## REFERENCES

- 1. Akarte, RR 2004, 'An overview of energy and issues of future', Proceedings of the National Conference on Energy and Fuel Issues of Future, Pune, pp. 150-160.
- 2. Alam, M, Song, KH & Boehman, A 2005, 'Effects of inlet air temperature on performance and emissions of a direct injection diesel engine operated with ultra low sulfur diesel fuel', Proceedings of the International Conference on Mechanical Engineering (ICME2005), Dhaka, pp. 11-16.
- 3. Al-Rousan, AA 2010, 'Reduction of fuel consumption in gasoline engines by introducing HHO gas into intake manifold', International Journal of Hydrogen Energy, vol. 35, no. 23, pp. 12930-12935.
- 4. Altenergy 2014, Kyoto Protocol. Available from: <a href="http://www.altenergymag.com/emagazine/2012/04/green-innovation-%E2%80%93-fukuoka-hydrogen-town/">http://www.altenergymag.com/emagazine/2012/04/green-innovation-%E2%80%93-fukuoka-hydrogen-town/</a> 18 76>. [23 February 2014].
- 5. Amos, WA 2004, 'Biological water-gas shift conversion of carbon monoxide to hydrogen', NREL Technical Report No. NREL/MP-560-35592.
- 6. Amos, WA, Wolfrum, EJ & Watt, AS 2003, 'Biological H<sub>2</sub> production from synthesis gas: Preliminary techno-economics & reactor design issues', NREL Technical Report No. PO-510-34726.
- 7. Andrea, TD 2003, The addition of hydrogen and oxygen to a gasolinefuelled SI engine to enhance combustion and reduce emissions. Ph.D. thesis, University of Windsor.
- 8. Apostolescu, N & Chiriac R 1998, Combustion process in internal combustion engine, Tehnica, Bucharest.
- 9. Asad, U & Wattoo, MA 2003, 'Hydrogen as a fuel supplement in a CNG operated vehicle using a simple onboard hydrogen generation system', Proceedings of the ASME 2003 International Mechanical Engineering Congress and Exposition, Washington, pp. 85-90.
- Atkinson, A, Barnett, S, Gorte, RJ, Irvine, JTS, McEvoy, AJ, Mogensen, M, Singhal, SC & Vohs, J 2004, 'Advanced anodes for high-temperature fuel cells', Nature Materials, vol. 3, no. 1, pp. 17 – 27.

- Bair, KM, Czernik, S, French, R, Parent, Y, Landin, S & Chornet, S 2003, 'Fluidizable Catalysts for Hydrogen Production from Biomass Pyrolysis/Steam Reforming', National Renewable Energy Laboratory, Progress Report No. FY 2003.
- Bair, KM, Czernik, S, French, R, Parent, Y, Ritland, M & Chornet, E 2002, 'Fluidizable catalysts for producing hydrogen by steam reforming biomass pyrolysis liquids', Proceedings of the 2002 U.S. DOE Hydrogen Program Review, Colorado, pp. 1-11.
- 13. Bakar, RA, Ismail, S & Ismail, AR 2008, 'Fuel injection pressure on performance of direct injection diesel engines based on experiment', American Journal of Applied Sciences, vol. 5, no. 3, pp. 197-202.
- Balusamy, T & Marappan, R 2007, 'Performance evaluation of direct injection diesel engine with blends of thevetia peruviana seed oil and diesel', Journal of Scientific & Industrial Research, vol. 66, no. 1, pp. 1035-1040.
- 15. Bari, S & Esmaeil, MM 2010, 'Effect of H<sub>2</sub>/O<sub>2</sub> addition in increasing the thermal efficiency of a diesel engine', Fuel, vol. 89, no. 1, pp. 378-383.
- 16. Batawi, E 1997, High temperature fuel cell, US patent 5691075.
- 17. Bazari, Z & French, B 1993, 'Performance and emissions trade-offs for a HSDI diesel engine an optimization study', SAE Technical Paper No. 930592.
- 18. Billings, R, Hatch, S & DiVacky, R 1983, 'Conversion and testing of hydrogen-powered post office vehicle', International Journal of Hydrogen Energy, vol. 8, no. 11-12, pp. 943- 948.
- 19. Bioenergyconsult 2014, Pyrolysis. Available from: <a href="http://www.bioenergyconsult.com/biomass-pyrolysis/">http://www.bioenergyconsult.com/biomass-pyrolysis/</a>>. [1 March 2014].
- 20. Birtas, A, Voicu, I, Petcu, C, Chiriac, R & Apostolescu, N 2011, 'The effect of HRG gas addition on diesel engine combustion characteristics and exhaust emissions', International Journal of Hydrogen Energy, vol. 36, no. 18, pp. 12007-12014.
- 21. Bruno, LC 1996, Science and technology firsts, Thomson Gale, Detroit.
- 22. Bunes, O & Einang, PM 2000, 'Comparing the performance of the common rail fuel injection system with the traditional injection system using computer aided modelling and simulation', Proceedings of the International Conference on Marine Science and Technology for Environmental Sustainability, Newcastle, pp. 1-10.

