

Patent Selections:

The patents annotated in this section have been selected from various patent databases. These recent patents are relevant to the articles published in this journal issue, categorized by different analytical methods, designs, manufacturing and analysis of automobiles, aircrafts, manufacturing plants, industrial instruments, machines, heating and cooling systems and processes involved and related to mechanical engineering.

LANE-CHANGING MODEL & INTELLIGENT VEHICLE

1. Bone, S., Winner, H., Habenicht, S., Selinski, J. Lane change assist information visualization system. *US9092987 (2015)*.
2. Wilson, C.K. Systems and methods for building road models, driver models, and vehicle models and making predictions therefrom. *US20150266455 (2015)*.
3. Gordon, R. Guidance assist vehicle module. *US20150235556 (2014)*.
4. Luo, Y., Hoetzer, D. Video based intelligent vehicle control system. *US9165468 (2015)*.
5. Mudalige, U.P., Losh, M. Efficient data flow algorithms for autonomous lane changing, passing and overtaking behaviors. *US9096267 (2015)*.
6. Schofield, K., Lynam, N.R. Vision system for vehicle. *US20150215588 (2015)*.
7. Rubin, K.T., Betts-Lacroix, J. Operational efficiency in a vehicle-to-vehicle communications system. *US9031089 (2015)*.

LANE-CHANGING MODEL & ASSISTANT DRIVING SYSTEM & INTELLIGENT TRANSPORTATION SYSTEM

1. Fritsch, J., Kühnl, T. Lane relative position estimation method and system for driver assistance systems. *US20150203114 (2015)*.
2. Hale, D.K. System and method for automated model calibration, sensitivity analysis, and optimization. *US20150039278 (2015)*.
3. Slusar, M.V. Driving analysis using vehicle-to-vehicle communication. *US9147353 (2015)*.
4. Breed, D.S. Vehicle heads-up display navigation system. *US20150149079 (2015)*.
5. McClellan, S. System and method for providing a user interface for vehicle mentoring system users and insurers. *US9117246 (2015)*.

ASSISTANT DRIVING SYSTEM & INTELLIGENT TRANSPORTATION SYSTEM & LANE-CHANGING WARNING

1. Cullinane, B., Nemec, P., Clement, M.C., Mariet, R.C.E., Jonsson, L.I.-M. Engaging and disengaging for autonomous driving. *US9075413 (2015)*.

2. Santucci, M.D., Di Tanna, O., Savaresi, S.M., Manzoni, V., Corti, A. Real-time drive assistance system and method. *US9153131 (2015)*.
3. Herschbach, N. Driver assistance system comprising an optical detector with active scene illumination. *US20150168555 (2015)*.
4. Jo, J.H. Apparatus and method for warning of dangerous passing of vehicle. *US20150070194 (2015)*.

IN-MOLD LABELING INJECTION

1. Shapiro, B., Wlezien, C., Tokich, J.J. In-mold label forming surfaces for molded articles. *US20150024156 (2015)*.
2. Miya, T., Ishihara T. Container with in-mold label. *JP2015009811 (2015)*.
3. Timmerman, L.A., Ratcliff, C.M., Richmond, D.W., Gravley, L.H. Composite film assemblies having sealing and barrier properties for use as in-mold labels, articles with in-mold labels, and methods of making same. *US20150084236 (2015)*.
4. Iwasa, Y., Shiina, M., Nishizawa, T. Label for in-mold forming and resin container with the label. *US9149976 (2015)*.
5. Kameda, K., Bushida, M., Kado, T., Aizawa, H. In-mold label container. *WO2015141789 (2015)*.
6. Shapiro, B., Wlezien, C., Tokich, J.J. In-mold label forming surfaces for molded articles. *US20150111006 (2015)*.
7. Suzuki, T., Nakamura, K., Kimura, K., Iida, S. Readily removable film, label for in-mold molding, molded resin article having label attached thereto, wallpaper, glue label, and container having label attached thereto. *US9102126 (2015)*.
8. Brown, P.P., Sorensen, J.O. Reducing indentation in a label included on the exterior surface of an injection-molded product. *US9120254 (2015)*.
9. Hahn, M., Clemens, W., Sigriz, R., Schindler, U., Golling, G. Body produced by an in-mold process and process for the production thereof. *US20150293558 (2015)*.

