TECHNOLOGY FACTSHEET

WASTE TO ENERGY

(Production of Residue Derived Fuel –RDF from Municipal Solid Waste – MSW) [1]

1. Sector: Energy Supply/ Waste/ Industry

2. Introduction

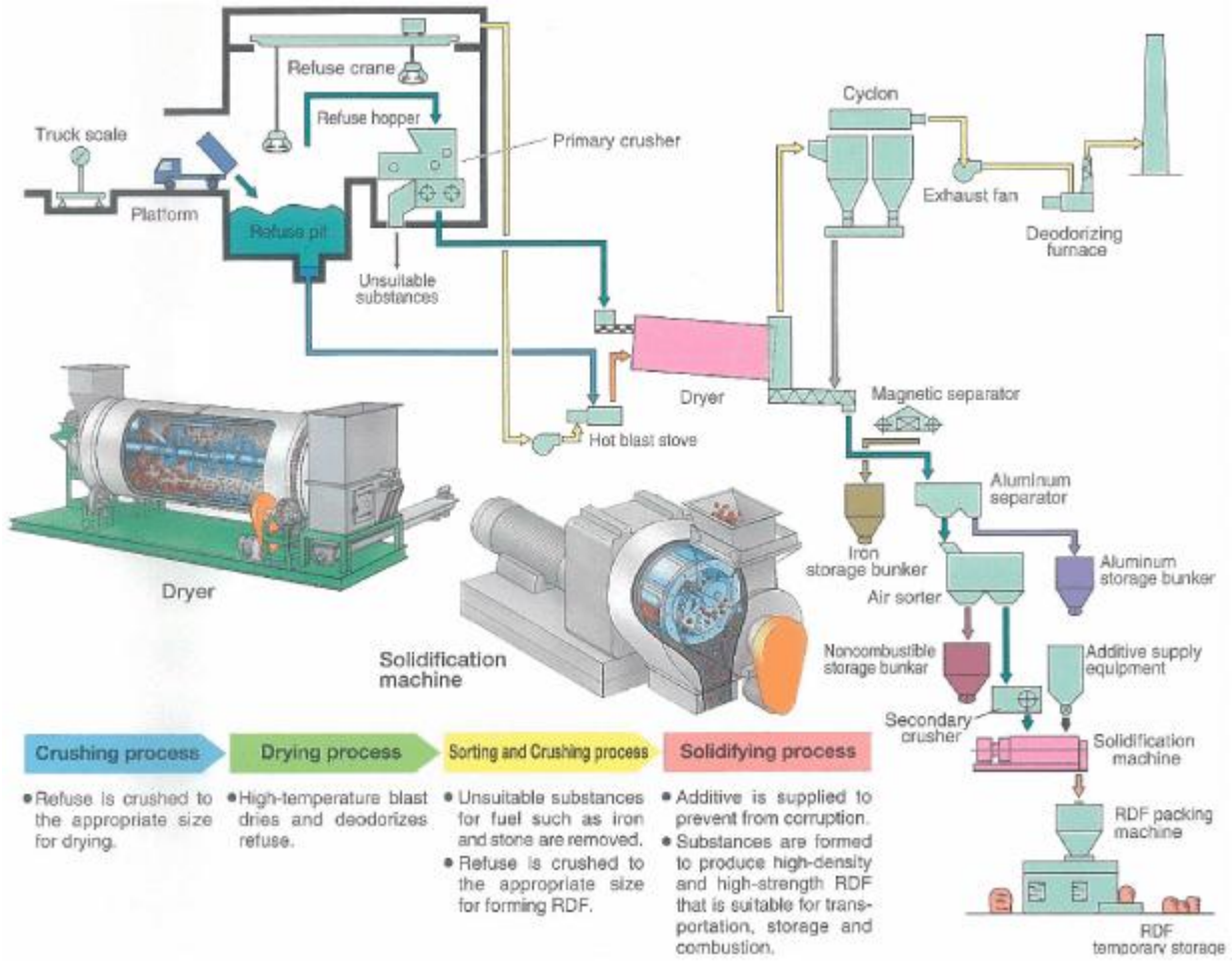
The city of Colombo daily generates 1250 tonnes of Municipal Solid waste (MSW) with a moisture content of around 60% and an organic content of 60%. The MSW also contains small quantities of halogenated PVC. Many attempts made to convert MSW into energy have not materialized. In the proposed technology, it is anticipated to convert MSW into a Residue Derived Fuel (RDF). This RDF could be used to replace a part of the coal used as the fuel in cement manufacture.