- Canada 2005, Canadian Hydrogen Energy. Available from: <a href="http://www.hydrogen-generators-usa.com/support-files/canada\_hydrogen.pdf">http://www.hydrogen-generators-usa.com/support-files/canada\_hydrogen.pdf</a>>. [23 February 2014]
- 25. Cecil, RW 1820, 'On the application of hydrogen gas to produce a moving power in machinery', Transactions of the Cambridge Philosophical Society, vol. 1, no. 2, pp. 217–240.
- 26. Cecrle, E, Depcik, C, Guo, J & Peltier, E 2012, 'Analysis of the effects of reformate (hydrogen/carbon monoxide) as an assistive fuel on the performance and emissions of used canola-oil biodiesel', International Journal of Hydrogen Energy, vol. 37, no. 4, pp. 3510-3527.
- 27. Celikten, I 2003, 'An experimental investigation of the effect of injection pressure on the engine performance and exhaust emission in indirect injection diesel engines', Applied Thermal Engineering, vol. 23, no. 16, pp. 2051-2060.
- Chemtech 2014, Transition to hydrogen economy. Available from: <a href="http://www.chemtech-online.com/CP/K\_Venkataramanan\_dec12.html">http://www.chemtech-online.com/CP/K\_Venkataramanan\_dec12.html</a>>. [23 February 2014].
- 29. Chemwiki 2014, Chlor-alkali electrolysis process. Available from: <a href="http://chemwiki.ucdavis.edu/Analytical\_Chemistry/Electrochemistry/Electrochemistry\_8%3A\_Electrolytic\_cells\_and\_electrolysis>">http://chemwiki.ucdavis.edu/Analytical\_Chemistry/Electrochemistry/Electrochemistry\_8%3A\_Electrolytic\_cells\_and\_electrolysis>">http://chemwiki.ucdavis.edu/Analytical\_Chemistry/Electrochemistry/Electrochemistry/Electrochemistry\_8%3A\_Electrolytic\_cells\_and\_electrolysis>">http://chemwiki.ucdavis.edu/Analytical\_Chemistry/Electrochemistry/Electrochemistry/Electrochemistry\_8%3A\_Electrolytic\_cells\_and\_electrolysis>">http://chemistry/Electrochemistry/Electrochemistry/Electrochemistry\_8%3A\_Electrolytic\_cells\_and\_electrolysis>">http://chemistry/Electrochemistry/Electrochemistry/Electrochemistry\_8%3A\_Electrolytic\_cells\_and\_electrolysis>">http://chemistry/Electrochemistry/Electrochemistry/Electrochemistry\_8%3A\_Electrolytic\_cells\_and\_electrolysis>">http://chemistry\_8%3A\_Electrolytic\_cells\_and\_electrolysis>">http://chemistry\_8%3A\_Electrolytic\_cells\_and\_electrolytic\_cells\_and\_electrolytic\_cells\_analytical\_chemistry\_8%3A\_Electrolytic\_cells\_analytical\_chemistry"</a>
- CHFCA 2012, Canadian Hydrogen and Fuel Cell. Available from: <a href="http://www.chfca.ca/media/CHFCA\_CapabilitiesGuide\_2012\_LR(1).pdf">http://www.chfca.ca/media/CHFCA\_CapabilitiesGuide\_2012\_LR(1).pdf</a>>. [23 February 2014].
- 31. Chiriac, R, Apostolescu, N & Dica, C 2006, 'Effects of gasoline-air enrichment with HRG gas on efficiency and emissions of a SI engine', SAE Technical Paper No. 2006- 01- 3431.
- 32. Cowan, GPM, Rogak, SN, Munshi, SR, Hill, PG & Bushe, WK 2010, 'The influence of fuel composition on a heavy-duty, natural gas direct injection engine', Fuel, vol. 89, no. 3, pp. 752-759.
- 33. Crowther, RC & Crowther, CR 2012, Generic fuel warming device, US Patent 8225772.
- 34. Crypton 2005, Operating & Maintenance Instructions Manual, Crypton, Somerset.

- 35. Das, LM 1996a, 'Hydrogen-oxygen reaction mechanism and its implication to hydrogen engine combustion', International Journal of Hydrogen Energy, vol. 21, no. 8, pp. 703-715.
- 36. Das, LM 1996b, 'On-board hydrogen storage systems for automotive application', International Journal of Hydrogen Energy, vol. 21, no. 9, pp. 789-800.
- 37. Ding, LJ, Qing, LY & Shen, DT 1986, 'Improvement on the combustion of a hydrogen fuelled engine', International Journal of Hydrogen Energy, vol. 11, no. 10, pp. 661- 668.
- DOE 2005, Roadmap on hydrogen economy. Available from: <a href="http://www.hydrogen.energy.gov/pdfs/roadmap\_manufacturing\_hydrogen\_economy.pdf">http://www.hydrogen.energy.gov/pdfs/roadmap\_manufacturing\_hydrogen\_economy.pdf</a>>. [23 February 2014].
- 39. DOE 2014, Hydrogen Program Budget. Available from: <a href="http://www.hydrogen.energy.gov/budget.html">http://www.hydrogen.energy.gov/budget.html</a>>. [23 February 2014].
- 40. Dulger, Z & Ozcelik, KR 2000, 'Fuel economy improvement by on board electrolytic hydrogen production', International Journal of Hydrogen Energy, vol. 25, no. 9, pp. 895-897.
- 41. Duruz & Jacques 1987, Low temperature alumina electrolysis, US Patent 4681671.
- 42. Dutton, K 2006, A brief history of the car, New Ideas, Sydney.
- 43. EAJV 2014, Steam methane reforming process. Available from: <a href="http://www.eajv.ca/english/h2">http://www.eajv.ca/english/h2</a>>. [1 March 2014].
- 44. Eckermann, E 2001, World history of the automobile, Society of Automotive Engineers, Warrendale.
- 45. EIA 2008, 'The Impact of Increased use of hydrogen on petroleum consumption and carbon dioxide emissions', EIA Technical Report No. SR-OIAF-CNEAF.
- 46. ELT 2014, Megawatt hydrogen production by electrolysis. Available from: <a href="http://www.elektrolyse.de/vkp/modules.php?name=Content&pa=show">http://www.elektrolyse.de/vkp/modules.php?name=Content&pa=show</a> page&pid=3>. [1 March 2014].
- 47. Energylibrary 2014, Lenoir. Available from: <a href="http://www.theenergylibrary.com/node/10399">http://www.theenergylibrary.com/node/10399</a>>. [23 February 2014].
- 48. Erren, RA 1932, Improvements in and relating to internal combustion engines using a mixture of hydrogen and oxygen as fuel, GB Patent 364180.