IN-MOLD LABELING & COUNTERMEASURES & INJECTION MOLD

1. Lee, R.E., Zhao, Y., Griffith, E., Zheng, Z., Singh, A.P. Substituted urea depsipeptide analogs as activators of the CLPP endopeptidase. *WO2015031871 (2015)*.

- Nichol, A.J., Coleman, Z.A. Display with a film-based lightguide and light redirecting optical element. *US20150219834 (2015)*.

INJECTION MOLD & INK WASHOUT

- Yizze, J.P., Marchetti, B.G., Rocco, C.A. Polymeric article formed by injection compression molding. *US20150197075 (2015)*.
- Karner, L., Schofield, K., Lynam, N.R. Rear vision system for a vehicle. *US20150077565 (2015)*.
- Namba, Y. Cylindrical printing plate precursor and process for producing same, and cylindrical printing plate and process for making same. *US20150114243 (2015)*.
- Hamada, K. Resin composition for laser engraving, flexographic printing plate precursor for laser engraving and process for producing same, and flexographic printing plate and process for making same. *US20150059605 (2015)*.
- Yasuhara, Y. Relief printing plate precursor for laser engraving and process for producing same, and relief printing plate and process for making same. *US20150059606 (2015)*.
- Hall, M.R., Castel, J.C., Castel, D. Light and/or ultrasonic transducer device with sensor feedback for dose control. *US9061128 (2015)*.

IN-MOLD LABELING & PART DEFECTS

- Suzuki, T., Nakamura, K., Ueda, T. Film and labeled plastic container. *US20150247017 (2015)*.
- Dandl, A. Method for providing a lamination film with adhesive, method for applying hot melt, application, lamination plant and method for upgrading such a plant. *US20150239224 (2015)*.
- Qin, J., Hill, C.R., Michonski, R.D., Wang, Z., Jiang, W., Lalican, M.M. Temperature controlled molding of composite components. *US9156198 (2015)*.
- West, S.R., Tong, T., Kwon, M. Packaging photon building blocks having only top side connections in a molded interconnect structure. *US9130139 (2015)*.

FAILURE MECHANISMS & RELIABILITY ANALYSIS & RF MEMS SWITCHES

- Jahnes, C.V., Stamper, A.K. Micro-electro-mechanical system (MEMS) and related actuator bumps, methods of manufacture and design structures. *US20150054100 (2015)*.
- Ballantyne, W.W., Klomsdorf, A.W., Minasi, D.H., Trocke, R.S. Method and system to improve antenna tuner reliability. *US20150171919 (2015)*.
- Vaganov, V., Belov, N. Method of testing of MEMS devices on a wafer level. *US9034666 (2015)*.
- Vasan, A.S.S., Pecht, M.G., Kluger, A.M. 3D RF MEMS biosensor for multiplexed label free detection. *US9151723 (2015)*.

- Nguyen, C.T.-C., Lin, Y., Li, W.-C., Kim, B. Microelectromechanical system (MEMS) resonant switches and applications for power converters and amplifiers. *US9077060 (2015)*.
- Prammer, M.G. Reliable wired-pipe data transmission system. *US20150204187 (2015)*.

DIELECTRIC CHARGING & RF MEMS SWITCHES

- Molinero-Giles, D., Cunningham, S.J., Dereus, D. Systems, devices, and methods for reducing surface dielectric charging in a RF MEMS actuator element. *WO2015153781 (2015)*.
- Steeneken, P.G., Suy, H., Herfst, R., Van Lippen, T. RF MEMS switch with a grating as middle electrode. *US9070524 (2015)*.
- Ma, Q., Swan, J., Rao, V., Eid, F. Package MEMS switch and method. *WO2015094184 (2015)*.
- Luce, S.E., Stamper, A.K. MEMS switches with reduced switching voltage and methods of manufacture. *US9019049 (2015)*.
- Bhutta, I.A. RF impedance matching network. *US20150200079 (2015)*.

