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**REFERENCES**

- F. Cavas-Martínez, F. Chaari, F. Gherardini, and Y. W. Kwon, “Lecture Notes in Mechanical Engineering Series Editors.” [Online]. Available: <http://www.springer.com/series/11693>
- A. Waters, “A Novel Universal Corner Module for Urban Electric Vehicles: Design, Prototype, and Experiment.”
- J. Lowry and James. Larminie, *Electric vehicle technology explained*. Wiley, 2012.
- V. Chinubhai Shah and K. Arturas Supervisor, “Designing and Investigating of Electric Tricycle,” 2018.
- A. Ewert, S. Schmid, M. Brost, H. Davies, and L. Vinckx, “Small Electric Vehicles An International View on Light Three-and Four-Wheelers.”
- “Electric and Plug-in Hybrid Vehicle Roadmap,” 2050. [Online]. Available: [www.iea.org/roadmaps](http://www.iea.org/roadmaps)
- P. R. Shukla, S. Dhar, M. Pathak, and K. Bhaskar, “Electric Vehicle Scenarios and a Roadmap for India Working Group III contribution to the IPCC 6th Assessment Report (AR6) View project Linking sectoral and economy-wide models View project,” 2014, doi: 10.13140/2.1.4544.0325.
- “Electric vehicles Setting a course for 2030.”
- P. R. Shukla, S. Dhar, M. Pathak, and K. Bhaskar, “PROMOTING LOW CARBON TRANSPORT IN INDIA Electric Vehicle Scenarios and a Roadmap for India,” 2014.
- K. Sreeram, P. K. Preetha, and P. Poornachandran, “Electric Vehicle Scenario in India: Roadmap, Challenges and Opportunities,” in *Proceedings of 2019 3rd IEEE International Conference on Electrical, Computer and Communication Technologies, ICECCT 2019*, Institute of Electrical and Electronics Engineers Inc., Feb. 2019. doi: 10.1109/ICECCT.2019.8869479.
- K. V. Singh, H. O. Bansal, and D. Singh, “A comprehensive review on hybrid electric vehicles: architectures and components,” *Journal of Modern Transportation*, vol. 27, no. 2. Springer Berlin Heidelberg, pp. 77–107, Jun. 01, 2019. doi: 10.1007/s40534-019-0184-3.

- 
- 
- S. Rokadiya and A. Bandivadekar, “Hybrid and electric vehicles in India: Current scenario and market incentives,” 2016. [Online]. Available: <http://www.theicct.org/sites/default/>
  - I. Husain, “Electric and Hybrid Vehicles: Design Fundamentals.”
  - M. Ehsani, Y. Gao, S. E. Gay, and A. Emadi, “Modern Electric, Hybrid Electric, and Fuel Cell Vehicles: Fundamentals, Theory, and Design.”
  - Z. Q. Zhu and D. Howe, “Electrical machines and drives for electric, hybrid, and fuel cell vehicles,” *Proceedings of the IEEE*, vol. 95, no. 4, pp. 746–765, 2007, doi: 10.1109/JPROC.2006.892482.
  - U. Pollicn, ! Ca, D. E. Caiauj, D. Sánchez-Repila, and J. E. W. Poxon, “hybrid electric vehicles: current concepts and future market trends.”
  - M. Trzesniowski, *Complete vehicle*. Springer Fachmedien Wiesbaden, 2023. doi: 10.1007/978-3-658-39667-1.
  - D. Deb, A. Dixit, and L. Chandra, “Smart Innovation, Systems and Technologies 161 Renewable Energy and Climate Change.” [Online]. Available: <http://www.springer.com/series/8767>
  - M. V. Reddy, B. R. Kumar, P. P. Kumar, Y. V. Vardhan, and A. Ravindra, “Design, analysis and fabrication of effie-cycle: A hybrid tadpole vehicle,” in *AIP Conference Proceedings*, American Institute of Physics Inc., Feb. 2021. doi: 10.1063/5.0036599.
  - A. Zandieh, “Dynamics of a Three-Wheel Vehicle with Tadpole Design.”
