

## Waste plastics to fuel

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Day by day, in every sector, plastics use is increasing all over the world. After plastic is used, it becomes waste plastic trash. Every year, 280 million tons of waste plastic is generated worldwide. Waste plastic is creating environmental problem all over the world. Major problem is green house gas (GHG) emission released waste plastics recycling process. 5 kg - 600 kg of CO<sub>2</sub> is produced from 1 ton of waste plastic recycling period, based on treatment process. Waste plastics are not biodegradable; they can remain for long time in environment producing methane, ethane, propane and butane gas. To avoid environmental problems of waste plastics, some countries and big cities banned or restricted the use of plastic products. Thermal cracking of waste plastics converts into useful liquid hydrocarbon fuel and fuel energy. The NSR has invented a technology which can remove all types of waste plastics from landfill and save environment. The developed technology will minimize the environment pollution problems and simultaneously boost up energy sector by renovating the waste plastics into high energy content fuel.

### Biography

Moinuddin Sarker, Ph.D., MCIC, FICER, has been working as the vice president (VP) of research and development and Head of Science Team (VP and CTO), at the Natural State Research (NSR), Inc at Stamford, CT and the inventor of NSR's award winning technology to convert municipal waste plastics into liquid hydrocarbon fuel. He has an M.Sc. (1992) and Ph.D. degrees in Chemistry from University of Manchester, Institute of Science and Technology (UMIST), Manchester, UK (1996). He has more than 22 years of professional research experience in different universities and research organizations all over the world including the US, Canada, the Netherlands, Germany, Taiwan, Bangladesh and the UK. During his research work, he carried out research in four different synchrotron radiation sources around the world: CRCL lab. Daresbury, Warrington, Cheshire, UK (1991-1996), Synchrotron Radiation Research Center (SRRC), Hsinchu, Taiwan, R.O.C (1996-1999), Berlin Electron Storage Ring Company for Synchrotron Radiation (BESSY II) (2000) and Advance Photon Sources (APS), Chicago, USA (2001-2004). He has three patents pending and 95 research publications to his credit in peer reviewed journals and conferences. He is a distinguished member of 30 professional organizations such as American Association of Naval Engineer (ASNE), Association of Consumer Growth (ACG), Society of Automobile International (SAE), American Chemical Society (ACS), American Physical Society (APS), American Institute of Chemical Engineering (AIChE), International Union of Pure and Applied Chemistry (IUPAC), Canadian Society for Chemistry (CSC), Chemical Institute of Canada (CIC), Canada and many more. He has been invited speaker at various conferences in the USA and world. Dr. Sarker is the inventor of the technology and product entitles: "Method for converting waste plastics to lower-molecular weight hydrocarbons, particularly hydrocarbon fuel materials and the hydrocarbon material produced thereby" (US and International patent pending). In 2010, he has received, the International Renewable Energy Innovator of the year award 2010 at Washington DC presented by Association of Energy Engineers (AEE), USA.

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## Transient temperature distribution on gas metal arc welded plate caused by moving tilted volumetric heat source

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In this paper, an attempt was made to find out the distribution of the transient temperature on gas metal arc welded plate which was caused by moving electrode having positive travel angle and heat loss through the convection and the heat flow from the liquid electrode material. It was assumed that the shape of heat source is ellipsoidal. The heat density is distributed on the welded plate through Gaussian manner. The travel angle is 35°. An analytical solution of the temperature field on welded plate is presented which was intuitive from the solution of general heat conduction equation. Finally, the measured temperature field was in accordance with the predicted data.

### Biography

N. K. Singh has completed his Ph.D. at the age of 38 from Jadavpur University, Kolkata, India. He is presently Associate Professor (Workshop) and sectional head of the Central Workshop under the Department of Mechanical Engineering and Mining Machinery Engineering, Indian School of Mines, Dhanbad, India, a reputed academic institution in the fields of Engineering, Mining and Applied Sciences. He has published more than 20 papers in reputed national and international journals as well as national conference proceedings. He is member of various national professional societies.

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