MAGNESIUM AND SODIUM METALS

The chief use of Magnesium metal is as an alloying agent to make aluminium-magnesium alloys. Since magnesium is less dense than aluminum, these alloys are prized for their relative lightness and strength. The second application field of magnesium is electronic devices.

Sodium metal is used in sodium vapor lamps, as a heat transfer fluid in some types of nuclear reactors and in organic synthesis..

Market

Sodium and Magnesium metals are produced in few countries. Others are dependent on imports. India imports substantial quantities of Magnesium and Sodium metals.

Aluminium industries and other speciality metal alloy manufacturers are major consumers of Magnesium metal. Defense equipment and nuclear reactor materials also consume magnesium.

Chemical Industry imports substantial sodium metal

Proposal

Considering the growing market, there is good scope for taking up manufacture of these metals

The processing involves Electrolysis. This is an energy intensive process and cost of production can be low if electrical energy is available at 3 to 4 cents per KWh.

Domestic market and export possibilities indicate very good market prospects

Suggested Capacity

Project with following capacities can be planned.

Magnesium metal 3000 Tons per year

Sodium metal 1500 Tons per year

Manufacturing process

Sodium is produced commercially through the electrolysis of liquid sodium chloride, This is done in a Downs Cell in which the Sodium Chloride is mixed with calcium chloride to lower the melting point below 700 °C. Magnesium metal is also obtained by electrolysis of fused magnesium chloride recovered from brines, wells, and sea water

The infrastructure and support systems required for both processes are similar and their manufacture can be tken up in one place.

Technology

This technology is available in India. It can also be sourced from other countries.

Raw Materials

Sodium Chloride, Magnesium Chloride and Calcium Chloride are the main raw materials.

Utilities

This is an energy intensive project. Power supply in the range of 10 MVA is required

Plant and Machinery

Electrolytic cells, Inverters and conductors are the main equipment

Capital outlay:

Capital outlay for project (3000 TPA Magnesium and 1500 TPA Sodium) could be in the range of US $ 20 million.

Turnover and profitability

Value of production would be in the range of US $ 20 million. ROI of 15 to 20 % is possible.

Suggested location

Power availability at low cost is main criteria

Strategy/ options

Setting up this project in a country where power is available at low cost is an option. This can be setup as an export oriented unit with buy back to India

Consultancy from APITCO : Sourcing technology. Selection of plant and machinery. Market study. Detailed project report preparation.