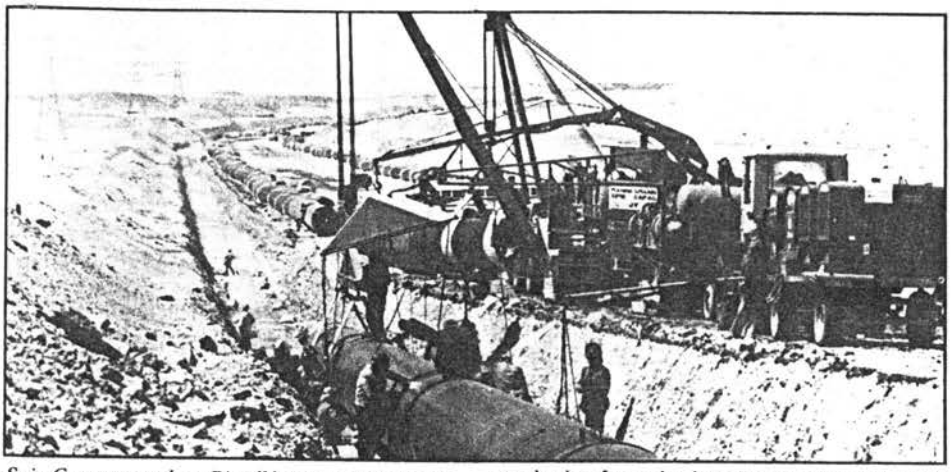


Spie-Capag at work on Riyadh's water transmission system

generated small orders for Spie's subsidiaries Sigma Offshore & Piping and Alia Electromechanical.

Spie-Capag has followed up last year's Iraqi success with a contract this March to build a 113-kilometre water pipeline to supply the Akjoujt copper mines in Mauritania. Client for the FF 90 million ($8.8 million) project is Societe Miniere d'Inchiri, which is 37.5 per cent owned by the government and 32.5 per cent by Amman-based Arab Mining Company.

Not that all is plain sailing for the Spie group, however, with problems arising in particular from its involvement in Sudan's Jonglei Canal and at Baghdad's new international airport.

In Sudan, where Spie-Batignolles was working for French main contractor Compagnie de Construction Internationale, the canal project has been suspended indefinitely for security reasons. And at Baghdad airport a long-running dispute over extra costs has yet to be resolved. The authorities imposed a curfew on the site but insisted that the work, originally planned to go on around the clock, be completed according to schedule. Compagnie Francaise d'Assurance pour le Commerce Exterieur (Coface) is currently negotiating a settlement.

Sidem sees openings in Gulf's water crisis

UNDERGROUND water reserves in Saudi Arabia are fast running out. According to a report compiled by France's Bureau de Recherches Geologiques & Minieres (BRGM) it will take only three years before supplies in certain areas of the north are completely exhausted.

This is alarming news and leaves the kingdom three choices — to step up desalination of sea water, import fresh water or make better use of underground reserves. Several French companies are already prominent in projects along these lines, both in Saudi Arabia and elsewhere in the Gulf.

Societe Internationale de Dessalement (Sidem), for example, has designed desalination plants in many Arab countries. The largest, in Al-Khobar, Saudi Arabia, was commissioned in 1982 and is now fully operational, with a daily output of 267,000 cubic metres. In 1984, a 110,000-cubic-

metre-a-day (m^3/d) plant came on stream at Umm al-Nar in Abu Dhabi and two smaller units of $150m^3/d$ and $200m^3/d$ were commissioned in Kuwait and Algeria respectively.

Due to start up this year are a 31,500-m^3/d plant at Misurata in Libya and an 8,000-m^3/d unit at Skikda in Algeria, to be followed in 1986 by the 100,000-m^3/d Al-Taweelah plant in Abu Dhabi. Like Misurata and Umm al-Nar it will use the multi-stage flash (MSF) process, while the smaller plants use reverse osmosis.