  - A. Ranpariya, A. Thattil, S. Vachhani, D. Raval, P. Sharma, and U. G. Students, “Design of the Tadpole Type Three-Wheel Vehicle with Dynamic Conditions,” *International Research Journal of Engineering and Technology*, vol. 9001, 2008, [Online]. Available: [www.irjet.net](http://www.irjet.net)
  - A. Tahjib, H. Tanzin, S. M. I. Rahman, B. S. Islam, and H. Azim, “Development of a Solar Powered Electric Vehicle based on Tadpole Design,” in *International Conference on Robotics, Electrical and Signal Processing Techniques*, 2021, pp. 206–210. doi: 10.1109/ICREST51555.2021.9331052.
  - S. Rokadiya and A. Bandivadekar, “Hybrid and electric vehicles in India: Current scenario and market incentives,” 2016. [Online]. Available: <http://www.theicct.org/sites/default/>

- 
- 
- N. M. Sarode and M. T. Sarode, “Current Scenario of Electric Mobility in India and its Challenges.” [Online]. Available: [www.ijert.org](http://www.ijert.org)
  - S. A. Bagloee, M. Tavana, M. Asadi, and T. Oliver, “Autonomous vehicles: challenges, opportunities, and future implications for transportation policies,” *Journal of Modern Transportation*, vol. 24, no. 4, pp. 284–303, Dec. 2016, doi: 10.1007/s40534-016-0117-3.
  - F. Czerwinski, “Current trends in automotive lightweighting strategies and materials,” *Materials*, vol. 14, no. 21, Nov. 2021, doi: 10.3390/ma14216631.
  - G. Tri Chandrasa, H. Suryoatmojo, and B. Tambunan, “Design and Performance a lightweight Electric Reverse Trike with Multiple Energy Storage.” [Online]. Available: <https://ssrn.com/abstract=4627866>
  - X. Jiang, L. Chen, X. Xu, Y. Cai, Y. Li, and W. Wang, “Analysis and optimization of energy efficiency for an electric vehicle with four independent drive in-wheel motors,” *Advances in Mechanical Engineering*, vol. 10, no. 3, Mar. 2018, doi: 10.1177/1687814018765549.
  - J. Filipe Dias Duque Marques Loureiro, A. Bento Moutinho Luís Alberto Gonçalves de Sousa, P. Jorge Coelho Ramalho Oliveira Supervisor, and L. Alberto Gonçalves de Sousa, “Energy Consumption Estimation in Lap Time Simulation Mechanical Engineering Examination Committee,” 2018.
  - W. Zhang and J. Xu, “Advanced lightweight materials for Automobiles: A review,” *Materials and Design*, vol. 221. Elsevier Ltd, Sep. 01, 2022. doi: 10.1016/j.matdes.2022.110994.
  - R. Pütz and T. Serné, *Race Car Handling Optimization: Magic Numbers to Better Understand a Race Car*. Springer Fachmedien Wiesbaden, 2022. doi: 10.1007/978-3-658-35200-4.
  - “vehicle electrification january 2023.”
  - Sae, “Materials Innovations Guide for Medical Components and Equipment EBOOK Guide to Battery, Electrification, and Mobility Advances.”
  - “Automotive transmissions fundamentals selection design and application”.
  - A. Suvac, L. Cucu, M. Stoica, and M. Savaniu, “Development and optimization of a three-wheeled electric vehicle frame using structural materials,” in *Journal of Physics: Conference Series*, Institute of Physics Publishing, Sep. 2019. doi: 10.1088/1742-6596/1297/1/012021.
- 
-

- 
- 
- A. Suvac, L. Cucu, M. Stoica, and M. Savaniu, “Development and optimization of a three-wheeled electric vehicle frame using structural materials,” in *Journal of Physics: Conference Series*, Institute of Physics Publishing, Sep. 2019. doi: 10.1088/1742-6596/1297/1/012021.
  - D. A. Sumarsono, M. K. Jati, and M. A. Muiz, “Modelling of Tilting and Steering Control System for a Tadpole Three-Wheeled Vehicle,” in *Journal of Physics: Conference Series*, Institute of Physics Publishing, Apr. 2020. doi: 10.1088/1742-6596/1519/1/012008.
