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FLUIDIZED BED COMBUSTION (FBC) BOILERS FOR AGRO-INDUSTRIAL POWER GENERATION

CASE STUDY/INSIGHT

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Fluidized Bed Combustion (FBC) technology is a type of boiler technology in which fuel particles are suspended in a hot, bubbling fluid bed of materials such as ash, limestone, sand, etc., through which jets of air are blown to provide the oxygen required for the fuel combustion. The resultant fast and intimate mixing of gas and solids promotes rapid heat transfer and chemical reactions within the bed. Such technology was introduced into the market in developing countries in the late 1980s.

In India, the FBC technology got popular in the early 1990s and several companies started promoting boiler manufacture using FBC technologies. They came up with unique designs, material use, etc., to reduce the initial investment cost of power plants. These power plants were tried more with the agricultural wastes as fuel to produce steam. The steam is then supplied to the steam turbines to generate electricity. Such power plants were installed in the 1990s and slowly the industry started adopting the technology.

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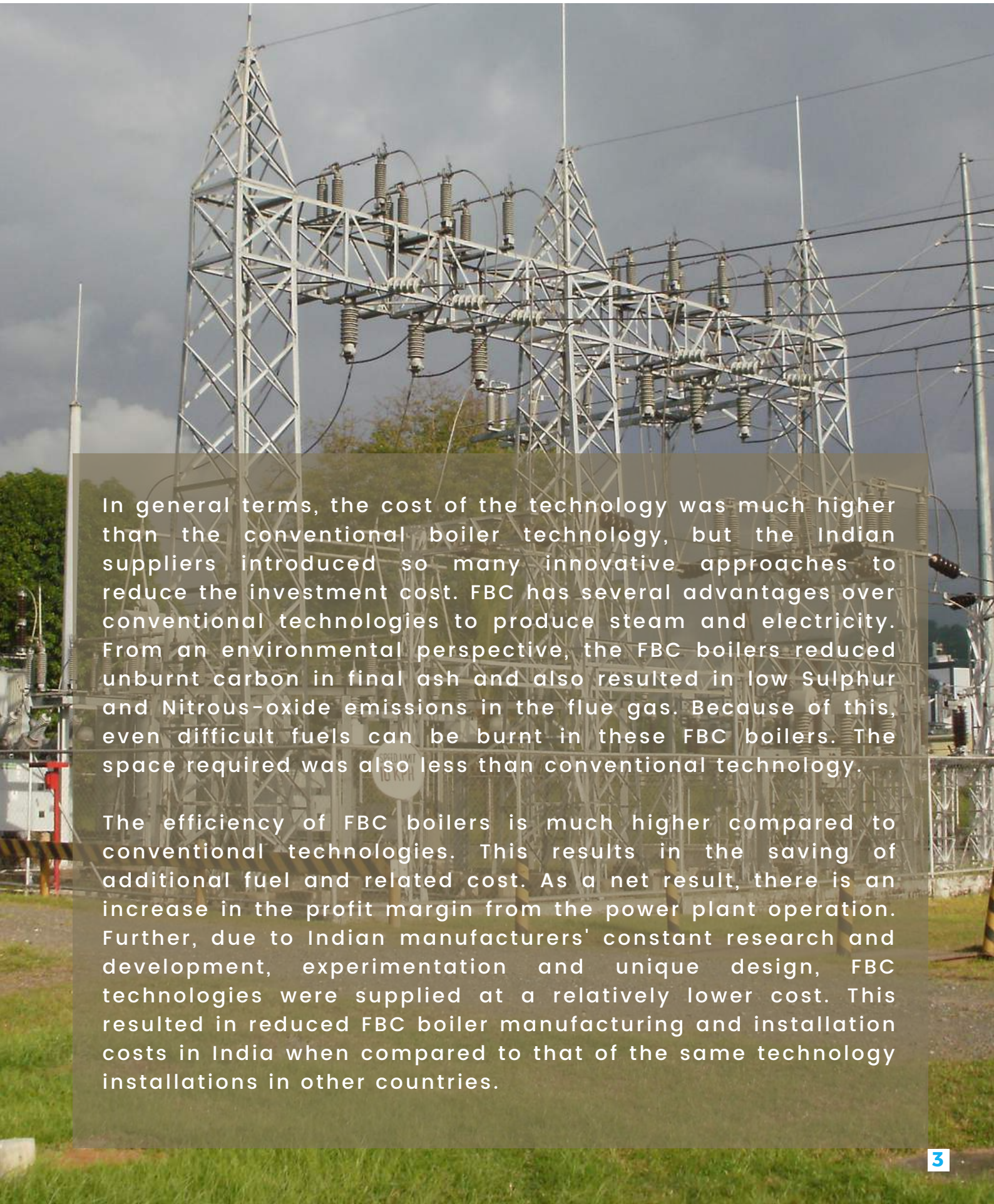

In general terms, the cost of the technology was much higher than the conventional boiler technology, but the Indian suppliers introduced so many innovative approaches to reduce the investment cost. FBC has several advantages over conventional technologies to produce steam and electricity. From an environmental perspective, the FBC boilers reduced unburnt carbon in final ash and also resulted in low Sulphur and Nitrous-oxide emissions in the flue gas. Because of this, even difficult fuels can be burnt in these FBC boilers. The space required was also less than conventional technology.

The efficiency of FBC boilers is much higher compared to conventional technologies. This results in the saving of additional fuel and related cost. As a net result, there is an increase in the profit margin from the power plant operation. Further, due to Indian manufacturers' constant research and development, experimentation and unique design, FBC technologies were supplied at a relatively lower cost. This resulted in reduced FBC boiler manufacturing and installation costs in India when compared to that of the same technology installations in other countries.