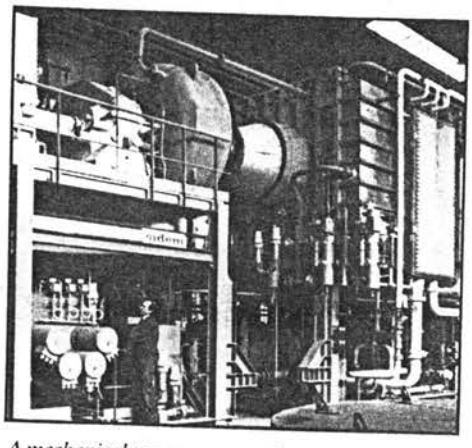
New techniques

As competition intensifies, many companies are looking to improve their processes. Sidem, for one, has just designed a new MSF technique which operates at a lower temperature and causes less corrosion. It produces very pure water no matter how saline the feedstock. And, most important, it requires only two tons of sea water to produce one ton of desalinated water, a significant reduction on the eight tons needed for the older process.

It is also easily exported in kit form. Sidem, which is primarily a consultancy and design firm, has in the past subcontracted construction work for big desalination plants in the Gulf to companies such as Japan's Mitsubishi and South Korea's Hyundai. But they will no longer be required for units of this kind.

So far, the new process has only been used at the Flamanville nuclear reactor in northwest France, but Sidem executive Francis Maurat is confident it has a bright future in the Gulf. He stresses, however, that it is not designed for giant plants — like the one at Al-Khobar — which are used to provide base-load water supplies. Rather, its future lies in serving industrial complexes such as refineries and petrochemical plants that have their own electricity supply and a relatively small demand for water.

According to Yann-Pierre Remond, commercial director for the Port Autonome de Marseille (PAM), Arab oil-exporting states have invested heavily in desalination plants for essentially the same reason that



A mechanical vapour compression unit, offering output of 1,500 cubic metres a day

industrial countries have sought to reduce their reliance on crude. "Arab countries are extremely sensitive about becoming too dependent upon foreign suppliers for so vital a commodity as water," he says. Nevertheless, PAM and a number of other French concerns are very interested in the possibility of exporting fresh water to the Gulf and North Africa.

Looking at Marseilles' water resources it is quite easy to understand why. It stands at the mouth of the Rhone, which is the largest river in France and pours into the Mediterranean at the rate of 2,500 cubic metres a second. This means that in just over nine days enough pure glacier water flows from the Swiss Alps into the sea to meet Saudi Arabia's needs for a whole year.

PAM is ready to install 16 kilometres of pipe, at a cost of some $10 million, to enable it to export 100 million cubic metres a year. A two-kilometre pipe connecting the Rhone to PAM's Lavera terminal could be built in about one month, while a 14-kilometre pipe to Fos would take about 18 months. But, stresses Remond, this will go ahead only if PAM gets sufficient orders.

Competitive

Ideally the company would be looking for regular long-term contracts. And on that basis Remond estimates that the cost of imported water in the Gulf (excluding investment in unloading terminals and storage tanks) would range from $0.03-0.027 a cubic metre, depending on a contract's size and duration. This, he says, is competitive with the costs of desalinated water.

Transport would be no problem, he argues, because the water could be carried on board empty oil tankers returning to the Gulf. For closer destinations such as Algiers, Sfax and Tripoli, all of which are within 750 kilometres of Marseilles, and even Port Said and Beirut, within 1,600 kilometres, it would be cheaper to commission special water carriers which do not require cleaning after each crude cargo.

Remond is convinced of the scheme's potential. "Our exports," he says, "could help to refill the depleting aquifers in the Arabian peninsula." According to the BRGM report, Saudi Arabia's aquifers are being replenished by rainfall at an average rate of 800 million cubic metres a year. Extraction, however, averages about 2,000 million cubic metres, leaving a net depletion rate of 1,200 million cubic metres.

Incorporated in the report are the results of a three-year study of an area in the northwest running from the Jordanian and Iraqi frontiers as far as Buraidah, and including the towns of Tabuk, Hail and Sakakah. It estimates the area's aquifer reserves at 70,000 million cubic metres to a depth of 100 metres, 323,000 million cubic metres to a depth of 200 metres, and 500,000 million cubic metres to a depth of 250 metres, the limit of current drilling technology. However, only about 40 per cent of this — some 200,000 million cubic metres — is economically recoverable.

And the situation can only get worse. Independent observers say the depletion of oilfields is causing aquifers to recede beyond the limits of recoverability. As a result the best reserves of fossil water now lie in remote areas, and their exploitation would entail vast expenditure on transport and establishment of equipment and personnel, in addition to construction of pipelines and pumping stations.