  - B. Sunday, U. Thomas, I. S. Ityokumbul, and A. Nasir, “effect of number of passengers [loading] on centre of gravity of a three wheeled vehicle [keke-napep] cg of Four Wheeled Vehicle CG of Three wheeled Vehicle Effects of Loading on CG Static Stability Factor,” vol. 15, no. 3, pp. 628–637, 2019, [Online]. Available: [www.azojete.com.ng](http://www.azojete.com.ng)
  - A. J. Waters and A. Khajepour, “optimization of novel corner module for urban electric vehicle,” 2017. [Online]. Available: <http://www.asme.org/about-asme/terms-of-use>
  - T. Nabil et al., “Design and Fabrication of Prototype Battery Electric Three Wheeled Vehicles,” 2019.
  - O. Ellerstrand and T. E. Kilicasan, “Optimization of Front Suspension Uprights on a Three-wheeled Electric Vehicle Ecoist,” 2017. [Online]. Available: <http://www.mek.lth.se/>
  - S. P. Vijaya Ram, “mass optimization using generative design for rear accessory assembly in a two-wheeler,” *International Journal of Mechanical Engineering*, vol. 6, no. 3, 2021.
  - “Brake Design and Safety Second Edition.” [Online]. Available: [www.sae.org/BOOKSTORE](http://www.sae.org/BOOKSTORE)
  - Karin. Jonasson and Media-tr.), *Analysing hybrid drive system topologies*. Dept. of Industrial Electrical Engineering and Automation, Univ, 2002.
  - L. Shui, F. Chen, A. Garg, X. Peng, N. Bao, and J. Zhang, “Design optimization of battery pack enclosure for electric vehicle,” *Structural and Multidisciplinary Optimization*, vol. 58, no. 1, pp. 331–347, Jul. 2018, doi: 10.1007/s00158-018-1901-y.
  - “The Automotive Chassis.”
- 
-

- 
- 
- B. Heissing and M. Ersoy, *Chassis handbook: fundamentals, driving dynamics, components, mechatronics, perspectives*. Vieweg + Teubner, 2011.
  - S. Luo, “Human Vehicle Dynamics Coupling of Miniature Electric Vehicle Roll Stability: Effects of Driver Weight, Wheel Base and Track Width,” in *Journal of Physics: Conference Series*, IOP Publishing Ltd, Aug. 2021. doi: 10.1088/1742-6596/2002/1/012018.
  - S. A. Sree Ram, P. Raja, and K. Sreedaran, “Optimization of rollover stability for a three-wheeler vehicle,” *Adv Manuf*, vol. 5, no. 3, pp. 279–288, Sep. 2017, doi: 10.1007/s40436-017-0191-8.
  - H. Yim and K. Lee, “Preliminary Modular Design for Electric Personal Mobility with Design-Engineering Collaboration.”
  - M. Ataei, A. Khajepour, and S. Jeon, “Rollover stabilities of three-wheeled vehicles including road configuration effects,” *Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering*, vol. 231, no. 7, pp. 859–871, Jun. 2017, doi: 10.1177/0954407017695007.
  - E. C. Tsirogiannis, G. E. Stavroulakis, and S. S. Makridis, “Electric car chassis for Shell Eco Marathon competition: Design, modelling and finite element analysis,” *World Electric Vehicle Journal*, vol. 10, no. 1, Mar. 2019, doi: 10.3390/wevj10010008.
  - D. Seward, *Race car design*.
  - P. Kale and P. Ardak, “Design, Fabrication of Human-Powered Vehicle,” in *Lecture Notes in Mechanical Engineering*, Springer Science and Business Media Deutschland GmbH, 2021, pp. 593–598. doi: 10.1007/978-981-15-7779-6\_54.
  - M. Lilavois et al., “Human Powered Vehicle Concept Design.”
  - Abhijit M. Mane, Akshay S. Chorge, Akshay Muragode, and Pranesh Bamankar, “Design and fabrication of universal,” *International Engineering Research Journal (IERJ)*, no. Special Issue, pp. 102–104, 2017.
