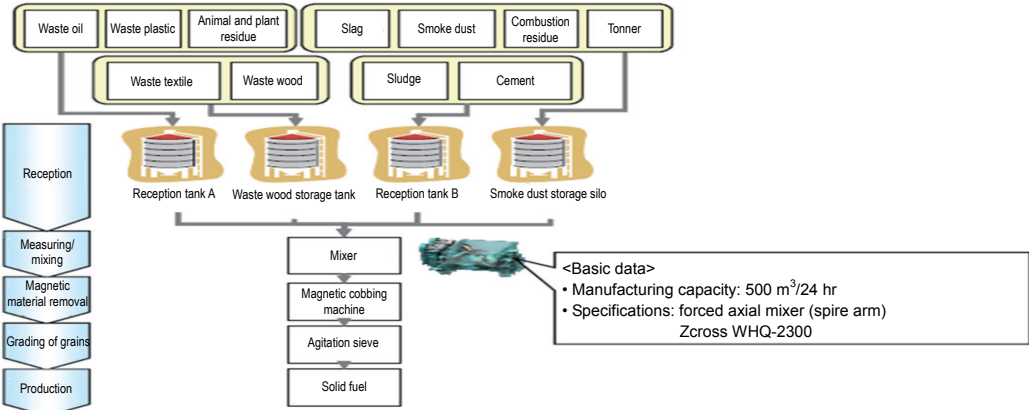

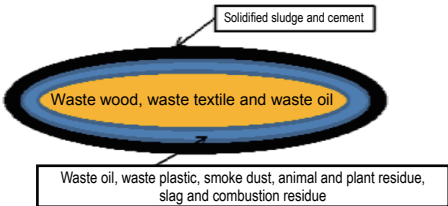

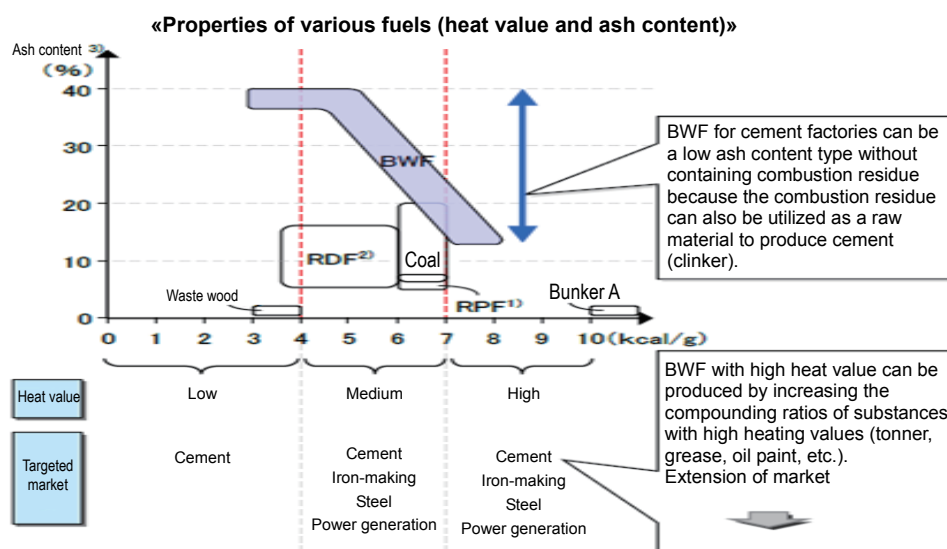


Technical Information Sheet

1. Name of technology	Biomass Waste Fuel (BWF) Manufacturing Technology
2. Type of technology	<p>Complete recycling of waste oil (waste ink, waste paint, etc.) which has been considered difficult for recycling and simply incinerated.</p> <p>A patented original treatment system (Patent No. 5078628) to manufacture BWF as an alternative fuel to coal</p>
3. Description of technology	<p>[Objective and application of technology]</p> <p>Our original treatment method and facilities enable waste oil, for which incineration has been the only treatment method, to be recycled to BWF with higher combustion efficiency than coal and thereby contributing to the reduction in environmental impact by accelerating the recycling of various kinds of waste. In particular, BWF for cement factories enables combustion residue from incineration plants and oil mud from oil-water separation plants to be fully recycled, provided that BWF is used in appropriate plants with facilities for burning general coal.</p> <p>In our BWF manufacturing process, we receive materials after carrying out preliminarily sample inspections for thoroughly confirming material composition (to eliminate substances with hazardous properties such as heavy metal contamination). Also, we treat the materials using a reliable safety management system including special fire prevention equipment such as a nitrogen generating devices and sprinklers with twice the capacity generally required.</p> <p>■ Outline of solid fuel manufacturing</p>  <p>Objective, application, characteristics, delivery record, and price of technology</p>  <p>[Characteristics of technology]</p> <p>① Homogeneous and expeditious process of different kinds of mixtures by utilizing Zcross System (a system which uses a Zcross mixer to produce BWF and has a three-layer structure with: wood and textile waste as a core; a mixture of viscous oil waste as an intermediary layer; and a mixture of oil mud as a surface coating).</p> <p><Three-layer structure of BWF grain></p>  

- ② Technical expertise to enable properties (composition and ash content), a shape (solid or powder) and a caloric value of BWF product to be customized according to customer needs.



- 1) RDF is solid fuel recycled from waste plastics including waste paper, polyethylene.
 2) RDF is solid fuel made by solidifying general waste including household garbage and waste plastic.
 3) Ash content is the total amount of non-combustible substances (combustion residue) contained in a sample.
 ③ Contribution to the reduction in fossil fuel consumption and CO₂ emissions by propagating BWF made of waste as alternative fuel at a reasonable price.

[Delivery record]

Treatment capacity of 500 m³/day, manufacturing capacity of 15,000 m³/month

Specifications: chlorine content of 2,000 pp or less, total heat value of 3,000 kcal/kg to 8,000 kcal/kg.

[Price and other inquiries]

Hiroiku Sugimoto, Corporate Development Department

TEL: +81-47-485-7189, FAX: +81-47-482-7090

4. Classification of technology	
(1) Applicable fields	Municipal solid waste treatment, industrial waste treatment, Recycling
(2) Target waste	Paper, cardboard, waste plastic, waste oil, others (wood waste, textile waste, slag, sludge, etc.)
(3) Services provided	Plant construction, waste treatment service, technical assistance, consultation, research and data processing
5. Countries to which this technology can be provided	Countries in Asia, North America and Latin America
6. Keywords	Recycle, solid fuel, oily waste, waste oil, waste plastic, animal residue, waste wood, waste textile, waste paper, combustion residue, slag, smoke dust, sludge, recycling
7. Contact information	Toa Oil Kogyosyo Co., Ltd. Hiroiku Sugimoto, Corporate Development Department TEL: +81-47-485-7189, FAX: +81-47-482-7090