

ICELAND

By Fridrik Danielsson

Icelanders have long attributed the lack of a varied local industry to the absence of mineral resources, and have looked with some envy to their mineral- and oil-rich neighbours, Canada, Norway and others. That excuse, however, sounds increasingly unconvincing as technology has brought fresh opportunities: rivers in the snowy desert and geothermal bodies under the barren lava fields have become first-class resources for industrial development, needed to supplement the persistently dominating fisheries industry. These energy sources, only utilised to a small extent as yet, are making various industrial activities possible and, as might be expected, the main way of utilising the energy is to process raw materials from mineral-rich countries. Aluminium production has been, and will remain for some time, the main expansion field, based on imported alumina. But other projects are on the drawing board, some are still a vision, far into the future, some are spinning off new ideas for study, but there are also projects nearing implementation. The inevitable conclusion is that Icelanders no longer have an excuse to blame their one-sided economy on lack of local minerals. It seems minerals and metals are readily available to all those that can make economic use of them and sell the products derived from them, regardless of where they are located on the globe.

Aluminium

Alcoa Inc., the Icelandic Government, the Fjardabyggd local councils in east Iceland and the National Power Co., signed a contract on March 15, 2003, for a new 322,000 t/y capacity aluminium smelter. The speed at which the parties managed to reach an agreement was impressive; it took less than a year. The reason was partly swift work and decision-making by Alcoa and the government, and partly the comprehensive preparatory work which already had been conducted in Iceland in connection to the Noral project in which Icelandic investors and Norsk Hydro were involved. Alcoa reached an agreement with these parties to take over the project and make use of the work for its own plans. This has now led to an early final decision by Alcoa to build the Fjardaal smelter.

Construction work will begin in 2005 and it will take two years to build the smelter, creating 2,000 construction jobs and 450 permanent posts. Alain Belda, chairman and chief executive of Alcoa, said at the contract-signing ceremony, that the smelter would be one of the most environmentally-friendly in the world. The Fjardaal smelter will be the third in Iceland and is expected come on stream in 2007. It will more than double Iceland's current aluminium production capacity.

Aluminium production in Iceland continues to grow year-by-year and a new production record of 263,528 t was reached in 2002. The Alcan Isal plant produced a record 173,528 t of primary aluminium besides some quantities of remelt metal. Alcan is studying an expansion to potentially 460,000 t/y. It has

submitted an environmental assessment report and is in the process of obtaining an operating licence for the expansion which will probably be carried out in at least two stages. Alcan has not, as yet, announced plans for the expansion.

The Nordural smelter, owned by Columbia Ventures of the US, reached full capacity utilisation of 90,000 t/y during 2002. Nordural has already obtained an operating permit to expand the plant to 300,000 t/y. The expansion, potentially first to about 240,000 t/y, could come on stream as early as 2005-2006 judging from the preparedness of the power companies; the National Power Co. leads a group of Icelandic power companies which will supply power to the plant.

New projects

Alumina refining is being studied for a site in northeast Iceland. The raw material would be imported bauxite and the energy resources would be geothermal. Atlantsál hf, a company owned by Russian partners and Altech JHM of Iceland, an equipment producer for the aluminium industry, have been studying the infrastructure conditions for the plant to be sited at Husavík, and are co-operating with government and local council bodies. The Theystareykir geothermal area would be exploited as the steam source. Recent drilling there has given indications of sufficient steam to supply a large consumer. The establishment of an aluminium smelter has also been studied in conjunction with the alumina plant, but possibly sited at another location in northern Iceland.

RAG Trading AG of Germany has been studying the possibility of establishing an electrode plant in Iceland, probably in the Grundartangi industrial area where Nordural and Icelandic Alloys have their plants. A timetable has not been announced. The dross processing plant project of ALUR hf has progressed closer to implementation. ALUR has an agreement with Icelandic smelters to process their dross and intends to access raw material from overseas sources as well.

Steel pipe mill

A greenfield steel-pipe project is under way in southwest Iceland. International Pipe and Tube llc is planning to build a 175,000 t/y ERW steel-pipe mill on a site at the port of Helgúvík, near Keflavík in southwest Iceland. The site will be ready for construction activities at the end of 2003 and production could start during 2005-2006.

Iceland had a scrap melter furnace in operation for a few years for melting local steel scrap, but it was closed some years ago and has been dismantled. Scrap processing and export is on the increase (see table).

Ferroalloys

The Icelandic Alloys plant has a capacity of 120,000 t/y of 75% ferrosilicon, smaller quantities of lower and higher Si-content also being produced. The Government of Iceland, once a co-owner of the plant, adopted a policy to transfer plant ownership entirely to a strong industrial player and has therefore

sold its share to Elkem which now owns about 97.5 % of the stock in the company.