  - S. E. Manios, N. D. Lagaros, and E. Nassiopoulos, “Nested topology optimization methodology for designing two-wheel chassis,” *Front Built Environ*, vol. 5, Jan. 2019, doi: 10.3389/fbuil.2019.00034.

- 
- 
- N. Rohithkumar, R. Tatapudi, D. Danyharsha, D. Yadav, S. Kumar, and M. Engineering, “Optimization of Swingarm Design using Generative Design,” JETIR, 2021. [Online]. Available: [www.jetir.orgf599](http://www.jetir.orgf599)
  - R. Maryniuk, “Development of a Modular Urban Electric Vehicle,” 2017.
  - J. Peng, H. He, and N. Feng, “Simulation research on an electric vehicle chassis system based on a collaborative control system,” *Energies (Basel)*, vol. 6, no. 1, pp. 312–328, 2013, doi: 10.3390/en6010312.
  - “Fundamentals of Vehicle Dynamics”.
  - A. Tarhan, “yaw dynamics control of three wheeled hybrid vehicle by torque vectoring üç tekerli hibrit aracin tork aktarimi ile dogrultu kontrolü.”
  - J. Sangama, K. Belgavi, and M. Dijin Mathew, “DESIGN AND FABRICATION OF TADPOLE MODEL SOLAR POWERED TRICYCLE FOR PHYSICALLY CHALLENGED.”
  - B. Lenzo, “Vehicle Dynamics,” CISM International Centre for Mechanical Sciences, Courses and Lectures, vol. 603. Springer Science and Business Media Deutschland GmbH, pp. v–vi, Nov. 01, 2022. doi: 10.1007/978-3-030-75884-4.
  - B. Sunday, U. Thomas, I. S. Ityokumbul, and A. Nasir, “effect of number of passengers [loading] on centre of gravity of a three wheeled vehicle [kekenapep] cg of four wheeled vehicle cg of Three wheeled Vehicle Effects of Loading on CG Static Stability Factor,” vol. 15, no. 3, pp. 628–637, 2019, [Online]. Available: [www.azojete.com.ng](http://www.azojete.com.ng)
  - “Policy Guidelines for Electric 2-& 3-wheelers for Southeast Asia,” 2020. [Online]. Available: <https://www.un.org/Depts/Cartographic/english/htmain.htm>.
  - M. Palanivendhan, S. Devanand, J. Chandradass, J. Philip, and S. Sajith Reddy, “Design and analysis of 3-wheeler chassis,” in *Materials Today: Proceedings*, Elsevier Ltd, 2021, pp. 6958–6968. doi: 10.1016/j.matpr.2021.01.417.
  - F. Xiong, X. Zou, Z. Zhang, and X. Shi, “A systematic approach for multi-objective lightweight and stiffness optimization of a car body,” *Structural and Multidisciplinary Optimization*, vol. 62, no. 6, pp. 3229–3248, Dec. 2020, doi: 10.1007/s00158-020-02674-5.
- 
-

- 
- 
- D. Zindani, -Saikat Ranjan Maity, and -Sumit Bhowmik, “Excogitating Material Rankings Using Novel Aggregation Multiplicative Rule (AMR): A Case for Material Selection Problems,” *Arab J Sci Eng*, vol. 45, pp. 5631–5646, 2020, doi: 10.1007/513369-020-04495-6.
  - S. Nandhakumar, S. Seenivasan, A. M. Saalih, and M. Saifudheen, “Weight optimization and structural analysis of an electric bus chassis frame,” in *Materials Today: Proceedings*, Elsevier Ltd, 2020, pp. 1824–1827. doi: 10.1016/j.matpr.2020.07.404.
  - M. Musa Nisar, S. Zia, M. Fenoan, and O. Alquabeh, “Generative Design of a Mechanical Pedal Mass optimization using generative design View project,” *Article in International Journal of Engineering and Management Sciences*, 2021, doi: 10.21791/IJEMS.2021.1.5.
  - S. Khan and M. J. Awan, “A generative design technique for exploring shape variations,” *Advanced Engineering Informatics*, vol. 38, pp. 712–724, Oct. 2018, doi: 10.1016/j.aei.2018.10.005.