DIELECTRIC CHARGING & RF MEMS SWITCHES & RELIABILITY ANALYSIS

- Barnaby, H.J., Esqueda, I.S. Physics-based reliability model for large-scale CMOS circuit design. *US9032348 (2015)*.
- Jain, A., Alam, M.A., Nair, P.R. Capacitive microelectromechanical switches with dynamic soft-landing. *US9160333 (2015)*.
- Watanabe, K., Atsumi, T. Charge pump circuit and semiconductor device including the same. *US20150054571 (2015)*.
- Partovi, A. Intelligent charging of multiple electric or electronic devices with a multi-dimensional inductive charger. *US9112363 (2015)*.

DIELECTRIC CHARGING & RF MEMS SWITCHES & FAILURE MECHANISMS

- Huff, M.A., Sunal, P. Method and system for integrated MEMS and NEMS using deposited thin films having pre-determined stress states. *US9053929 (2015)*.
- Huffman, J.D., Khieu, C.Q., Van Kampen, R.P., Smayling, K.F., Joshi, V. Internally generated DFT stepped hysteresis sweep for electrostatic MEMS. *WO2015035120 (2015)*.
- Nguyen, C.T.-C., Lin, Y. Micromechanical resonant switches and charge pumps. *WO2015030898 (2015)*.

LIFE CYCLE IMPACT ASSESSMENT & ALLOCATION & BOUNDARY IDENTIFICATION

- Wyatt, T.M., Strazzere, T., Mahaffey, K.P., Swami, Y. Comparing applications and assessing differences. *US20150302182 (2015)*.

2. Duffy, C.J. Method and system for quantitative assessment of visual form discrimination. *US20150011908 (2015)*.
3. Duffy, C.J. Method and system for quantitative assessment of verbal recognition memory. *US20150196243 (2015)*.
4. Skaakrud, O.-P. Methods and apparatus for assessing a current location of a node-enabled logistics receptacle. *US20150154551 (2015)*.

LIFE CYCLE INVENTORY & HYBRID ANALYSIS

1. Johnson, W.J. System and method for location based inventory management. *US9078095 (2015)*.
2. Kates, L. Method and apparatus for monitoring a refrigeration-cycle system. *US9021819 (2015)*.
3. Woolley, R.D. Hybrid molten salt reactor with energetic neutron source. *US20150078504 (2015)*.
4. Friesth, K.L. Quintuple-effect generation multi-cycle hybrid renewable energy system with integrated energy provisioning, storage facilities and amalgamated control system cross-reference to related applications. *US20150143806 (2015)*.
5. Bhardwaj, B. Fully automated dermatoglyphics based multiple intelligence testing process leading to create an emotional social network and better online security and productivity application based integrated life management system. *WO2015118556 (2015)*.

ECONOMIC INPUT-OUTPUT LIFE CYCLE INVENTORY & HYBRID ANALYSIS

1. Mun, J. Qualitative and quantitative modeling of enterprise risk management and risk registers. *WO2015137970 (2015)*.
2. McNamara, M.M., Linton, T.K., Mikhail, N.K. Method and apparatus for managing, displaying, analyzing, coordinating, and optimizing innovation, engineering, manufacturing, and logistics infrastructures. *US20150046363 (2015)*.
3. Wichmann, L.A., Pandey, A.K., Pool, E.T., Raczynski, C.M., Pamujula, S. Methods and systems for enhancing control of power plant generating units. *US20150185716 (2015)*.
4. Peterson, N.J., Deitz, D.L., Wilson, G., Zhou, L., Tanyous, E.S., Worek, C.J., Nixon, M.J. Web services-based communications for use with process control systems. *US9094470 (2015)*.

RELIABILITY DESIGN & MECHANICAL SYSTEMS & REPETITIVE STRESSES

1. Jeon, S.Y., Park, J.M., Yeo, J.Y., Lee, S.E., Jin, P.G., Hyun, E.J. System and method for managing stress. *US20150120205 (2015)*.
2. Karavitis, M. High power femtosecond laser with variable repetition rate. *US20150117480 (2015)*.

