

# MAHE and GHCL Limited Collaborate to Develop AI-Enabled Real-Time Fuel Quality Monitoring Solution

Category: Business

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**Manipal Academy of Higher Education (MAHE)**, an Institution of Eminence Deemed to be University, has signed a Memorandum of Understanding (MoU) with GHCL Limited, one of India's leading chemical companies, to develop a Laser-Induced Breakdown Spectroscopy (LIBS)-based solution for real-time monitoring of the Gross Calorific Value (GCV) of carbon-based fuels. Mr Sanjay Gupta, Vice President (Commercial) at GHCL, participated in the discussions with the MAHE team and exchanged the signed MoU with Dr P. Giridhar Kini, Registrar of MAHE.



**MAHE and GHCL Limited exchanged an MoU to collaborate on developing a LIBS-based solution for real-time monitoring of the GCV of carbon-based fuels**

The collaboration combines cutting-edge spectroscopy with artificial intelligence and machine learning to deliver a rapid, on-site fuel quality assessment system. The initiative seeks to bridge the gap between laboratory research and industrial applications by replacing conventional, time-intensive fuel-testing methods with a data-driven solution that enables proactive operational decision-making.

As one of India's leading chemical manufacturing companies, GHCL relies extensively on carbon-based fuels for energy generation and process heating requirements. Recognising the critical role of fuel quality in operational efficiency and

cost competitiveness, GHCL is working towards strengthening its fuel quality assurance through faster and more reliable real-time monitoring systems.

Carbon-based fuels account for a significant share of operational costs in energy-intensive industries. Conventional quality verification relies on laboratory analysis, often resulting in delays that limit timely corrective action. Through this partnership, GHCL Limited and MAHE, Manipal Institute of Applied Physics (MIAP), aim to develop an intelligent monitoring system capable of providing immediate insights into fuel quality at the point of receipt, thereby improving operational efficiency, enhancing quality assurance, and optimising fuel utilisation.

Speaking on the collaboration, **Mr Mayuresh Hede, Operations Head, Sutrapada Plant, GHCL Limited**, said, *"This partnership reflects GHCL's commitment to adopting advanced technologies that improve operational excellence and sustainability. By integrating real-time analytics into fuel quality management, we aim to strengthen process efficiency while reducing uncertainties associated with conventional testing methods. We believe this initiative has the potential to set new benchmarks for quality assurance in industrial operations."*

Commenting on the collaboration, **Dr Sharath K. Rao, Vice Chancellor, MAHE**, said, *"This project exemplifies how academic research can directly address complex industrial challenges. By combining LIBS technology with artificial intelligence and machine learning, we are developing an innovative solution with significant scientific and commercial potential. The collaboration also provides an excellent platform for translational research that can benefit multiple energy-*

*intensive sectors.”*

The project is being led on behalf of MAHE by Dr Unnikrishnan V. K. from the Manipal Institute of Applied Physics as the Principal Investigator, and Prof. Karunakar Kotegar, Pro Vice Chancellor – Technology and Science, assured full support from MAHE. Also present during the event were Dr Sajan Daniel George, Director of Manipal Institute of Applied Physics and Dr Harishkumar, Director, Corporate Relations, MAHE

Additionally, the collaboration aims to generate intellectual property and develop scalable technology solutions with commercial potential. Upon successful implementation, the LIBS-based monitoring system could serve as a replicable model for industries that rely on carbon-based fuels, thereby strengthening the innovation ecosystem and demonstrating the value of industry-academia partnerships.

### **About Manipal Academy of Higher Education**

Manipal Academy of Higher Education (MAHE) is an Institution of Eminence Deemed to be University. MAHE offers over 400 specialisations across the Health Sciences (HS), Management, Law, Humanities & Social Sciences (MLHS), and Technology & Science (T&S) streams through its constituent units at campuses in Manipal, Mangalore, Bengaluru, Jamshedpur, and Dubai. With a remarkable track record in academics, state-of-the-art infrastructure, and significant contributions to research, MAHE has earned recognition and acclaim both nationally and internationally. In 2020, the Ministry of Education, Government of India, awarded MAHE the prestigious Institution of Eminence status. Currently ranked 3rd in the National Institutional Ranking Framework (NIRF) 2025 rankings,

MAHE is the preferred choice for students seeking a transformative learning experience and enriching campus life, as well as for national and multinational corporations seeking top talent.

## **About GHCL**

GHCL Limited is the largest manufacturer of soda ash at a single location in the country. Soda Ash (Anhydrous Sodium Carbonate) is a major raw material for the detergent & glass industries and Sodium Bicarbonate (baking soda). It is an important raw material for solar glass and lithium batteries as well. The company has a state-of-the-art manufacturing plant of soda ash at Sutrapada, Gujarat with an installed production capacity of 1.2 million tons per annum. Sustainability is a core element of business strategy as defined by the 'GHCL Way' with its four pillars, i.e. Responsible Stewardship, Social Inclusiveness, promoting relationships and adding value. GHCL Limited remains committed to working closely with stakeholders for promoting the agenda of sustainability underpinning on the core values of Respect, Trust, Ownership and Integrated Teamwork.