- 49. Erren, RA 1939, Internal combustion engine using hydrogen as fuel, US Patent 2183674.
- 50. Erren, RA & Campbell, WH 1933, 'Hydrogen: A Commercial Fuel for Internal Combustion Engines and Other Purposes', Journal of the Institute of Fuel, vol. 6, no. 1, pp. 277-291.
- 51. European Commission 2006, Contribution of CUTE. Available from: <a href="http://ec.europa.eu/energy/res/fp6\_projects/doc/hydrogen/deliverables/summary.pdf">http://ec.europa.eu/energy/res/fp6\_projects/doc/hydrogen/deliverables/summary.pdf</a>>. [23 February 2014].
- 52. Fang, HR, Sheng, WC, Tsung, LC, Yu, C & Tsuen, HC 2008, 'Driving characteristics of a motorcycle fuelled with hydrogen-rich gas produced by an onboard plasma reformer', International Journal of Hydrogen Energy, vol. 33, no. 24, pp. 7619-7629.
- 53. Fathi, V, Nemati, A, Jafarmadar, S & Khalilarya, S 2011, 'Influence of initial charge conditions on engine performance and emission of a DISI hydrogen-fueled engine under various injection timings', Turkish Journal of Engineering & Environmental Sciences, vol. 35, no. 1, pp. 159-171.
- 54. Feucht, K, Hotzel, G & Hurich, W 1988, 'Perspectives of mobile hydrogen applications', Proceedings of the 7th World Hydrogen Energy Conference, Moscow, pp. 1963-1969.
- 55. Fuelcell 2014, High Temperature Fuel Cells. Available from: <a href="http://www.fuelcelltoday.com/about-fuel-cells/technologies/mcfc">http://www.fuelcelltoday.com/about-fuel-cells/technologies/mcfc</a>>. [1 March 2014].
- 56. Fuelcells 2014, Investment detail. Available from: <a href="http://www.fuelcellin.sider.org/?p=940">http://www.fuelcellin.sider.org/?p=940</a>. [23 February 2014].
- 57. Funk , JE & Reinstrom, RM 1966, 'Energy requirements in production of hydrogen from water', Industrial & Engineering Chemistry Process Design and Development, vol. 5, no. 3, pp. 336–342.
- 58. Furuhama, S & Fukuma, T 1986, 'High output power hydrogen engine with high pressure fuel injection, hot surface ignition and turbocharging', International Journal of Hydrogen Energy, vol. 11, no. 6, pp. 399- 407.
- 59. Furuhama, S 1989, 'Hydrogen engine systems for land vehicles', International Journal of Hydrogen Energy, vol. 14, no. 12, pp. 907- 913.
- 60. Furuhama, S, & Kobayashi, Y 1982, 'A liquid hydrogen car with a twostroke direct injection engine and LH<sub>2</sub>-pump', International Journal of Hydrogen Energy, vol. 7, no. 10, pp. 809- 820.

- 61. Ghazikhani, M & Darbandi, A 2010, 'Experimental study on the injection pressure effect on bsfc and emissions in a turbocharged diesel engine', ICASTOR Journal of Engineering, vol. 3, no. 1, pp. 67-80.
- 62. Ghazikhani, M, Torughi, YK, Tufani, M & Mirzadeh, SI 2007a, 'Experimental investigation on soot reduction in city driving diesel vehicles in comparison with euro II standard', Proceedings of the 5th International Conference on Internal Combustion Engines, Tehran, pp. 135-145.
- 63. Ghazikhani, M, Zangooee, MR & Darbandi, A 2007b, 'Investigation of the effect of injection pressure on engine specific fuel consumption and exhaust emissions in turbocharged diesel engines', Proceedings of the 15th Annual (International) Conference on mechanical engineering-ISME2007, Tehran, pp. 21-30.
- 64. Ghojel, J, Hilliard, J & Levendis, J 1983, 'Effect of oxygen enrichment on the performance and emissions of I.D.I. diesel engines', SAE Technical Paper No. 830245.
- 65. Glasson, ND & Green, RK 1994, 'Performance of a spark- ignition engine fuelled with hydrogen using a high pressure injector', International Journal of Hydrogen Energy, vol. 19, no. 11, pp. 917- 923.
- 66. Greco, EF 2008, Thermal and hydrodynamic interactions between a liquid droplet and a fluid interface. Ph.D. thesis, Georgia Institute of Technology.
- 67. Green, RK & Glasson, ND 1992, 'High- pressure hydrogen injection for internal combustion engines', International Journal of Hydrogen Energy, vol. 17, no. 11, pp. 895-901.
- 68. Greencar 2014, Steam electrolysis process. Available from: <a href="http://www.greencar\_congress.com/2004/11/milestone\_for\_h.html">http://www.greencar\_congress.com/2004/11/milestone\_for\_h.html</a>. [1 March 2014].
- 69. Hedrick, J & Winsor, R 1994, 'Advanced hydrogen utilisation technology demonstration', NREL Technical Paper No. DE9401181.
- 70. Heywood, JB 1988, Internal combustion engine fundamentals, McGraw-Hill, New York.
- 71. Hirschenhofer, JH, Stauffer, BD, Engleman, RR & Klett, MG 2000, Fuel Cell Handbook, US Department of Energy, Orinda.
- 72. Holman, JP 2000, Experimental Methods for Engineers, Tata Mcgraw Hill, New delhi.
- 73. Homan, HS, DeBoer, PCT & McLean, WJ 1983, 'The effect of fuel injection on NOx emissions and undesirable com bustion for hydrogen -

fuelled piston engines', International Journal of Hydrogen Energy, vol. 8, no. 2, pp. 131-146.

- 74. Houseman, J & Hoehn, F 1974, 'A Two-charge engine concept: Hydrogen enrichment', SAE Technical Paper No. 741169.
- 75. Huang, Z, Liu, B, Zeng, K, Huang, Y, Jiang, D, Wang, X & Miao, H 2006, 'Experimental study on engine performance and emissions for an engine fueled with natural gas-hydrogen mixtures', Energy & Fuels, vol. 20, no. 5, pp. 2131-2136.
- Huong, TTT, Hiroshi, E, Motoki, K & Takaaki, S 2010, 'Effect of fuel temperature on spray properties using local-contact microwave-heating injector', Proceedings of the World Automotive Congress, Budapest, pp. 1-7.
- 77. IEA 2006, Hydrogen production and storage. Available from: <a href="http://www.iea.org/publications/freepublications/publication/hydrogen.pdf">http://www.iea.org/publications/freepublications/publication/hydrogen.pdf</a>>. [23 February 2014].
- 78. Ikegami, M, Miwa, K & Shioji, M 1982, 'A study of hydrogen fuelled compression ignition engines', International Journal of Hydrogen Energy, vol. 7, no. 4, pp. 341-353.
- 79. JAEA 2009, Thermo-chemical IS process. Available from: <a href="http://jolisfukyu.tokai-sc.jaea.go.jp/fukyu/mirai-en/2009/7\_8.html">http://jolisfukyu/mirai-en/2009/7\_8.html</a>>. [1 March 2014].
- James, BD, Baum, GN, Perez, J & Baum, KN 2009, Photo-electrochemical (PEC) hydrogen production. Available from: <a href="https://www1.eere.energy">https://www1.eere.energy</a> .gov/hydrogenandfuelcells/pdfs/pec\_technoeconomic\_analysis.pdf>. [1 March 2014].
- 81. Jensen, JW & Dickman, E 2010, Hydrogen production by biological watergas shift reaction using carbon monoxide, International Patent WO 2010056458 A2.
- 82. Ji, C, Wang, S & Zhang, B 2012, 'Performance of a hybrid hydrogengasoline engine under various operating conditions', Applied Energy, vol. 97, no. 1, pp. 584-589.
- 83. Jorach, R, Enderle, C & Decker, R 1997, 'Development of a low-no<sub>x</sub> truck hydrogen engine with high specific power output', International Journal of Hydrogen Energy, vol. 22, no. 4, pp. 423- 427.
- 84. Julien, L 2006, Characteristics of diesel sprays at high temperatures and pressures. Ph.D. thesis, University of Brighton.