3. Prammer, M.G. Reliable downhole data transmission system. *US9133707 (2015)*.
4. Wang, Q., Hess, D.R., Walker, M.J., Doty, H.W., Xiao, B. Product design reliability with consideration of material property changes during service. *US20150213164 (2015)*.
5. Colley, A., Kivelä, K., Koskela, M., Lahtela, M., Nissilä, J. A method and system for measuring stress and recovery. *WO2015101698 (2015)*.
6. Nypl, J., Carroll, J. System and method for mobile and reliable testing, voting, and/or learning. *US20150213722 (2015)*.

RELIABILITY DESIGN & MECHANICAL SYSTEMS & REPETITIVE STRESSES & FAILURE MECHANICS

1. Balandis, A.J., Taft, A.A. Multi function exercise apparatus with resistance mechanism. *US9011301 (2015)*.
2. Chung, S.C. Method and structure for reliable electrical fuse programming. *US20150003142 (2015)*.
3. Schneider, R. Method for designing a traction unit for a rail vehicle. *WO2015128383 (2015)*.
4. Whitney, P.S., Flanders, D.C. Method and system for avoiding package induced failure in swept semiconductor source. *US9048614 (2015)*.

RELIABILITY DESIGN & MECHANICAL SYSTEMS & REPETITIVE STRESSES & ACCELERATION FACTOR

1. Henley, F., Lamm, A., Chow, Y.-L. Substrate cleaving under controlled stress conditions. *US20150155422 (2015)*.
2. Fitzsimmons, J., Kouznetsov, A. Computer assisted ergonomic workstation designs and methods. *WO2015026697 (2015)*.
3. Byun, D.J. Test apparatus and method of accelerated photo-degradation using plasma light source. *US20150017731 (2015)*.

MECHANICAL SYSTEMS & REPETITIVE STRESSES & ACCELERATION FACTOR

1. Davidson, J., Dove, J., Dobler, D. Methods for pre-stressing and capping bioprosthetic tissue. *US9101691 (2015)*.
2. Barger, A.V. Navigation system for viewing an image data-stack in less time with less effort and less repetitive motions. *WO2015073955 (2015)*.
3. Stuart, M.A. Dielectric wall accelerator and applications and methods of use. *WO2015077554 (2015)*.

ELECTRIC-MECHANICAL CONTINUOUSLY VARIABLE TRANSMISSION

1. Hawkins, Jr., G.S., Schoolcraft, B., Raszkowski, J.A., Earhart, D.E., Reichanadter, G. Input clutch assembly

- for infinitely variable transmission. *US20150240925 (2015)*.
2. Scagliarini, M. Ventilation element for a housing containing an electrical, mechanical or electromechanical member. *US20150062940 (2015)*.
 3. Hagelskamp, B. Electro-hydraulic failure recovery control for dual clutch transmission. *US20150300484 (2015)*.
 4. Long, C.F., Weber, D.J. Fast valve actuation system for an automatic transmission. *US20150020633 (2015)*.

ELECTRIC VEHICLE & GLOBAL OPTIMIZATION

1. Engman, J.L., Arvidsson, R. Method for optimizing the power usage of a vehicle. *US20150025727 (2015)*.
2. Preece, A. Optimization of extended range electric vehicle. *US20150134174 (2015)*.
3. Bramson, E.D. Dual motor electric vehicle drive with efficiency-optimized power sharing. *US20150298574 (2015)*.
4. Zhao, Y., Kuang, M.L., Phillips, A.M. Spatial domain optimal electric and hybrid electric vehicle control with path forecasting. *US20150127199 (2015)*.
5. Blandin, S., Boeuf, V. Global positioning system based toll road pricing. *US20150235478*
6. Bauchot, F., Dispensa, J.-C., Drouet, F.-X., Marmigere, G. Generating optimal itineraries based on network connectivity. *US9103677 (2015)*.

