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National Chemical Laboratory sets up pilot plant to produce clean fuel that can replace diesel

The pilot plant has been set up under the mission project, 'Catalysis for Sustainable Development', in which NCL scientists have developed indigenous process to create DME from methanol dehydration.

By: [Express News Service](#) | Pune | Updated: September 17, 2019 9:20:17 am



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Dr Harsh Vardhan, Union Minister for Science & Technology, inaugurated the pilot plant at CSIR-NCL in Pune.

City-based National Chemical Laboratory (NCL) has become the first among Council of Scientific and Industrial Research (CSIR) laboratories in the country to set up a pilot plant to produce Dimethyl ether (DME), a clean fuel with potential to replace diesel.

The development comes at a time when the Department of Science and Technology (DST) plans to launch five mission projects in areas, including electric mobility, methanol, research in quantum and Artificial Intelligence (AI), and digital mapping.

According to the DST, this is among the many upcoming projects aimed at establishing a methanol-based economy in the country, by making use of various sources. The DST, in an announcement in New Delhi on Sunday, stated that to boost the use of alternate fuel, the central government envisages to establish Centres of Excellence at various places, where research and development works on methanol and DME will be carried out. A range of solid fuels, biodegradable products including crop residue are presently being considered under this methanol scheme.

The pilot plant has been set up under the mission project, 'Catalysis for Sustainable Development', in which NCL scientists have developed indigenous process to create

DME from methanol dehydration.

“This facility, in a miniature form, can be set up onboard ships. This can be s **LIVE UPDATES**
the Sagarmala programme that aims at reducing the costs of transportation, **India vs New**
an official working on the project.



Scientists argue that burning of clean fuel can help control the pollution levels, thereby contributing towards protecting the environment. An official said, “The DME also can be used in place of diesel in large bore engines, without the need to modify any of the engine design.”

Work at the pilot plant, inaugurated by Dr Harsh Vardhan, Union Minister for Science and Technology, will be jointly carried out with SignAssure Services (India) Limited. “Work to scale-up the technology will be taken up and it is expected to be completed in next one year,” said the minister.

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Pune: Union minister Harsh Vardhan to inaugurate facilities at NCL on Monday

TNN | Sep 8, 2019, 03.00 PM IST



PUNE: Union minister of science and technology and earth sciences Harsh Vardhan will inaugurate various facilities at the CSIR-National Chemical Laboratory (CSIR-NCL) in Pune on September 9.

During the visit, the minister will address the NCL staff and scientists. He will visit the crucial facilities in pilot plant III and IV.

“The minister will inaugurate the Dimethyl Ether (DME) pilot plant under mission project “catalysis for sustainable development,” an NCL release stated.

The minister will also visit the recently-developed pilot facility for process intensification, process scale-up studies and demonstrations for various internal and industrial projects.

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Union minister Harsh Vardhan inaugurates DME fuel plant at NCL, Pune

[CITIES](#) Updated: Sep 09, 2019 19:35 IST

 HT Correspondent



Pune Harsh Vardhan, Union Minister for Health and Family Welfare, Science and Technology, and Earth Sciences, inaugurated a dimethyl ether (DME) pilot plant under the mission project 'Catalysis for Sustainable Development', at the Council of Scientific and Industrial Research-National Chemical Laboratory (CSIR-NCL) on Monday.

DME will be a non-fossil additive to the liquified petroleum gas (LPG) used for cooking. The DME project is aimed at helping in the Prime Minister Ujjwala Yojana, that provides cooking gas to the marginalised, by reducing import. DME can be blended with LPG upto maximum of 20%, according to NCL officials.

The DME pilot plant mission project catalysts for sustainable development was a result of the decisions made through the 2015 Dehradun declaration, according to Ashwini Kumar Nangia, Director of CSIR-NCL.

"In the Dehradun Declaration that was made in May-June 2015, we had decided specifics of concrete developments so that our research and technology does not remain inside laboratories. We vowed to take these inventions to the industry and through the industry to

the people," said Vardhan.

Union minister Harsh Vardhan inaugurates DME fuel plant at



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including game-changing technologies. Each laboratory would also develop at least one technology in strategic sector for India. The two days of 'Chintan Shivir' held on June 12 and 13, 2015 concluded with all CSIR labs agreeing to make efforts to be self-financing in next 2 years," read a 2015 statement by the Ministry of Science and Technology.

The decision to leave the CSIR labs to fend for themselves for two years after the Dehradun declaration had drawn flak for Vardhan.

When asked about the funding available for research projects, the minister said, "If you compare the past four years and the four-five years before that, you will see some 90% change in DST (drug susceptibility testing), biotechnology has seen 65%, CSIR has also seen a 45% rise in funding. Plus, they also have self-creation of funds."

He further added, "In government, there is never a problem of money. There has to be a programme ambitious enough for the money. If there is a project, there's always money."

CSIR-NCL has applied for three patents related to the project which will help them make money out of the project. The DME project has five industrial partner organisations attached to it. The five organisations include three government companies including Rashtriya Chemicals and Fertilizers Limited (PSU - Mini-Ratna), Engineers India Limited (PSU) - Navratna company and Automotive Research Association of India (ARAI), Pune. The two private players include SignAssure-Deepak Group which is a privately owned methanol producer and Kirloskar Oil Engines Limited, Pune.