- 85. Kalinci, Y, Hepbasli, A & Dincer, I 2009, 'Biomass-based hydrogen production: A review and analysis', International Journal of Hydrogen Energy, vol. 34, no. 21, pp. 8799–8817.
- 86. Kameyama, H, Tomino, Y, Sato, T, Amir, R, Orihara, A, Aihara, M & Yoshida, K 1989, 'Process simulation of "mascot" plant using UT-3 thermochemical cycle for hydrogen production', International Journal of Hydrogen Energy, vol. 14, no. 5, pp. 323-330.
- Karagoz, Y, Orak, E, Sandalci, T & Uluturk, M 2012, 'Effect of H<sub>2</sub>+O<sub>2</sub> gas mixture addition on emissons and performance of an SI engine', International Virtual Journal for Science, Technic and Innovations for Industry, vol. 6, no. 7, pp. 38-42.
- 88. Karimi, K 2007, Characterisation of multiple-injection diesel sprays at elevated pressures and temperatures. Ph.D. thesis, University of Brighton.
- 89. Khatri, KK, Sharma, D, Soni, SL, Kumar, S & Tanwar, D 2010, 'Investigation of optimum fuel injection timing of direct injection CI engine operated on preheated karanj-diesel blend', Jordan Journal of Mechanical and Industrial Engineering, vol. 4, no. 5, pp. 629- 640.
- 90. Kim, J, Kim, Y, Lee, J & Lee, S 1995, 'Performance characteristics of hydrogen fuelled engine with the direct injection and spark ignition system', SAE Technical Paper No. 952498.
- 91. Kirloskar 2014, Diesel engines. Available from: <a href="http://stech">http://stech</a> engg.com/ download/ Catalogue% 20R1040% 20.pdf>. [23 February 2014].
- Kline, SJ & McClintock, FA 1953, 'Describing Uncertainties in Single-Sample Experiments', Journal of Mechanical Engineering, vol. 75, no. 1, pp. 3-8.
- 93. Kubo, S, Nakajima, H, Kasahara, S, Higashi, S, Masaki, T, Abe, H & Onuki, K 2004, 'A demonstration study on a closed-cycle hydrogen production by the thermochemical water-splitting iodine–sulfur process', Nuclear Engineering and Design, vol. 233, no. 1, pp. 347–354.
- 94. Kumar, MS, Ramesh, A & Nagalingam, B 2003, 'Use of hydrogen to enhance the performance of a vegetable oil fuelled compression ignition engine', International Journal of Hydrogen Energy, vol. 28, no. 10, pp. 1143–1154.
- 95. Lata, DB, Misra, A & Medhekar, S 2012, 'Effect of hydrogen and LPG addition on the efficiency and emissions of a dual fuel diesel engine', International Journal of Hydrogen Energy, vol. 37, no., pp. 6084-6096.

- 96. Lead 2014, Lead acid battery. Available from: <a href="http://www.howitworks">http://www.howitworks</a> daily. com/transport/inside-car-batteries/>. [23 February 2014].
- 97. Lee, CS & Park, SW 2002, 'An experimental and numerical study on fuel atomization characteristics of high-pressure diesel injection sprays', Fuel, vol. 81, no. 18, pp. 2417-2423.
- 98. Lee, SJ, Yi, HS & Kim, ES 1995, 'Combustion characteristics of intake port injection type hydrogen fuelled engine', International Journal of Hydrogen Energy, 20, no. 4, pp. 317- 322.
- 99. Leick, P, Riedel, T, Bittlinger, G, Powell, CF, Kastengren, AL & Wang, J 2007, 'X-ray measurements of the mass distribution in the dense primary break-up region of the spray from a standard multi-hole common-rail diesel injection system', Proceedings of the 21st ILASS - Europe Meeting, Mugla, pp. 1-6.
- Lilik, GK, Zhang, H, Herrerosc, JM, Haworth, DC & Boehman, AL 2010, 'Hydrogen assisted diesel combustion', International Journal of Hydrogen Energy, vol. 35, no. 9, pp. 4382–4398.
- 101. Linde 2014, Partial oxidation of coal. Available from: <a href="http://www.linde-engineering.com/en/process\_plants/hydrogen\_and\_synthesis\_gas\_plants/gas\_generation/partial\_oxidation/index.html">http://www.linde-engineering.com/en/process\_plants/hydrogen\_and\_synthesis\_gas\_plants/gas\_generation/partial\_oxidation/index.html</a>>. [1 March 2014].
- 102. Lipman, T 2011, Hydrogen production and storage. Available from: <a href="http://www.cleanenergystates.org/assets/2011-Files/Hydrogen-and-Fuel-Cells/CESA-Lipman-H2-prod-storage-050311.pdf">http://www.cleanenergystates.org/assets/2011-Files/Hydrogen-and-Fuel-Cells/CESA-Lipman-H2-prod-storage-050311.pdf</a>>. [23 February 2014].
- 103. Lodhi, MAK 2004, 'Helio-hydro and helio-thermal production of hydrogen', International Journal of Hydrogen Energy, vol. 29, no. 11, pp. 1099-1113.
- 104. Mahr, W & Gautschi, GH 2012, 'Piezotron transducers How they compare with piezoelectric transducers using charge amplifiers', Kistler Technical Paper no. 20.106e.
- Mangalla, L & Enomoto, H 2013, 'Spray characteristics of local-contact microwave-heating injector fueled with ethanol', SAE Technical Paper No. 2013-32-9126.
- 106. Marban, G & Solis TV 2007, 'Towards the hydrogen economy', International Journal of Hydrogen Energy, vol. 32, no. 12, pp. 1625-1637.
- 107. Masood, M, Mehdi, SN & Reddy, PR 2007, 'Experimental investigations on a hydrogen-diesel dual fuel engine at different compression ratios',

Journal of Engineering for Gas Turbines and Power, vol. 129, no. 2, pp. 572-578.