Siliceous minerals

The diatomite plant on Lake Myvatn, owned by Allied Efa Ltd, produced less diatomite in 2002 than in 2001, partly as a result of market fluctuations, and because of the sales peak in late 2001. The company has plans to produce precipitated silica by a proprietary process that it has been developing in Norway.

The mineral wool plant in northwest Iceland is now fully in private ownership after the government sold its share to private shareholders. The owners include two of the biggest building materials retailers in Iceland, BYKO and Husasmidjan. Paroc Group of Finland holds 11.5% of the stock in the company.

Cement production by Icelandic Cement Ltd decreased for the second consecutive year, partly because of a contraction in construction activity and changes in the building- materials market, and partly because of competition from imports; Alborg Portland of Denmark has gained market share with Danish cement. The government, the sole owner of the cement plant, decided recently to sell the plant to the highest bidder on condition that the buyer has to guarantee continued operation of the plant. Five groups submitted offers and it is expected the sale will come through during 2003. Dredging of calcareous shell sand, which is used for cement production, declined in line with decline in cement sales.

Pumice exports have also been decreasing since 2000. Pumice is sensitive to fluctuations in exchange rates, freight costs and conditions in the European lightweight building aggregate market. All have been more or less unfavourable during the past two years.

Maërl sediments on the seabed of fjords in western Iceland have been studied for some decades, and local industrious fishermen have now helped establish a company, Icelandic Sea Minerals, and intend to start dredging maërl in one of the fjords. Indications are that there are some 20 million m³ of maërl averaging about 85% calcium carbonate. The plan is to start at a production rate of 50,000 t/y. The main uses will be as a fertilizer and in animal feed, and to a lesser extent as a filler in hygiene products and filter aids.

Scrap and recycling

Iceland's exports of ferrous scrap increased during 2002 but exports of aluminium, copper and lead scrap fell. Small quantities of scrap are used for remelting and for casting purposes within Iceland. Lead batteries are exported and processed for scrap lead overseas and do not show in the 2002 (or 2001) lead export statistics.

Energy projects

Electric power consumption in Iceland will rise sharply over the next few years as new aluminium smelters come on stream and expansions take place at

existing plants. The National Power Co. (Landsvirkjun) has signed a power supply contract with Alcoa for the new 322,000 t/y Fjarðaal smelter in Reyðarfjörður, east Iceland. Landsvirkjun will supply the power from the new 630 MW Kárahnjúka hydroelectric power plant in east Iceland. Construction work has already started by Icelandic contractors, among them Iceland Prime Contractors Ltd and Arnarfell Ltd, which have been building roads, bridges and tunnels and blasting rock for damming the rivers. Landsvirkjun has signed a contract with Impregilo of Italy to build the main dam and the headrace tunnel to the power station. The power plant is expected to come on stream in early 2007.

Landsvirkjun has started construction of new water-damming systems upstream of its existing power plants in the central southwest, and this will increase power production in the plants there. Several other hydro-electric power projects are on the drawing board but no timetables have been announced. The State Electricity Co. (RARÍK) has a 33 MW and a 185 MW plant in the north at advanced stages of preparation. These plants could be build with a relatively short lead time when the market demands.

The Reykjavik Utility has plans to expand its electric power capacity by 40 MW within a few years and the power will mainly be sold to expanding industries such as the Nordural aluminium smelter.

The Sudurnes Regional Heating Co. has plans to expand its geothermal electric power production by a total of 55 MW in both Svartsengi and Reykjanes, in part to provide power for the expansion of the Nordural smelter and other industrial projects.

Plans to expand the Krafla geothermal electric power plant by 40 MW, and to build a new 40 MW plant near Bjarnarflag have not yet been timed. Neither has The State Electricity Co.'s plan to build a geothermal electric power plant in Hveragerði in the south.

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Aluminium Production (t)

| | 2000 | 2001 | 2002 |
|--------------|----------------|----------------|----------------|
| Alcan | 168,028 | 168,276 | 173,528 |
| Nordural | 57,693 | 74,250 | 90,000 |
| Total | 225,721 | 242,526 | 263,528 |

Metal Scrap Export (t)

| | 2000 | 2001 | 2002 |
|-----------|-------------|-------------|-------------|
| Ferrous | 28,726 | 32,919 | 38,296 |
| Aluminium | 6,136 | 8,366 | 6,191 |
| Copper | 373 | 355 | 339 |
| Lead | 108 | 1 | 1 |

Siliceous Minerals Production (t)

| | 2000 | 2001 | 2002 |
|-----------------|-------------|-------------|-------------|
| Diatomite | 27,614 | 30,434 | 26,494 |
| Mineral wool | 8,250 | 7,812 | 7,948 |
| Cement | 142,600 | 127,660 | 84,684 |
| Pumice (export) | 123,837 | 76,699 | 44,409 |

Ferroalloy Production (t)

| | 2000 | 2001 | 2002 |
|---------------|-------------|-------------|-------------|
| FeSi (as 75%) | 108,400 | 112,600 | 118,810 |