yasushi KOBAYASHI · Yuta HIGUCHI · Naoki NAKAMURA · 229

Development of Feedback Active Noise Control Technology for Noise in Multiple Narrow Frequency Bands by Multiplexing of Single-frequency Adaptive Notch Filters

Kosuke SAKAMOTO · Toshio INOUE · 237

Development of Multiscale Computational Model for Carrier Mobility in GaAs Nanopillars with Twin Boundaries

Mitsumoto KAWAI · 244