- 108. Mathur, HB & Das, LM 1991, 'Performance characteristics of a hydrogen fuelled SI engine using timed manifold injection', International Journal of Hydrogen Energy, vol. 16, no. 2, pp. 115- 127.
- 109. Mathur, HB & Khajuria, PR 1984, 'Performance and emission characteristics of hydrogen fuelled spark ignition engine', International Journal of Hydrogen Energy, vol. 9, no. 8, pp. 729-735.
- 110. Maxwell, T, Setty, V, Jones, J & Narayan, R 1993, 'The effect of oxygen enriched air on the performance and emissions of an internal combustion engines', SAE Technical Paper No. 932804.
- 111. McClaine, AW, Breault, RW, Larsen, C, Konduri, R, Rolfe, J, Becker, F & Miskolczy, G 2000, 'Hydrogen transmission/storage with metal hydrideorganic slurry and advanced chemical hydride/hydrogen for PEMFC vehicles', U.S DOE Technical Progress Report No. DE-FC02-97EE50483.
- 112. McWilliam, L 2008, Combined hydrogen diesel combustion: an experimental investigation into effects of hydrogen addition on the exhaust gas emissions, particulate matter size distribution and chemical composition. Ph.D. thesis, Brunel University.
- MFC 2014, Mass flow controller. Available from: <a href="http://www.chromatography-online.org/Chrial-GC/The-Basic-Gas-Chromatograph/Gas-Supplies-1.html">http://www.chromatograph/Gas-Supplies-1.html</a>. [23 February 2014].
- 114. Milen, M & Kiril, B 2004, 'Investigation of the effects of hydrogen addition on performance and exhaust emissions of diesel engine', Proceedings of the world automotive congress, Barcelona, pp, 1-7.
- 115. MNRE 2006, National Hydrogen Energy Road Map. Available from: <a href="https://mnre.gov.in/file-manager/UserFiles/abridged-nherm.pdf">https://mnre.gov.in/file-manager/UserFiles/abridged-nherm.pdf</a>>. [23 February 2014].
- 116. Mohammadi, A, Shioji, M, Ishiyama, T & Kitazaki, M 2005, 'Utilization of low-calorific gaseous fuel in a direct-injection diesel engine', Journal of Engineering for Gas Turbines and Power, vol. 128, no. 4, pp. 915-920.
- 117. Mohammadi, A, Shioji, M, Nakai, Y, Ishikura, W & Tabo, E 2007, 'Performance and combustion characteristics of a direct injection SI hydrogen engine', International Journal of Hydrogen Energy, vol. 32, no. 2, pp. 296-304.

- 118. Mohammed, SEL, Baharom, MB & Aziz, ARA 2011, 'Analysis of engine characteristics and emissions fueled by in-situ mixing of small amount of hydrogen in CNG', International Journal of Hydrogen Energy, vol. 36, no. 6, pp. 4029-4037.
- 119. Momirlan, M & Veziroglu, TN 2002, 'Current status of hydrogen energy', Renewable and Sustainable Energy Reviews, vol. 6, no. 1-2, pp. 141-179.
- 120. Murayama, T 1994, 'Simultaneous reduction of NO<sub>x</sub> and smoke of diesel engines without sacrificing thermal efficiency', JSME International Journal Series B Fluids and Thermal Engineering, vol. 37, no. 1, pp. 1-8.
- 121. Murayama, T, Miyamoto, N & Fukazawa, S 1971, 'An experimental study on the performance of multifuel engine (part 4)', Bulletin of JSME, vol. 14, no. 67, pp. 76-83.
- 122. Musmar, SA & Al-Rousan, AA 2011, 'Effect of HHO gas on combustion emissions in gasoline engines', Fuel, vol. 90, no. 1, pp. 3066–3070.
- Naber, JD & Siebers, DL 1996, 'Effects of gas density and vaporization on penetration and dispersion of diesel sprays', SAE Technical Paper No. 960034.
- Naber, JD & Siebers, DL 1998, 'Hydrogen combustion under diesel engine conditions', International Journal of Hydrogen Energy, vol. 23, no. 5, pp. 363-371.
- 125. NAS/NAE 2004, 'The hydrogen economy: opportunities, costs, barriers, and R&D needs', Technical Report No. DOE GO12114-F.
- 126. Nezhad, MZ, Rowshanzamir, S & Eikani, MH 2009, 'Autothermal reforming of methane to synthesis gas: Modeling and simulation', International Journal of Hydrogen Energy, vol. 34, no. 3, pp. 1292-1300.
- 127. Ng, H, Sekar, R, Kraft, S & Stamper, K 1993, 'The potential benefits of intake air oxygen enrichment in spark ignition engine powered vehicle', SAE Technical Paper No. 932803.
- 128. Niculae, G & Chiriac, R 2013, 'On the possibility to recover the decrease of the spark ignition engines output at liquified petroleum gas fueling', U.P.B. Science Bulletin Series D, vol. 75, no. 3, pp. 97-110.
- 129. Niculae, G, Chiriac, R & Apostolescu, N 2013, 'Effects of HRG gas addition on performance and emissions of a SI engine fuelled with liquefied petroleum gas', Review of Chemistry, vol. 64, no. 6, pp. 574-579.