  - T. Briard, F. Segonds, and N. Zamariola, “G-DfAM: a methodological proposal of generative design for additive manufacturing in the automotive industry,” *International Journal on Interactive Design and Manufacturing*, vol. 14, no. 3, pp. 875–886, Sep. 2020, doi: 10.1007/s12008-020-00669-6.
  - A. T. Mayyas, A. Qattawi, A. R. Mayyas, and M. A. Omar, “Life cycle assessment-based selection for a sustainable lightweight body-in-white design,” *Energy*, vol. 39, no. 1, pp. 412–425, 2012, doi: 10.1016/j.energy.2011.12.033.
  - C. Chatzikomis, A. Sorniotti, P. Gruber, M. Zanchetta, D. Willans, and B. Balcombe, “Comparison of Path Tracking and Torque-Vectoring Controllers for Autonomous Electric Vehicles,” *IEEE Transactions on Intelligent Vehicles*, vol. 3, no. 4, pp. 559–570, Dec. 2018, doi: 10.1109/TIV.2018.2874529.
  - “Creating harmonized standards solutions. Moving the on-and off-road vehicle industry forward. Issue Highlights,” 2010. [Online]. Available: [www.sae.org](http://www.sae.org)
  - “Status quo analysis of various segments of electric mobility and low carbon passenger road transport in India | Foreword by NITI Aayog.”

- 
- 
- S. Mande, Institute of Electrical and Electronics Engineers, International Conference on Technologies for Sustainable Development 1 2015.02.04-06 Mumbai, and ICTSD 1 2015.02.04-06 Mumbai, 2015 International Conference on Technologies for Sustainable Development (ICTSD) 4-6 Feb. 2015, Mumbai, India.
  - D. A. Sumarsono, M. K. Jati, and M. A. Muiz, “Modelling of Tilting and Steering Control System for a Tadpole Three-Wheeled Vehicle,” in *Journal of Physics: Conference Series*, Institute of Physics Publishing, Apr. 2020. doi: 10.1088/1742-6596/1519/1/012008.
  - P. Upadhyay, S. Kumar Sharma, G. Kumar, P. Bansal, and P. Sharma, “Optimization of chassis for a solar powered vehicle,” in *IOP Conference Series: Materials Science and Engineering*, Institute of Physics Publishing, Feb. 2020. doi: 10.1088/1757-899X/748/1/012021.
  - V. Fegade, G. Jadhav, and M. Ramachandran, “Design, Modelling and Analysis of Tilted Human Powered Vehicle,” in *IOP Conference Series: Materials Science and Engineering*, Institute of Physics Publishing, Jul. 2018. doi: 10.1088/1757-899X/377/1/012215.
  - V. Gulati, E. Vikas Gulati, E. Sameer Mehta, A. Kashyap, and K. Pawar, “Design and FEA of a recumbent trike.” [Online]. Available: <https://www.researchgate.net/publication/291440380>
  - J. Prakash Srivastava et al., “Design and Fabrication of Human-Electric Hybrid Power Tri-Cycle,” in *IOP Conference Series: Materials Science and Engineering*, IOP Publishing Ltd, Nov. 2019. doi: 10.1088/1757-899X/653/1/012004.
  - P. Upadhyay, M. Deep, A. Dwivedi, A. Agarwal, P. Bansal, and P. Sharma, “Design and analysis of double wishbone suspension system,” in *IOP Conference Series: Materials Science and Engineering*, Institute of Physics Publishing, Feb. 2020. doi: 10.1088/1757-899X/748/1/012020.
  - B. Siegler, A. Deakin, and D. Crolla, “Lap Time Simulation: Comparison of Steady State, Quasi-Static and Transient Racing Car Cornering Strategies.”
  - Y. Ye, Y. Sun, S. Dongfang, D. Shi, and M. Hecht, “Optimizing wheel profiles and suspensions for railway vehicles operating on specific lines to



- 
- 
- reduce wheel wear: a case study,” *Multibody Syst Dyn*, vol. 51, no. 1, pp. 91–122, Jan. 2021, doi: 10.1007/s11044-020-09722-4.
