

- For a brighter Future

Libaran Power Station



Constructed in 1998
for the
Independent Power Producer



Stratavest Sdn Bhd

by



BWSC 

MES

Libaran Power Station Project Background

A sustainable industrial development demands robust and reliable power supplies. One of the strongest reasons why Stratavest Sdn Bhd won the contract for Libaran Power Station was its ability to provide robust and reliable power in the minimum possible time. This 60 MW plant is of the new generation of built, own and operate (BOO) power stations constructed under the Independent Power Producer (IPP) concept. The Federal Economic Planning Unit (ECU) conducted the tendering and contract awarding process.

Vital part of the management culture of Stratavest Sdn Bhd and its contractors is to protect the valuable environmental heritage of the Sandakan area. The decision to choose low-speed diesel engines for the Libaran Power Station ensures maximum plant performance with minimum environmental impact. The high-efficiency engines provide extremely high reliability with a minimum of fuel consumption, and special treatment plant ensures that fuel oil residuals do not contaminate the local environment.

BWSC (Malaysia) Sdn Bhd was selected as the Turnkey Contractor for the power station. Burmeister & Wain Scandinavian Contractor A/S (BWSC) and Mitsui Engineering & Shipbuilding Co., Ltd. (MES) were major suppliers. Mitsui & Co., Ltd. (MBK) assisted in the commercial issues.

The Engineering, Procurement and Construction (EPC) contract was signed by Stratavest Sdn Bhd and BWSC (Malaysia) Sdn Bhd with an ambitious completion time of 16 months for the first block of two units and 18 months for the second block of two units.

Project Execution

In order to meet the ambitious contract completion dates, it was essential to transport the 400 tonnes engines as complete units all the way from the factory in Japan to the construction site. This remarkable

achievement is described in more detail on the last page of this brochure.

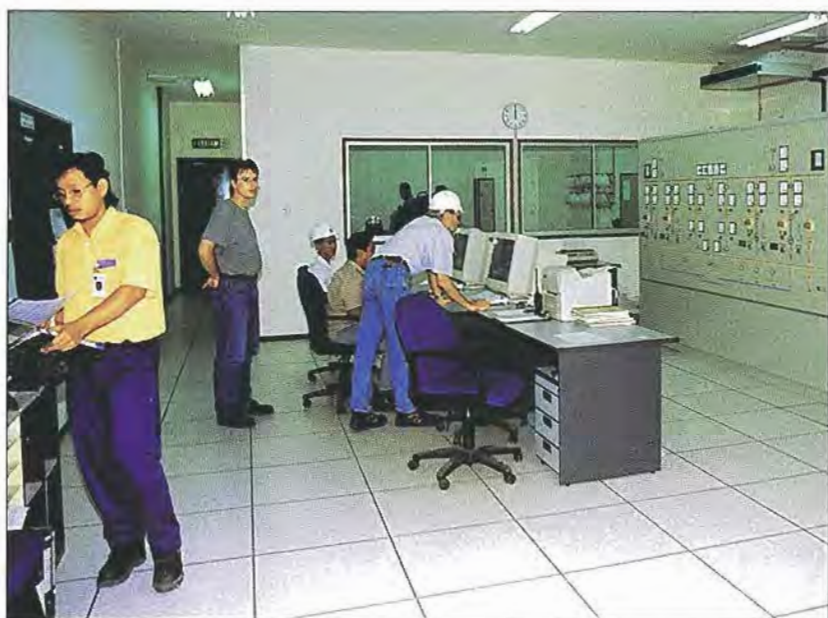
Following the award of the contract in 1997 the work progressed rapidly in Malaysia, in Japan and in Europe. The completed plant was handed over to Stratavest Sdn Bhd in November 1998 and immediately commercial operations commenced, thus achieving the goals as set out in the Power Purchase Agreement (PPA).

In order to maximize utilization of the Malaysian goods and services a purchasing office was established in Kota Kinabalu, the capital of Sabah. The major local suppliers were Jurutera Konsultant (Sabah) Sdn Bhd as civil engineers including the responsibility for statutory approvals, City Construction Company as civil work contractor and Daya Asal Engineering Construction as mechanical and electrical erection contractor plus many more.

Power generated by this new plant is supplied to industrial and private consumers in the Sandakan area through the SESB sub-stations at Tshun Nyen and Seguntor. The power station will be able to supply enough electricity to satisfy the demand of 75-100,000 private homes.

Aerial view of the entire Plant





Control room

Operation and Maintenance

Operation and maintenance of the complete power plant is the responsibility of Serve Vest Power Sdn Bhd, a company related to Stratavest Sdn Bhd.