ELECTRIC VEHICLE & GLOBAL OPTIMIZATION & TRANSMISSION RATIOS CONTROL

1. Wang, X., Liang, W., Kuang, M.L., Johri, R., Colvin, D.S., Yamazaki, M.S. Step-ratio transmission control for a hybrid vehicle. *US20150283996 (2015)*.
2. Jia, J., Crabtree, J. Comfort-driven optimization of electric grid utilization. *US20150094968 (2015)*.
3. Tseng, C.-Y., Tang, H.-W., Li, B.-P. Power distribution method for electric vehicle driven by two power sources. *US20150057866 (2015)*.
4. Versteyhe, M.R.J., De Mare, A.R.L. Enhanced waste heat recovery system and method allowing global optimal control. *WO2015143280 (2015)*.
5. Bridges, S.W., Pollack, S.B., Lafky, J., Davis, J., Axelrod, Z. Electric vehicle power management systems. *US20150202976 (2015)*.
6. Williams, J.R. System and method for computing slope of a road in an electric vehicle. *US20150266483 (2015)*.

BEARINGS & BOUNDARY FILM & LUBRICATION

1. Kane, D.J. Joint bearing lubricant system. *US9140302 (2015)*.
2. Putnam, D., Tan, M., Samaroo, K.J., Bonassar, L.J. Biomimetic boundary lubricants for articular cartilage. *US20150275118 (2015)*.

3. Fisher, M., Jungk, M., Stammer, A., Stoegbauer, H. Lubricant compositions. *US20150232782 (2015)*.
4. Dayalan, S., John, Z.P., Pithamber, K., Karthikeyan, P., Figura, G., Kolur, M. Turbocharger with lubricant deflector. *US20150176593 (2015)*.
5. Ito, Y., Sugai, Y. Sintered bearing. *US20150285300 (2015)*.

BEARINGS & BOUNDARY SLIPPAGE & LUBRICATION

1. Bednarz, S.M. High-load thrust bearing. *US9004041 (2015)*.
2. Nagamatsu, S., Shindo, Y. Gear having excellent seizing resistance. *US20150038380 (2015)*.
3. Dietle, L., Schroeder, J.E. Low torque hydrodynamic lip geometry for rotary seals. *US9086151 (2015)*.
4. Ito, Y. Medium pressure control device of continuously variable transmission and continuously variable transmission. *US9091344 (2015)*.
5. Hinderks, M.V. Engines and integral engine/ generators. *US20150260095 (2015)*.

BEARINGS & BOUNDARY SLIPPAGE & LUBRICATION & FRICTION COEFFICIENT

1. Schroeder, J.E., Dietle, L.L. Rotary seal with truncated wave form. *US9103445 (2015)*.
2. Aizenberg, J., Aizenberg, M., Kang, S.H., Wong, T.S., Kim, P. Slippery surfaces with high pressure stability, optical transparency, and self-healing characteristics. *US9121307 (2015)*.
3. Rose, J.A., Rose, J.A., Rose, S.D., Cooper, R., Sweda, J.J. Touch sensitive robotic gripper. *US20150019013 (2015)*.
4. Bruce, S. A mixture for a road formation and methods for blending and compaction thereof. *WO2015048838 (2015)*.

BOUNDARY SLIPPAGE & FRICTION COEFFICIENT & LOAD & LUBRICATION

1. Higgins, J., McBroom, J.A. Rotational atherectomy systems and methods with shock absorbing element. *WO2015116618 (2015)*.
2. Okamoto, D. Gear mechanism and manufacturing method of gear mechanism. *US20150082930 (2015)*.
3. Sicilian, J.A. Graphene enhanced elastomeric stator. *WO2015126955 (2015)*.
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COOLING WATER CHANNEL & MOTORIZED SPINDLE

1. Dotan, A., Frumson, T., Angel, A., Books, B., Harpaz, O., Perlberg, G. Fluid powered spindle. *US20150075833 (2015)*.

2. Tang, X. High-speed ball electric spindle. *WO2015074404 (2015)*.
3. Rust, H. Planetary roller extruder with planet spindles and contact ring. *US20150043300 (2015)*.
4. Hunt, C.A. Flood coolant to through spindle coolant conversion. *US20150151402 (2015)*.
5. Shelnutt, A.M., Curlee, J.D. Techniques for controlling vapor pressure in an immersion cooling tank. *US20150060009 (2015)*.
6. Schlak, D.K. Sky condenser with vertical tube compression and pressurized water utilization. *US20150128597 (2015)*.