- 130. Norbeck, J, Heffel, J, Durbin, T, Tabbara, B, Bowden, J & Montano, M 1996, Hydrogen Fuel For Surface Transportation, SAE International, Warrendale.
- 131. Ofner, B, Eisen, S & Mayinger, F 1999, 'Performance of common-railfuel injection systems in DI-diesel-engines', Proceedings of the International Conference on Engineering Thermophysics (ICET 99), Bejing, pp. 1-14.
- Oilsands 2014, Greenhouse gas emissions. Available from: <a href="http://www.oilsandstoday.ca/topics/ghgemissions/Pages/default.aspx">http://www.oilsandstoday.ca/topics/ghgemissions/Pages/default.aspx</a>>. [23 February 2014].
- 133. Ommi, F, Movahednejad, E & Nekofar, K 2008, 'Study of injection parameters on performance and fuel consumption in a port-injected gasoline engine with experimental and theoretical methods', Journal of engineering Annals of the faculty of engineering hunedoara, vol. 6, no. 2, pp. 39-50.
- 134. Overend, E 1999, Hydrogen combustion engines. Ph.D. thesis, University of Edinburgh.
- 135. Palumbo, R, Keunecke, M, Moller, S & Steinfeld, A 2004, 'Reflections on the design of solar thermal chemical reactors: Thoughts in transformation', Energy, vol. 29, no. 5-6, pp. 727-744.
- 136. Park, C, Park, S, Lee, Y, Kim, C, Lee, S & Moriyoshi, Y 2011, 'Performance and emission characteristics of a SI engine fueled by low calorific biogas blended with hydrogen', International Journal of Hydrogen Energy, vol. 36, no. 16, pp. 10080-10088.
- 137. Paykani, R, Saray, K, Koushal, AM & Tabar, MTS 2011, 'Performance and emission characteristics of dual fuel engines at part loads using simultaneous effect of exhaust gas recirculation and pre-heating of in-let air', International Journal of Automotive Engineering, vol. 1, no. 2, pp. 53-67.
- 138. Pham, AQ, See, E, Lenz, D, Martin, P & Glass, R 2002, 'High-efficiency steam electrolyzer', Proceedings of the 2002 U.S. DOE hydrogen program review, Livermore, pp. 1-10.
- Plaksin, VY, Lee, HJ, Riaby, VA, Mok, YS, Lim, SH & Kim, JH 2008, 'Reduction of NOx in diesel engine emissions by using a plasmatron fuel reformer', Korean Journal of Chemical Engineering, vol. 25, no. 1, pp. 84-88.
- 140. Power 2014, Electrolysis process. Available from: <a href="http://www.powersat.com/eNews/eNews001/article\_2.htm">http://www.powersat.com/eNews/eNews001/article\_2.htm</a>>. [23 February 2014].

142. Princeton 2014, Gasification. Available from: <a href="https://www.princeton.edu/~achaney/tmve/wiki100k/docs/William\_Murdoch.html">https://www.princeton.edu/~achaney/tmve/wiki100k/docs/William\_Murdoch.html</a>>. [1 March 2014].

Journal of Hydrogen Energy, vol. 10, no. 6, pp. 389- 397.

141.

- 143. Puhan, S, Jegan, R, Balasubbramanian, K & Nagarajan, G 2009, 'Effect of injection pressure on performance, emission and combustion characteristics of high linolenic linseed oil methyl ester in a DI diesel engine', Renewable Energy, vol. 34, no. 5, pp. 1227-1233.
- 144. Purushothaman, K & Nagarajan, G 2009, 'Effect of injection pressure on heat release rate and emissions in CI engine using orange skin powder diesel solution', Energy Conversion and Management, vol. 50, no. 4, pp. 962-969.
- 145. PWM 2014, Pulse width modulator. Available from: <a href="http://www.pcsilencioso.com/cpemma/pwm.html">http://www.pcsilencioso.com/cpemma/pwm.html</a>>. [23 February 2014].
- 146. Qi, DH, Bian, YZ, Ma, ZY, Zhang, CH & Liu, SQ 2007, 'Combustion and exhaust emission characteristics of a compression ignition engine using liquefied petroleum gas-diesel blended fuel', Journal of Energy Conversion and Management, vol. 48, no. 2, pp. 500-509.
- 147. Rao, GA, Raju, AVSR, Rao, CVM & Rajulu KG 2008, 'Experimental investigation of a single-cylinder, four-stroke diesel engine operating on the dual-fuel mode (LPG + Diesel)', International Journal of Scientific Computing, vol. 2, no. 2, pp. 145-152.
- 148. Rao, GA, Raju, AVSR, Rajulu, KG & Rao, CVM 2011, 'Influence of injection pressure on the performance and emissions of a dual fuel engine', International eJournal of Mathematics and Engineering, vol. 137, no. 1, pp. 1240-1249.
- 149. Rivaz, ID 1807, Explosion engine, French Patent 731.
- 150. Rose, HW 1995, Method and apparatus for enhancing combustion in internal combustion engines, US Patent 5452688.
- 151. Rosseel, E & Sierens, R 1997, 'Knock detection in a hydrogen engine', SAE Technical Paper No. 970039.
- 152. Rowley, GW & Gonzalez, G 2012, Fuel preheater and emission reducing device for diesel and other fuel injected engines, US Patent 20120012085.
- 153. Roy, MM, Tomita, E, Kawahara, N, Harada, Y & Sakane, A 2010, 'An experimental investigation on engine performance and emissions of a

supercharged H<sub>2</sub>-diesel dual-fuel engine', International Journal of Hydrogen Energy, vol. 35, no. 2, pp. 844-853.