Serve Vest Power Sdn Bhd places a minimum of reliance on ex-patriate labour and has successfully employed over 50 Malaysian operating and maintenance personnel. These technicians and engineers have developed their operating and maintenance skills at special training courses organized by BWSC (Malaysia) Sdn Bhd and their suppliers, during installation and commissioning of the plant.

Serve Vest Power Sdn Bhd has also entered into a Technical Service Agreement (TSA) with BWSC (Malaysia) Sdn Bhd for an initial period of three years with options for future extensions.

The TSA includes provision of the following services:

- Supply and delivery of spare parts.
- Monitoring the installation of all spare parts.
- Provision of technical directives for operation and maintenance.
- Production of specialist technical reports.
- Refresher training for existing employees and specialist support for training new recruits.

Summary

Contract Type	Turn-key
Contract award	May 1997
Handing over	November 1998

Technical Data

Diesel Engines	
Make	Mitsui/MAN B&W, Japan
Type	4x12K50MC-S, 2 Stroke
Speed	166,7 rpm

Alternators	
Make	Meidensha, Japan
Type	TICB-AF
Rating	19,622 KVA
Voltage/frequency	11 kV/50 Hz
Output at 100% load	4x15,698 kW at pf 0.8

Radiator Coolers	
Make	GEA, France
Type	Induced Draft
Cooling capacity	4x10,820 kW

Exhaust Gas Boilers	
Make	Clayton, Belgium
Steam capacity	4x800 kg steam/h
Steam pressure	7 bar

Fuel Treatment	
Make	Westfalia, Germany
Type	OSA 20
Capacity	3x7 m ³ /h

Step-up Transformers	
Make	Pauwels, Canada
Type	ONAN/ONAF
Ratio	34.5/11KV
Rated power	15/20 MVA

Civil Work	
Subcontractor	City Construction Company, Malaysia

Power Building	
Height	18.5 meters
Length	52.8 meters
Width	27.5 meters
Overhead cranes	1x30 ton, 1x10 ton
Stacks	4x32 meters

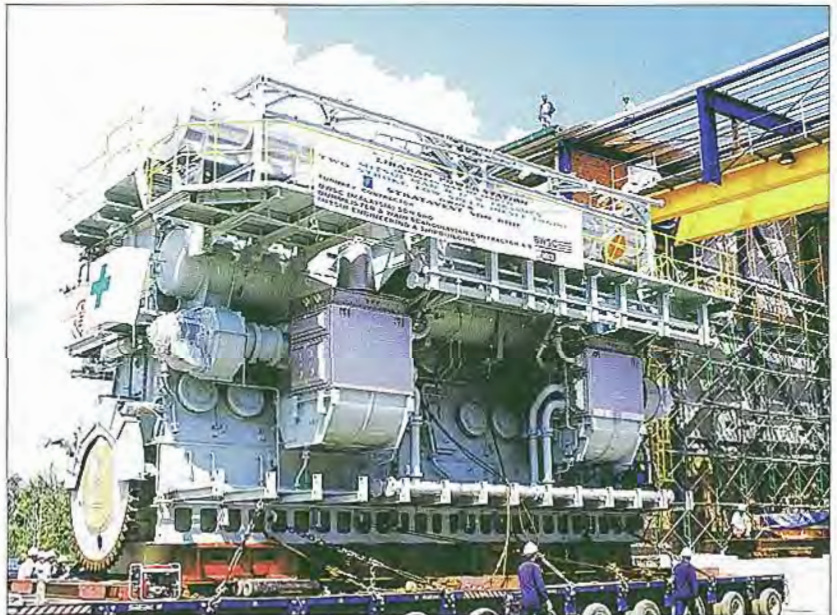
Special Logistic Operation

Transportation of massive diesel engines to the site was an engineering challenge that required the closest co-operation between local authorities, port authorities, Stratavest Sdn Bhd and BWSC (Malaysia) Sdn Bhd's specialist contractors.

Each of the four diesel engines weighs 400 tonnes and transportation over the 10 km route from Sandakan harbour to the site required the dredging of a river channel 200 meters long, construction of an off-loading jetty and building of a reinforced concrete roadway 8 meters wide and 700 meters long.

Each of the four engines arrived at Sandakan harbour direct from Japan, on-board a heavy-lift ship. Using the ship's crane, each engine was unloaded onto a large barge. The barge was then towed up-river and along the new channel to the specially constructed jetty. The engines were transported from the jetty to the site on a special heavy-lift trailer and manoeuvred in front of their respective foundation blocks. Finally the engines were winched from the trailers onto the foundation blocks and aligned to their permanent position, using special tools and jacks. Transportation of the engines from the ship to their final position took only 3½ days for each unit.

Construction of the new road, jetty and river channel reduced the construction schedule by two months. However, these facilities will also provide an everlasting benefit for local residents and industrialists who wish to use it for everyday transport, or for the rapid movement of goods and materials between the new industrial area and the harbour.



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