

CASE STUDY

EFFICIENCY DOES MATTER



SDC
Solar District Cooling

Solar District Cooling Sdn. Bhd. (607017-T)
Suite G.2, Ground Floor, No. 2A, Jalan BP 4/6, Bandar Bukit Puchong Industrial Park,
47120 Puchong, Selangor Darul Ehsan, Malaysia.

Tel: + 603. 8062. 2237 Fax: + 603. 8068. 6124 Email: enquiry@sdc.my Web: www.sdc.my

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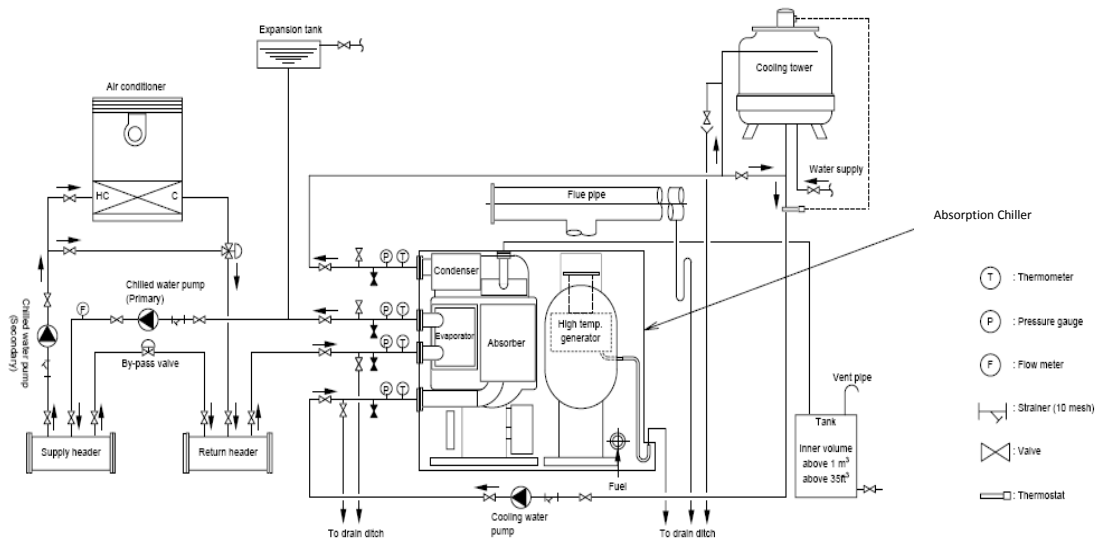
1.0 Introduction:

- a. Project: Commercial Building
- b. Location: East Malaysia
- c. Background: A shopping mall consists of multiple tenants inclusive of offices, and shop lots using direct fired, double effect absorption chiller. The chillers are due for replacement; the following comparison is on the saving of operation cost with the availability of high efficiency absorption chiller.
- d. Equipment: Double Effect Direct Fired Absorption Chiller
 - Model: Sanyo DG-E42H
 - Capacity: 500RT
 - Quantity: 3 nos.
 - Feature: Market leader with advanced technology in Li-Br absorption chiller, complying JIS B 8622-2002.

2.0 System Schematic:

The followings are schematics for air conditioning system, equipments inclusive of cooling towers, chilled water pump, condenser water pumps, air handling units, and other related accessories. Due to units' replacement, the dimension of chiller and piping need to be equivalent or smaller than the original equipment.

Air-Conditioning System Schematic



3.0 Energy Consumption Analysis

For absorption chiller, electricity usage is very minimum. Therefore, the consumption of natural gas becomes the rating factor for selection of brand of chiller besides the dimension of the chiller.

The following is the summary of comparison analysis:

	Brand: Sanyo Model: DG	Brand: Other 1 Model: ABC	Brand: Other 2 Model: XYZ
Cooling Capacity:	500 USRT	496 USRT	496 USRT
Chilled Water In / Out:	12°C / 7°C	14°C / 7°C	12°C / 7°C
Chilled Water Flow:	302m ³ /h	214m ³ /h	300m ³ /h
Cooler Pressure Drop:	7.1mH ₂ O	22H ₂ O	6.0mH ₂ O
Power Consumption:	9.7kW	10.3kW	11.1kW
Dimension			
Length:	4,850	5,000	5,058
Width:	2,490	2,700	2,817
Height:	2,600	3,340	2,538
Operating Weight:	17.1 T	24.2 T	20.8 T
Natural Gas Consumption:	104.1 Nm ³ /hr	138.0 Nm ³ /hr	136.5 Nm ³ /hr
Performance Compliance:	JISB8622-2002 ASME / ISO 14001	ISO 14001 ASME	ASME / TUV / CE

4.0 Operating Cost Saving:

For smaller dimension, lower natural gas consumption, and performance complying international technical standard JISB8622-2002 or ARI1560 equivalent, Sanyo Double Effect Direct Fired absorption chiller selected.

Based on 10am to 10pm, 12 working hours, and Gas Malaysia Tariff D – Industrial and Commercial RM 20.05/mmBtu or equivalent to RM0.77/Nm³/hr.

	Brand: Sanyo Model: DG	Brand: Other 1 Model: ABC	Brand: Other 2 Model: XYZ
Cooling Capacity:	500 USRT	496 USRT	496 USRT
Natural Gas Consumption:	104.1 Nm ³ /hr	138.0 Nm ³ /hr	136.5 Nm ³ /hr
Chiller Quantity:	2 nos.	2 nos.	2 nos.
Operation Hours:	12hours	12hours	12hours
Annual Operation Cost (RM):	702,175.32	930,837.60	920,719.80

The annual operation saving of natural gas consumption is RM 228,662.28 or approximately 32.5% reduction, comparing to the nearest double effect direct-fired absorption chiller available in the market.

5.0 Benefits of Specify Sanyo Absorption Chiller:

a. Lower Operation Cost

Lower natural gas consumption to deliver the same amount of cooling effect, thus allow long term operation saving. For the differential of investment of RM 200,000.00 to higher efficiency chiller, the additional capital expenditure and be recover within the first twelve months.


b. Latest Technology in Absorption Chiller

High efficiency chiller with improved technologies: enlarge and strengthen heat exchanger area, patented refrigerant condensate heat reclaim, plate-type and multipath heat exchanger design, vacuum thermal insulation, and internal refrigerant self-adapting cold storage device. And most importantly, complying international performance standard.

c. After Sales Support

Sanyo chiller maintains by a team of highly trained service engineer, offering maintenance programme tailored to suit the customer needs. In addition, the local distributor carries a complete and ample amount of spare parts to support their customers in Malaysia. This stocking program will minimize the downtime of the installed systems.

Devote to Beautiful Life



SANYO

Contact:
A: Suite G-2, Ground Floor, No. 2A, Jalan BP 4/6, Bandar Bukit Puchong Industrial Park, 47120 Puchong, Selangor Darul Ehsan, Malaysia
T: +603 8062 2237 F: +603 8068 612 E: enquiry@sdc.my

www.sdc.my