

Now produce oil from paddy stubble

IIT Ropar and Aston university unveil new technology that may come as boon for farmers

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ROPAR, JULY 2

What is expected to put an end to open field burning of tonnes of paddy and wheat stubble across Punjab, IIT Ropar and Aston University, UK have come up with an offer the state's farmer cannot ignore.

A new renewable energy technology that uses the stubble as raw material and produces "bio-oil", "bio gas" and "bio-char". All these are combustible and can be put to use by the farmer at

his farm or sold commercially.

The technology, painstakingly downscaled from an industrial size set up at the European Bio-energy Research Institute at Aston University into truck sized portable units, was unveiled at village Khuaspura near Ropar today.

The first unit housed in a container in the village has taken over two years to be perfected by a team of scientists led by Sudhakar Sagi from Aston University in collaboration with the department of mechanical engineering, IIT Ropar.

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The unit is housed in a container unit that can be transported by a tractor

This "Pyroformer" uses intermediate pyrolysis technology to convert pallets of the paddy and

wheat leftovers into bio-oil. The oil is then blended with regular diesel and out comes an oil product which can be used in generator sets and lister engines. The oil being extracted from paddy stubble at the Khuaspura unit is being used to run a generator which is lighting up a whole school in a nearby village.

The other by product is bio-char — a form of coal which can be used both as a fuel in small domestic stoves or as fertiliser. The bio gas produced can be used to produce electricity or burnt for light and heat.

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"This project is called EnergyHarvest as each of the product that comes out has commercial value. What was considered a waste and was burnt causing serious pollution problems can now be put to use," said Dr Sagi.

The potential for such a technology in Punjab is enormous. "In Punjab 116 million tonnes of agriculture residue is burnt each year. With this technology, this residue can be used to produce at least 20 GW of electricity," said Prof Andrea Hornung Director EBRI, who has been working on the technology for decades.

The technology is also "flexible" with several versions than can be put to use

commercially.

"For all the three products to come out in almost equal amounts an optimum temperature is maintained. If we increase the temperature more gas is produced and if lowered more bio-char is produced," said Hornung.

The technology is available as a pilot phase in three villages Khuaspura, Hussainpur and Ladal. "The Punjab Agricultural University, Ludhiana, would be glad to adopt the technology and extend it to farmers. It's a revolution," said a scientist from PAU at the launch.

Local entrepreneurs too are taking a lot of interest in the technology's business

model. "The capital cost of the unit is about Rs 20 lakh and running cost Rs 10 lakh a year which includes the cost of palletisation and the diesel which is blended with the oil. The annual profit made by the entrepreneur by using a 20 kg per hour capacity unit for 6750 hours in one year will lead to a profit of over Rs 7 lakh," explained Dr Prasantha Dey of the Aston Business School.

The Pyroformer is housed in a container that can be transported between villages and can easily be operated by the villagers themselves. "The unit runs on a touch screen control and not more than two persons are needed to run it," said Sagi.