- 154. Roy, MM, Tomita, E, Kawahara, N, Harada, Y & Sakane, A 2011, 'Comparison of performance and emissions of a supercharged dual-fuel engine fueled by hydrogen and hydrogen-containing gaseous fuels', International Journal of Hydrogen Energy, vol. 36, no. 12, pp. 7339-7352.
- 155. Rutland CJ & Wang, Y 2006, 'Turbulent liquid spray mixing and combustion fundamental simulations', Journal of Physics: Conference Series, vol. 46, no. 28, pp. 28-37.
- 156. Sahoo, BB, Sahoo, N & Saha, UK 2012, 'Effect of H<sub>2</sub>:CO ratio in syngas on the performance of a dual fuel diesel engine operation', Applied Thermal Engineering, vol. 49, no. 1, pp. 139-146.
- 157. Sankaranarayanan, G & Pugazhvadivu, M 2012, 'Effect of hydrogen enriched air on the performance and emissions of mahua oil fuelled diesel engine', International Journal of Renewable Energy Technology, vol. 3, no. 1, pp.94-106.
- 158. Santilli, RM 2006, 'A new gaseous and combustible form of water', International Journal of Hydrogen Energy, vol. 31, no. 9, pp. 1113–1128.
- 159. Saravanan, N & Nagarajan, G 2009, 'An insight on hydrogen fuel injection techniques with SCR system for NO<sub>X</sub> reduction in a hydrogen-diesel dual fuel engine', International Journal of Hydrogen Energy, vol. 34, no. 21, pp. 9019-9032.
- 160. Saravanan, N, Nagarajan, G, Dhanasekaran, C & Kalaiselvan, KM 2007, 'Experimental investigation of hydrogen port fuel injection in DI diesel engine', International Journal of Hydrogen Energy, vol. 32, no. 16, pp. 4071-4080.
- 161. Saravanan, N, Nagarajan, G, Kalaiselvan, KM & Dhanasekaran, C 2008, 'An experimental investigation on hydrogen as a dual fuel for diesel engine system with exhaust gas recirculation technique', Renewable Energy, vol. 33, no. 3, pp. 422-427.
- 162. Seebeck 2014, Thermocouple. Available from: <a href="http://www.brandigg.de/nach\_name/Seebeck">http://www.brandigg.de/nach\_name/Seebeck</a>>. [23 February 2014].
- 163. SES 2014, Bio-mass gasification. Available from: <a href="http://www.synthesis">http://www.synthesis</a> energy.com/Technology/SES-Gasification-System-9.html>. [1 March 2014].

- 164. Shahad, HAK & Hadi, NA 2011, 'Experimental investigation of the effect of hydrogen blending on the concentration of pollutants emitted from a four stroke diesel engine', Jordan Journal of Mechanical and Industrial Engineering, vol. 5, no. 1, pp. 71-76.
- 165. Shahadat, MMZ, Nabi, MN & Akhter, MS 2005, 'Diesel NO<sub>X</sub> reduction by preheating inlet air', Proceedings of the International Conference on Mechanical Engineering 2005 (ICME2005), Dhaka, pp. 1-6.
- 166. Shepherd, CR 1982, Diesel engine fuel preheating system, US Patent 4343283.
- 167. Shioji, M & Mohammadi, A 2006, 'Effects of hydrogen in low-calorific gases on fuel consumption and emissions in a diesel engine', Asian Journal on Energy and Environment, vol. 7, no. 2, pp. 289-298.
- 168. Shrestha, SB & Karim, G 1999, 'An Investigation of the effects of the addition of dissociated water products to a gas fueled spark ignition engine', SAE Technical Paper No. 1999-01-3516.
- 169. Shrestha, SB, Leblanc, G, Balan, G & Desouza, M 2000, 'A before treatment method for reduction of emissions in diesel engines', SAE Technical Paper No. 2000-01-2791.
- 170. Shudo, T 2005, 'A new equation to describe cooling loss in hydrogen combustion engines which was developed from the equation for turbulent heat transfer of pipe flows', Proceedings of the 6th World Conference on Experimental Heat Transfer, Fluid Mechanics, and Thermodynamics, Matsushima, pp. 10-16.
- 171. Shudo, T 2007, 'Improving thermal efficiency by reducing cooling losses in hydrogen combustion engines', International Journal of Hydrogen Energy, vol. 32, no. 17, pp. 4285-4293.
- 172. Shudo, T, Nabetani, S & Nakajima, Y 2001, 'Analysis of the degree of constant volume and cooling loss in a spark ignition engine fuelled with hydrogen', International Journal of Engine Research, vol. 2, no. 1, pp. 81-92.
- Siebers, DL & Higgins, B 2001, 'Flame lift-off on direct-injection diesel sprays under quiescent conditions', SAE Technical Paper No. 2001-01-0530.
- 174. Siebers, DL & Pickett, LM 2002, 'Injection pressure and orifice diameter effects on soot in di diesel fuel jets', Proceedings of the International Conference Thermo and fluid dynamic processes in Diesel engines 2 (THIESEL 2002), Valencia, pp. 109-132.

- Siebers, DL 1999, 'Scaling liquid-phase fuel penetration in diesel sprays based on mixing-limited vaporization', SAE Technical Paper No. 1999-01-0528.
- 176. Sierens, R & Rosseel, E 1998, 'Backfire mechanism in a carburetted hydrogen fuelled engine', Proceedings of the Twelfth World Hydrogen Energy Conference, Buenos Aires, pp. 1537-1546.
- 177. Sim, KS, Son, YM & Kim, JW 1992, 'Some thermo-chemical cycles composed of copper compounds with three-step reactions', International Journal of Hydrogen Energy, vol. 18, no. 4, pp. 287-290.
- 178. Singh, SP & Malhotra A 2004, Hydrogen enrichment scheme for autothermal reforming, US Patent 6818198.
- 179. Sobiesiak, A, Uykur, C, Ting, D & Henshaw, P 2002, 'Hydrogen/Oxygen additives influence on premixed iso-octane/air flame', SAE Technical Paper No. 2002-01-1710.
- 180. Stebar, R & Parks, F 1974, 'Emission control with lean operation using hydrogen-supplemented fuel,' SAE Technical Paper No. 740187.
- 181. Stegen, JHGV, Veen, AJV, Weerdenburg, H, Hogendoorn, JA & Versteeg, GF 1999, 'Application of the Maxwell-Stefan theory to the transport in ionselective membranes used in the chlor-alkali electrolysis process', Chemical Engineering Science, vol. 54, no. 13-14, pp. 2501-2511.
- 182. Sudheesh, K & Mallikarjuna, JM 2010, 'Effect of cooling water flow direction on performance of an acetylene fuelled HCCI engine', Indian Journal of Engineering & Materials Sciences, vol. 17, no. 2, pp. 79-85.
- 183. Swain, M, Schade, G & Swain, M 1996, 'Design and testing of a dedicated hydrogen-fuelled engine', SAE Technical Paper No. 961077.
- 184. Teledyne Energy Systems 2014, Alkaline electrolysis process. Available from: <a href="http://www.teledynees.com">http://www.teledynees.com</a>>. [1 March 2014].
- Texas 2014, Clean Urban Transport for Europe (CUTE). Available from: <a href="http://www.window.texas.gov/specialrpt/energy/renewable/h2.php">http://www.window.texas.gov/specialrpt/energy/renewable/h2.php</a>>. [23 February 2014].
- Themel, T, Jansons, M, Campbell, S & Rhee, K 1998, 'Diesel engine response to high fuel-injection pressures', SAE Technical Paper No. 982683.
- 187. Tomita, E, Kawahara, N, Hamamoto, Y, Piao, ZY & Fujita, S 2000, 'A Study on hydrogen combustion ignited with light oil in a dual fuel engine',

Proceedings of the 4th JSME-KSME Thermal Engineering Conference, Kobe, pp. 1-7.