- T. Wilhelm, V. Dorsch, and F. Gauterin, “Mass data measurement, approximation and influence on vehicle stability for ultra-light human-powered vehicles,” *Applied Sciences (Switzerland)*, vol. 11, no. 12, Jun. 2021, doi: 10.3390/app11125485.
  - O. Ellerstrand and T. E. Kilicasan, “Optimization of Front Suspension Uprights on a Three-wheeled Electric Vehicle Ecoist,” 2017. [Online]. Available: <http://www.mek.lth.se/>
  - S. Wang and D. Wang, “Crashworthiness-based multi-objective integrated optimization of electric vehicle chassis frame,” *Archives of Civil and Mechanical Engineering*, vol. 21, no. 3, Aug. 2021, doi: 10.1007/s43452-021-00242-2.
  - S. Rosenthal, F. Maaß, M. Kamaliev, M. Hahn, S. Gies, and A. E. Tekkaya, “Lightweight in Automotive Components by Forming Technology,” *Automotive Innovation*, vol. 3, no. 3, pp. 195–209, Sep. 2020, doi: 10.1007/s42154-020-00103-3.
  - B. El Elnaghi et al., “Design and Fabrication of Prototype Battery Electric Three Wheeled Vehicles,” 2019. [Online]. Available: <https://www.researchgate.net/publication/335021388>
  - B. Conard, M. Reynolds, and R. Marlee, “Testing of a Human Powered Vehicle.” [Online]. Available: [https://ideaexchange.uakron.edu/honors\\_research\\_projectshttps://ideaexchange.uakron.edu/honors\\_research\\_projects/866](https://ideaexchange.uakron.edu/honors_research_projectshttps://ideaexchange.uakron.edu/honors_research_projects/866)
  - “Testing and Evaluation of a New Multitrack Electric Bicycle—A Comparative Study”.
  - P. Patodi, V. Saxena, and Y. Rathore, “international journal of research in aeronautical and mechanical engineering review on tadpole design-issues & challenges,” *international journal of research in aeronautical and mechanical engineering*, vol. 2, no. 3, pp. 122–128, 2014.
  - T. Varmora, M. Kumar, and S. K. Rajendra, “Design and Optimization of Hybrid Electric Vehicle,” in *Smart Innovation, Systems and Technologies*,

- 
- 
- Springer Science and Business Media Deutschland GmbH, 2020, pp. 199–209. doi: 10.1007/978-981-32-9578-0\_18.
- S. A. Sree Ram, P. Raja, and K. Sreedaran, “Optimization of rollover stability for a three-wheeler vehicle,” *Adv Manuf*, vol. 5, no. 3, pp. 279–288, Sep. 2017, doi: 10.1007/s40436-017-0191-8.
  - K. Srinivas et al., “design, analysis & virtual test run of three wheeler advanced hybrid electric vehicle (efficycle),” 2223. [Online]. Available: [www.irjmets.com](http://www.irjmets.com)
  - I. Journal, “IRJET-A design To Control the Center Of Gravity and Friction of A Tricycle,” *International Research Journal of Engineering and Technology*, 2018, [Online]. Available: [www.irjet.net](http://www.irjet.net)
  - A. Kumar, B. P. Chaturvedi, M. Lal, K. Sri, and N. Singh, “Energy Systems in Electrical Engineering Planning of Hybrid Renewable Energy Systems, Electric Vehicles and Microgrid Modeling, Control and Optimization.” [Online]. Available: <https://link.springer.com/bookseries/13509>
  - P. Serafini, E. Guazzelli, F. G. Rammerstorfer, W. A. Wall, and B. Schrefler, “CISM International Centre for Mechanical Sciences Courses and Lectures Volume 603 Managing Editor Series Editors.” [Online]. Available: <https://link.springer.com/bookseries/76>
  - A. S. Shinde, B. R. Chavan, and S. M. Patankar, “Results: Investigation for Effect of Parameters on Corrugated Wire Mesh Laminates Strength,” *International Advanced Research Journal in Science, Engineering and Technology*, vol. 8, 2021, doi: 10.17148/IARJSET.2021.8656.