Turnkey pelletising plant helps tackle urban pollution and boosts net zero potential

Pelletising creates a strong opportunity for many industries to re-purpose byproducts and agricultural waste into something more useful, with a lower environmental impact

Customer Story
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Multi-source agricultural residue convereted to co-fired fuel to meet stringent national sustainability legislation

THE CHALLENGE

- Stubble burning compounds existing pollution issues
- Utility companies are challenged by national government to use more biofuels

THE SOLUTION

- Highly flexible multi-module turnkey pelletising plant close to raw material sources and power-generation facilities
- Powerful yet easy to operate plant, SCADA and HMI
- Three types of agricultural waste can be processed and pelletised: wood, mustard husk and rice straw

THE RESULT

- 210 tonnes per day output, with higher levels planned
- Pellets supplied to local power station to be co-fired with coal, reducing environmental impact
- Lower fossil fuel usage, stubble burning reduced

INTRODUCTION

To help counter India's ever-more stringent emission laws, multi-source processing and pelleting solutions from ANDRITZ are playing a pivotal role in the repurposing of agricultural waste that would otherwise have been burnt, further compounding the country's emissions challenge.

The pellets created by the turnkey plant – developed for K2 Biofuels – are used for co-fired heating and power generation, further reducing the overall carbon impact.

CHALLENGE

Stubble burning has been used in agriculture for millennia in India, but the pollution it causes – especially in nearby urban areas – accumulates alongside other emissions generated by commerce, industry, transportation and utilities.

The evidence and effects of this pollution are acutely evident in major population areas, with several parts of New Delhi recently recording air quality index (AQI) readings of 450 – considered "severe" according to international pollution standards.

ANDRITZ

As a result of this ongoing problem, India's national government has introduced legislation that tasks utility companies to use at least 5% biomass pellets – primarily from agricultural residue that would otherwise be burnt – in coal based co-fired systems. The policy was recently revised to increase this to 7% from the start of 2025-26.

It is estimated that India has a biomass surplus of around 230 million tonnes per year. As a result, the opportunities to have a positive environmental impact – from co-firing and a reduction in stubble burning – will make a real difference to the country's environmental efforts as it targets net zero by 2070.

One company that has recognised the incredible potential that this approach can deliver is K2 Biofuels, a forward-thinking 'green energy' company based in Haryana, India.

Specialising in solutions that exploit the power of biomass, it has recently commissioned ANDRITZ to build a pelletising plant that can create 210 tonnes of biomass pellets per day from a variety of agricultural byproducts and residues.

SOLUTION

The turnkey plant designed, built, and installed by ANDRITZ, comprises multiple modules, including a shredder, a screener, driers, a hammer mill, a pelleting machine, coolers and a sieve unit used to return fines back into the system.

A woodchipper and drier were also supplied by a third party, but all installation and commissioning were undertaken by ANDRITZ, as a single-point-of-contact prime contractor.

A major feature of the plant is its flexibility to process multiple raw material types, all of which are available in abundance in and around the local area. Wood, mustard husk and rice straw can all be chipped, shredded, screened and dried prior to pelleting, to deliver a range of pellet types, based on seasonal variations and raw material availability.

ANDRITZ also delivered a powerful, but simple-to-use control architecture, which comprises intuitive HMI screens and a SCADA solution that oversees the entire plant via a PLC. Interactions are designed in such a way that operators do not require high-level skills in order to achieve maximum uptime.

RESULTS

The greenfield plant, 80 km from New Delhi, started production in September 2025 and is currently producing 210 tonnes of pellets per day, with a projected target of over 1,000 tonnes.

NTPC Ltd., India's largest integrated power utility company, and K2 customer, estimates that it alone requires over 1,000 MT of biomass per day, per plant, so there is huge scope for scaling established operations and the creation of similar plants close to other power-generation facilities.

Sister company, K2 Ethanol, will also soon add to the company's portfolio with the design, build, and installation of another huge project from ANDRITZ, comprising a 150 KLPD (Kilo Liters per day) ethanol distillery and a 400 TPD (tons per day) animal feed pellet plant that will utilise the by products from the ethanol production.

Rajpal Yadav, Managing Director at K2 Biofuels, explains: "ANDRITZ was the only company that could offer us a complete end-to-end turnkey solution and that it could offer us the efficiency, quality and intuitive operations that we required. We also knew that its pelletising technology is proven in applications across the world."

Pavan Pawar, Vice President – Sales at ANDRITZ Feed & Biofuel, concludes: "India is not unique in its huge biomass potential. Pelletising creates a strong opportunity for many industries to re-purpose byproducts and local agricultural waste into something more useful… and with a lower environmental impact. This plant is just one of many successes we are seeing around the world, with plenty of other facilities in the pipeline."

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