- 188. Tomita, E, Kawahara, N, Piao, ZY, Fujita, S & Hamamoto, Y 2001, 'Hydrogen combustion and exhaust emissions ignited with diesel oil in a dual-fuel engine', SAE Technical Paper No. 2001-01-3503.
- 189. Torregrosa, AJ, Olmeda, P, Martín, J & Degraeuwe, B 2006, 'Experiments on the influence of inlet charge and coolant temperature on performance and emissions of a DI Diesel engine', Experimental Thermal and Fluid Science, vol. 30, no. 7, pp. 633-641.
- 190. Turkcan, A & Canakci, M 2011, 'Combustion characteristics of an indirect injection (IDI) diesel engine fueled with ethanol/diesel and methanol/diesel blends at different injection timings', Proceedings of the World Renewable Energy Congress, Sweden, pp. 3565-3572.
- 191. Uykur, C, Henshaw, PF, Ting, DSK & Barron, RM 2001, 'Effects of addition of electrolysis products on methane/air premixed laminar combustion', International Journal of Hydrogen Energy, vol. 26, no. 3, pp. 265-273.
- 192. Vandenborre, H & Sierens, R 1996, 'Greenbus: a hydrogen fuelled city bus', International Journal of Hydrogen Energy, vol. 21, no. 6, pp. 521-524.
- 193. Varde, KS & Frame, GA 1983, 'Hydrogen aspiration in a direct injection type diesel engine-its effects on smoke and other engine performance parameters', International Journal of Hydrogen Energy, vol. 8, no. 7, pp. 549-555.
- 194. Varde, KS & Frame, GA 1984, 'A study of combustion and engine performance using electronic hydrogen fuel injection', International Journal of Hydrogen Energy, vol. 9, no. 4, pp. 327-332.
- 195. Varde, KS & Frame, GA 1985, 'Development of a high- pressure hydrogen injection for SI engine and results of engine behaviour', International Journal of Hydrogen Energy, vol. 10, no. 11, pp. 743- 748.
- 196. Verne, J 1874, The Mysterious Island, Hetzel, Paris.
- 197. Wallner, T, Ng, HK & Peters, RW 2007, 'The effects of blending hydrogen with methane on engine operation, efficiency, and emissions', SAE Technical Paper No. 2007-01-0474.

- 198. Wang, HK, Cheng, CY, Chen, KS, Lin, YC & Chen, CB 2012a, 'Effect of regulated harmful matters from a heavy-duty diesel engine by  $H_2/O_2$  addition to the combustion chamber', Fuel, vol. 93, no. 1, pp. 524-527.
- 199. Wang, HK, Cheng, CY, Lin, YC & Chen, KS 2012b, 'Emission reductions of air pollutants from a heavy-duty diesel engine mixed with various amounts of H<sub>2</sub>/O<sub>2</sub>', International Journal of Aerosol and Air Quality Research, vol. 12, no. 1, pp. 133-140.
- 200. Wang, S, Ji, C, Zhang, J & Zhang, B 2011, 'Comparison of the performance of a spark-ignited gasoline engine blended with hydrogen and hydrogen-oxygen mixtures', Energy, vol. 36, no. 10, pp. 5832-5837.
- 201. Wang, X, Huang, Z, Zhang, W, Kuti, OA & Nishida, K 2011, 'Effects of ultra-high injection pressure and micro-hole nozzle on flame structure and soot formation of impinging diesel spray', Applied Energy, vol. 88, no. 5, pp. 1620-1628.
- 202. Wartinbee, W 1971, 'Emissions study of oxygen enriched air', SAE Technical Paper No. 710606.
- 203. Welch, A & Wallace, J 1990, 'Performance characteristics of a hydrogenfueled diesel engine with ignition assist', SAE Technical Paper No. 902070.
- 204. Wilhelm, E & Fowler, M 2006, 'A Technical and economic review of solar hydrogen production technologies', Bulletin of Science Technology & Society, vol. 26, no. 4, pp. 278-287.
- 205. Wong, J 1990, 'Compression ignition of hydrogen in a direct injection diesel engine modified to operate as a low-heat-rejection engine', International Journal of Hydrogen Energy, vol. 15, no. 7, pp. 507- 514.
- 206. Wood, BC, Ogitsu, T & Schwegler, E 2011, 'Ab initio modeling of watersemiconductor interfaces for photocatalytic water splitting: role of surface oxygen and hydroxyl', Journal of Photonics for Energy, vol. 1, no. 1, pp. 16-22.
- 207. Yi, HS, Lee, SJ & Kim, ES 1996, 'Performance evaluation and emission characteristics of in-cylinder injection type hydrogen fuelled engine', International Journal of Hydrogen Energy, vol. 21, no. 7, pp. 617- 624.
- 208. Yilmaz, AC, Uludamar, E & Aydin, K 2010, 'Effect of hydroxy (HHO) gas addition on performance and exhaust emissions in compression ignition engines', International Journal of Hydrogen Energy, vol. 35, no. 20, pp. 11366-11372.

- 209. Zeman, H, Url, M & Hofbauer, H 2011, 'Autothermal reforming of hydrocarbon fuels', Proceedings of the Tenth International Conference on Chemical & Process Engineering (ICheaP-10), Florence, pp. 1-6.
- 210. Zhou, JH, Cheung, CS & Leung, CW 2013, 'Combustion and emission of a compression ignition engine fueled with diesel and hydrogen-methane mixture', International Journal of Mechanical, Industrial Science and Engineering, vol. 7, no. 8, pp. 54-59.
- 211. Zoulias, E, Varkaraki, E, Lymberopoulos, N, Christodoulou, CN & Karagiorgis, GN 2004, 'A Review on water electrolysis', Cyprus Journal of Science and Technology, vol. 4, no. 2, pp. 41-71.