The manufacture of RDF from MSW consists of the following activities:

- Preliminary, manual recovery of recyclable and reusable items such as glass bottles, paper, hardboard, wooden items, large plastic pieces etc.
- Mechanized shredding and drying of MSW.
- Mechanized separation of shredded MSW into components such as organic materials, plastics, glass, metal etc.
- Storing segregated materials separately.
- Blending segregated materials in predetermined proportions.
- Pelletizing the blended materials.
- Packaging and transporting to the point of use.

[1] **This fact sheet has been extracted from TNA Report – Mitigation for Sri Lanka. You can access the complete report from the TNA project website** http://tech-action.org/

A flow diagram is shown below:



3. **Technology Name:** Waste To Energy (Production of Residue Derived Fuel –RDF from Municipal Solid Waste – MSW)

4. **Technology Characteristics: (Feasibility of technology and operational necessities)**

Feasibility of Technology:

The processes associated in the manufacture of RDF from MSW utilize readily available machinery and equipment in many parts of the world. This process is practiced in many countries. Details of these installations in some of these countries are given below:

Country	No. of RDF Plants	Waste Input Tones/y	Fuel Output Tones/y
Austria	12	340,000	70,000
Finland	20	300,000	90,000
Italy	25	1,000,000	300,000

Netherlands	25	2,000,000	700,000
United Kingdom	3	250,000	90,000

Operational Necessity

The national daily production of MSW is 2,800 tonnes. Despite many attempts made to manage this material in an acceptable manner, only a tiny fraction of this material is properly utilized incurring enormous cost. The rest of the materials are taken to open dumps.

The reasons for the failure to implement acceptable proposals are as follows:

- The moisture in MSW is too high to be used for direct combustion.
- The cost of anaerobic digestion of organic materials is too high.
- The presence of halogenated plastics prevents conventional direct incineration.

The conversion of MSW into RDF and the use of RDF as a fuel substitute for the manufacture of cement would be acceptable as the estimated cost of production of RDF is comparable to that of imported coal on an equivalent energy content basis.

The need to reduce the consumption of coal and the reduction methane emission from open dumping of MSW would be mandatory for Sri Lanka in the years to come.

For these reasons it had become necessary to convert MSW into RDF and use the RDF as a substitute for coal.

5. Country Specific Applicability:

This aspect has been already covered under the previous section.

6. Status of the technology in the country and its future market potential:

Status of Technology in Sri Lanka

The following components of this technology are being practiced in Sri Lanka at present:

- Preliminary, manual recovery of recyclable and reusable items such as glass bottles, paper, hardboard, wooden items, large plastic pieces etc.
- Drying.
- Storing segregated materials separately.
- Blending segregated materials in predetermined proportions.
- Pelletizing the blended materials.
- Packaging and transporting to the point of use.

The following components of this technology are new to Sri Lanka and needs assistance to transfer these components of technology:

- Mechanized shredding of MSW.
- Mechanized separation of shredded MSW into components such as organic materials, plastics, glass, metal etc.

7. Future Market Potential

The total production of MSW in Sri Lanka at present is 2800 tonnes per day. With the rapid economic growth and urbanization, this value would increase rapidly. All these materials could be converted into over 8000 tonnes of RDF annually and used either in Sri Lanka or sold overseas.

8. Barriers: -

9. Benefits: (How the technology could contribute to socio-economic development and environmental protection)

Social Benefits

The total production of MSW in Sri Lanka at present is 2800 tonnes per day. With the rapid economic growth and urbanization, this value would increase rapidly. All these materials could be converted into over 8000 tonnes of RDF annually and used either in Sri Lanka or sold overseas. These would eliminate the present practice of open dumping of MSW and the associated health problems.

This process will also provide numerous job opportunities at all levels.

Economic Benefits

The 8000 tonnes of RDF to be produced annually would amount to 5000 tonnes coal valued at US$750,000. This is the direct economic benefit. But the indirect benefits arising from the proper management MSW would be enormous.

Environmental Benefits

The use of RDF as an alternative to fossil fuels for cement manufacture would result in the following environmental benefits:

- Less GHG emissions: The 50 tonne/ day RDF project would reduce GHG emissions by 27,740tCO2/y.
- Elimination of health problems associated with open dumping of MSW.

10. Operations: -

11. Costs

The cost of producing 1oe of RDF in Sri Lanka is estimated as Rs. 9,594.

11. References

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