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NCL sets up pilot plant to produce clean fuel DME

娟 [Prakati \(http://www.prakati.in/author/jaideep/\)](http://www.prakati.in/author/jaideep/)

伺 [September 18, 2019 \(http://www.prakati.in/ncl-sets-up-pilot-plant-to-produce-clean-fuel-dme/\)](http://www.prakati.in/ncl-sets-up-pilot-plant-to-produce-clean-fuel-dme/)



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National Chemical Laboratories (NCL) has set up a pilot plant, under the mission project, 'Catalysis for [Sustainable Development \(http://www.prakati.in/sustainable/economy/\)](http://www.prakati.in/sustainable/economy/)', in which NCL scientists have developed indigenous process to create DME from methanol dehydration.

Pune based NCL has become the first among Council of Scientific and Industrial Research (CSIR) laboratories in the country to set up a pilot plant to produce Dimethyl ether (DME), a clean fuel **with potential to replace diesel**.

The development comes at a time when the Department of Science and Technology (DST) plans to launch five mission projects in areas, including electric mobility, methanol, research in quantum and Artificial Intelligence (AI), and digital mapping.

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The pilot plant has been set up under the mission project, 'Catalysis for Sustainable Development', in which NCL scientists have developed indigenous process to create DME from methanol dehydration.

"This facility, in a miniature form, can be set up onboard ships. This can best suit the Sagarmala programme that aims at reducing the costs of transportation," said an official working on the project.

Scientists argue that burning of clean fuel can help control the pollution levels, thereby contributing towards protecting the environment. An official said, "The DME also can be used in place of diesel in large bore engines, without the need to modify any of the engine design."

Work at the pilot plant, inaugurated by Dr Harsh Vardhan, Union Minister for Science and Technology, will be jointly carried out with SignAssure Services (India) Limited. "Work to scale-up the technology will be taken up and it is expected to be completed in next one year," said the minister.

[Article Originally published in The Indian Express](#)

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'Laboratories should play a pro-active role'

ST CORRESPONDENT | Tuesday, 10 September 2019



“

Dr Harsh Vardhan further said, "Various laboratories in the country have been given targets up to 2022 when we will celebrate the Platinum Jubilee year of Independence. The labs need to identify problems which have been pestering the society and find the solution."

”

PUNE: Minister of Science and Technology Dr Harsh Vardhan while speaking at the inauguration of various facilities at Council of Scientific and Industrial Research-National Chemical Laboratory (CSIR-NCL) on Monday said, "Laboratories across the country should play a pro-active role and come up with a solution to various societal problems. I have hopes that science can solve the majority of the problems."

He quoted an example of Dehradun Declaration wherein the petroleum laboratory created its own mechanism by collecting the plastic from the city and converting it into diesel.

Dr Harsh Vardhan further said, "Various laboratories in the country have been given targets up to 2022 when we will celebrate the Platinum Jubilee year of Independence. The labs need to identify problems which have been pestering the society and find the solution."

He also said that the government has no dearth of funds. "The laboratories should submit a project and funds will be provided for it. We provide funds to the start-ups right from seeding until it becomes the entrepreneur."

"Until now, the laboratories in the country were not aware of each other's work areas and expertise, but now, these labs are working in coordination. They are in-sync and thus know what is going on where," he added.

Shekhar Mande, Director-General of CSIR, NCL Director Ashwini Kumar Nangai were also present. Harsh Vardhan visited the key facilities in pilot plant II and IV, native forest, an ecological experiment to replicate the semi-evergreen forests of the Western Ghats.

Inauguration of DME pilot plant

Harsh Vardhan also inaugurated the DME pilot plant under mission project 'Catalysis for Sustainable Development'. CSIR-NCL has developed indigenous process technology for the production of dimethyl ether (DME) from methanol dehydration. DME is a globally approved alternative ultra-clean fuel to diesel. It performs better than known commercialised processes at lab scale level. Catalyst and process cost is

economically comparable with the available processes.

DME can be blended with LPG of up to 20%. It is expected to contribute very significantly to PM's Ujjwala Yojana scheme in reducing LPG imports. An MoU will be signed with SignAssure Services (India) Limited to handover the CSIR-NCL Catalyst and Process for DME.

Visit to CEPD

Further, the Union minister Harsh Vardhan visited a recently developed pilot facility at CEPD for process intensification, process scale-up studies and demonstration for various internal and industrial projects.

The facility comprised skid-mounted continuous reactors setups and multipurpose distillation columns. The pilot plant has been designed and developed as modular units having the multipurpose facility while keeping in mind specific products such as paracetamol, ibuprofen and other drugs which can be extended to industrially important hazardous reactions such as nitration, oxidation, hydrogenation, alkylation, esterification and carbonylation etc. Demonstration of eco-friendly immersion of POP Ganesh idol, shudh jal plant, fuel cell were also exhibited.

