Biomass that makes a difference to reduce air pollution and generate green energy.

Stubble burning has long been a widespread post-harvest practice. After all, it gets rid of straw stubble cheaply as well as killing off weeds and pests. But one harmful side effect is severe pollution resulting from the smoke. That is not such a problem in windy England, where stubble

burning was commonplace until the 1990s, but it certainly is in Northern India where it is one of the chief causes of air pollution. A new technology from thyssenkrupp promises respiratory relief.

Air pollution is a serious health problem in Northern India. During the winter months, the air quality in Delhi, for example, is among the worst of any big city worldwide. Stubble burning in Punjab and Haryana in late September and October is one of the chief causes. Farmers in these two states are reckoned to burn up to 35 million tons of crop waste after harvesting as a cheap way of getting rid of straw and shortening the turnaround time between harvesting and sowing the next crop. As three crops are grown in a year in some highly fertile regions of India, small farm holders in particular burn crop stubble to save time between crop cycles. However, the smoke from stubble burning is so bad it can even be seen from space. Yet how can Indian farmers be persuaded to stop this cheap and, for them, beneficial practice?

Generating energy from stubble based biomass is an option but its high chlorine, potassium and alkaline content makes it difficult to burn. When released at combustion temperature, the alkaline content in the fuel solidifies on the heating surfaces of the boiler. These deposits are highly corrosive, damage the internal surfaces of the boiler, and hinder proper heat transfer. Now, thyssenkrupp through its license agreement with Babcock & Wilcox Volund offers

an innovative solution to successfully burn stubble biomass incorporating water-cooled vibrating grate technology. The critical elements of the newly designed boiler include a special feeding system, internal surfaces that can cope with the high alkaline content of biomass, and a special grate design. The cut biomass is spread across a grate that continuously vibrates at the bottom of the furnace and is cooled by means of a water-jacketing mechanism – hence the name. By ensuring efficient combustion of biomass, this new technology utilizes crop waste for efficient and eco-friendly energy generation, and thus promises to make a crucial difference to air quality in countries such as India, Nepal, Sri Lanka, Bangladesh, Myanmar, and Bhutan where stubble burning is still common practice.

In Punjab, thyssenkrupp is now supplying 80 TPH Waste-to-Energy Boilers for two power plants operated by a local energy company – Sukhbir Agro. In India, these boilers are the first of a kind to use crop waste as their sole fuel source. As such, they are pioneering a new form of renewable power generation – and contributing to a new mindset towards green energy.

> “Our new technology solution is not only a sustainably efficient solution for generating green energy from difficult-to-burn biomass; it also tackles a major cause of air pollution in countries like India: stubble burning.”
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> Vivek Bhatia
> Managing Director and CEO
> thyssenkrupp Industries India

As more and more small farm holders in India adopt this technology they will now have an option to sell their biomass for cash, which makes it a more profitable alternative to stubble burning, people in Northern India will enjoy better air. And once thyssenkrupp’s

innovative technology solution has been successfully implemented, it will be key to cutting air pollution in other stubble-burning countries as we

The bottom line: Air pollution from post-harvest stubble burning is a serious health problem in countries like India. Now, the boilers with water-cooled vibrating grate technology launched in India by thyssenkrupp allows crop stubble – hitherto a difficult biofuel to burn – to be efficiently combusted to generate green energy. The outcome is a win-win situation: a profitable alternative to stubble burning for farmers in Northern India, and less air pollution for people living in cities like Delhi.