COOLING WATER CHANNEL & MOTORIZED SPINDLE & OPTIMIZATION DESIGN

1. Shelnutt, A.M., Curlee, J.D., Bailey, E.I., Sekel, J.M., Stuewe, J.R., Mills, R.S. System and method for powering multiple electronic devices operating within an immersion cooling vessel. *US20150070846 (2015)*.
2. Becker, B., Diehl, J., Stroh, C., Zeuke, R. Device for grinding, precision-grinding and/or polishing of workpieces in optical quality, particularly of spherical lens surfaces in precision optics. *US20150258652 (2015)*.
3. Fadell, A.M., Rogers, M.L., Matsuoka, Y., Sloo, D., Honjo, S., McGaraghan, S.A., Plitkins, M., Veron, M., Guenette, I. Routing optimization for package delivery to a smart-home. *US20150120596 (2015)*.
4. Astigarraga, T., Bates, A.K., Bui X.N., Dickens, L.A., Hancock, R.A., Schwartz, S.L., Starling, M.E., Winarski, D.J. Dynamic reconfiguration-switching of windings in an electric motor used as a generator in an electric vehicle. *US9024550 (2015)*.
5. Goldman, J., King, D., Meyer, R., Petty, C., Winslett, B.L., Lee, J. Water vapor management and control methodology system for single and multiple hydrogen fuel cells used for combustion augmentation in internal combustion engines and method. *US20150040843 (2015)*.

MOTORIZED SPINDLE & NOISE & THERMAL FLUIDS DESIGN & VIBRATION

1. Kukacka, D.E., Wobbe, D.G., Langlais, T.E., Robelia, R.D. Spin stand with motor having fluid dynamic bearing. *US9165577 (2015)*.
2. Van Der, W.J.J. Feathering-spindle-bearing lubrication and temperature control. *US9073631 (2015)*.
3. Dougherty, M.D. Spindle motor magnet diameter increase above head plane. *US9007716 (2015)*.

MOTORIZED SPINDLE & NOISE & VIBRATION

1. Nicholls, M.T., Watanabe, T.N.K. Data storage device employing sliding mode control of spindle motor. *US9171567 (2015)*.
2. Lee, M.A. Stator core and spindle motor including the same. *US20150214791 (2015)*.
3. Hur, J., Kim, T. Signal noise rejection. *US20150092288 (2015)*.

HIGH-SPEED PERFORMANCE TEST & OIL PRESSURE

1. Tisone, T.C., Eickhoff, H. Systems and methods for high speed array printing and hybridization. *US20150119296 (2015)*.
2. Sinkhorn, J. Portable high speed balance machine. *US20150128698 (2015)*.
3. Holmes, E.A., Young, D.L., Smith, T., Ridell, S., Frankovich, J.K., Siegel, M. High speed, compact centrifuge for use with small sample volumes. *US20150198465 (2015)*.
4. Romer, M.C., Uptigrove, S.O. High-speed, multi-power submersible pumps and compressors. *US20150114632 (2015)*.

OIL PRESSURE & ROTATION SPEED & TEMPERATURE RISE & VIBRATION

1. Furusho, K., Hiranuma, K., Okada, T., Shizu, Y. Shovel and swiveling speed reducer. *US20150233091 (2015)*.
2. Watanabe, Y., Ohnishi, H. Variable-capacity oil pump and oil supply system using same. *US20150218983 (2015)*.
3. Al Ahmad, T. High range temperature thermal dismantling method in processing oil shale. *WO2015053721 (2015)*.
4. Yamao, T., Katayama, T., Azuma, K. Vibration damping device. *US9051733 (2015)*.

AXIAL PRE-TIGHTENING FORCE & ROTATION SPEED

1. Luo, J., Liu, J. Conical surface friction type overrunning clutch. *US20150204394 (2015)*.
2. Junkers, J.K., Zhang, X., Junkers, E.P. Apparatus for tightening threaded fasteners. *WO2015100115 (2015)*.
3. Li, M., Li, Z. Parts for crankshaft of internal combustion engine or compressor, crankshaft, internal combustion engine and compressor. *US9163658 (2015)*.