Inauguration of Venture Centre

Dr Harsh Vardhan visited CSIR-NCL's technology business incubator Venture Center and inaugurated the new MedTech clean room facility and the loan license facility for its start-ups working on clinical trial samples.

This facility is 'first-of-its-kind in India' cleanroom facility designed for the manufacture of medical devices and diagnostics for testing and clinical study purposes. Dr Harsh Vardhan also inaugurated the new guest house building of CSIR-NCL covering a built-up area of 9,575 square feet which includes 17 rooms on two floors.

Tags

डिझेल, गॅससाठी नवे सहयोगी इंधन

‘डायमिथिल इथर’ची ‘एनसीएल’मध्ये निर्मिती

सम्राट कदम :

@namastesamrat



डॉ. टी. राजा

पुणे, ता. १३ : मानवाची ऊर्जेची गरज भागविण्यासाठी संपूर्ण जग स्वच्छ इंधनाचा पर्याय शोधत आहे. असे असतानाच पारंपरिक ऊर्जा स्रोत असलेल्या डिझेल आणि स्वयंपाकाच्या गॅससाठी (एलपीजी) सहयोगी इंधन म्हणून ‘डायमिथिल इथर’ची (डीएमई) निर्मिती करण्यात राष्ट्रीय रासायनिक प्रयोगशाळेतील (एनसीएल) संशोधकांना यश आले आहे. ‘एनसीएल’मधील उत्प्रेरक विभागातील शास्त्रज्ञ डॉ. टी. राजा यांच्या नेतृत्वाखालील संशोधकांच्या चमूने ही कामगिरी केली आहे.

स्वच्छ आणि प्रदूषण न करणारे

इंधन म्हणून ‘डायमिथिल इथर’ ओळखले जाते. डिझेलमध्ये ४० टक्के आणि स्वयंपाकगृहातील गॅसमध्ये २० टक्के ‘डायमिथिल इथर’ वापरता येऊ शकतो. यामुळे इंधनाची २० टक्के बचत होईल आणि त्याचबरोबर २० टक्के कार्बन उत्सर्जनाला आळा बसेल, अशी माहिती डॉ. राजा यांनी दिली. ते म्हणाले, “चीनपेक्षाही जास्त म्हणजे २.३ दशलक्ष टन ‘एलपीजी’ आपण आयात करतो. यामुळे देशाचा पैसा बाहेर जातो आणि त्याचबरोबर इंधनाच्या बाबतीत आपली स्वयंपूर्णता नष्ट होते. याला पर्याय म्हणून यापैकी २० टक्के इंधन देशातच तयार करण्यासाठी पान ८ वर »



व्हिडिओ पाहा



डायमिथिल इथरची वैशिष्ट्ये

- कार्बन, सल्फर आदी प्रदूषकांचे उत्सर्जन न करणारे स्वच्छ इंधन
- डिझेल आणि गॅससोबत वापरल्यास उच्च क्षमतेचे उष्णता मूल्य
- उत्कलनांक उणे २५ अंश सेल्सिअस असल्याने थंड प्रदेशात वापरण्यास योग्य
- कमी हवेतही उच्च ज्वलनक्षमता
- डिझेल इंजिनमध्ये कोणताही बदल न करता वापरता येते
- १० लिटर तयार करण्यास केवळ ६०० रुपयांपर्यंत खर्च

डिझेल, गॅससाठी नवे सहयोगी इंधन

» पान १ वरून

आम्ही हा प्रकल्प हाती घेतला. माझ्या प्रयोगशाळेतील संशोधक विद्यार्थ्यांच्या सहयोगाने एका वर्षात आम्ही ज्वलनशील 'डायमिथिल इथर'चा शोध पूर्ण केला."

डॉ. राजा आणि त्यांच्या चमूने यासाठी उत्प्रेरकही (कॅटॅलिस्ट) निर्माण केला असून, त्याच्या 'पेटंट'साठी अर्ज करण्यात आला आहे. तसेच, डायमिथिल इथर, त्याची कार्यप्रणाली आणि यासाठी लागणारी

गॅसची शेगडी यांच्या पेटंटसाठी अर्ज करण्यात आला आहे. याचबरोबर औद्योगिक उत्पादनासाठी पाच कंपन्यांसोबत करार करण्यात आला आहे. 'एनसीएल'मध्ये प्रायोगिक तत्वावर उत्प्रेरकाची आणि शुद्ध 'डायमिथिल इथर'ची निर्मिती सुरू करण्यात आली आहे. या संशोधनात विपुल पाटील, शिवा प्रसाद, निकिता गुप्ता, आकाश भटकर, किरण चव्हाण, अमरीन पुणेकर, स्नेहल तेली, कार्तिक राज आदींचा सहभाग आहे.



पंतप्रधान उज्ज्वला योजना आणि सागरमाला योजनेसाठी आवश्यक इंधन पूर्तता याद्वारे करण्याचा आमचा प्रयत्न आहे. सामान्य माणसाला उच्च ज्वलनशील इंधनाचा पर्याय उपलब्ध होत असून, याचे मोठ्या प्रमाणावर उत्पादन होणे आवश्यक आहे.

- डॉ. टी. राजा, वैज्ञानिक, एनसीएल