

# Rydges Airport Hotel

## Cogeneration System



## RYDGES HOTELS • RESORTS

### Background

Rydges Hotels & Resorts was founded in 1998 and is a wholly Australian owned and operated hotel management group. The Group operates 40 city, suburban and resort style hotels and accommodates more than one million guests each year. The new Rydges Sydney Airport Hotel will officially open in May 2013.

As a part of the \$70 million hotel building project, Simons Green Energy was engaged to design, supply, install, commission and maintain a natural gas fired Cogeneration system to provide the Rydges Hotel with a 70kW electrical power system to supplement the electricity purchased from the grid. The hot water generated by the system is being used to heat the hotel's domestic hot water.

The Rydges Sydney International Airport Hotel has adopted a range of environmental initiatives in line with the Sydney Airport Corporation Limited (SACL) Environmental Management Strategy. The strategy involves energy management and greenhouse emissions, water management, waste and resource management, and soil and land management. To address these issues the hotel has implemented a number of leading edge initiatives including the installation of the Cogeneration System and recycling of up to 80% of the demolition and construction waste.

From the initial design stages, Simons Green Energy's engineering team worked closely with the asset owner, Denwol Group as well as with the appointed builder Lipman Pty Ltd to ensure a smooth installation and optimum system performance.

***“Our objective in following this path was to show some foresight and a real environmental sensitivity. We wanted any green initiatives to be practical, have strong environmental outcomes and provide us with financial payback over time. The Cogeneration unit provides us with these 3 criteria”***  
said Phillip Wolanski AM, Director of Denwol Group.

#### Project Name:

Rydges Sydney International Airport Hotel- Cogeneration System

**Site Owner:** Denwol Group

#### Cogeneration System supplier and installer:

Simons Green Energy

**Commissioning Date:** March 2013

#### Systems details:

- Cogeneration System - Combined Heat and Power
- 3 x 3,500 litre domestic hot water storage tanks

#### Capacities:

- Total Electrical Output: 70kWe
- Total Thermal Output 109kWt

#### Operation modes:

- Parallel grid connection
- Island mode emergency power connection

**Fuel Source:** Natural Gas

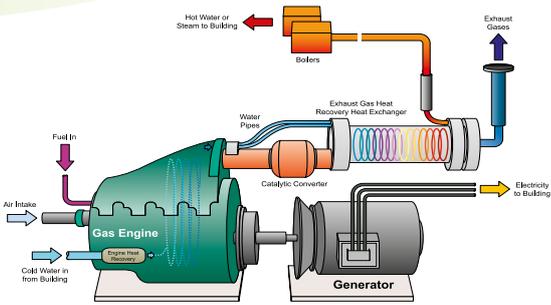
**Manufacturer:** SEVA Energie

**Engine:** MAN

**Building Type:** 4.5 star hotel comprising 318 guest rooms, a restaurant, bar and gymnasium.

**Estimated payback period:** 4 to 5 Years

# Rydges Airport Hotel – Cogeneration System



## What is Cogeneration?

Cogeneration, also known as Combined Heat and Power (CHP), is the simultaneous production of two forms of energy - electricity and heat - from a single fuel source. Cogeneration uses a natural gas-powered engine to generate electricity on site and converts the waste heat from the engine into usable heat for space heating, process heat for manufacturing, domestic hot water, heating for swimming pools and similar applications.

On site Cogeneration Systems have a total efficiency of up to 85%, as compared to the 32% efficiency of the NSW predominately coal-fired electricity grid.

In the case of the Rydges Sydney Airport Hotel, the waste heat recovered from the engine's jacket water and exhaust gasses is captured to produce domestic hot water at 65°C for use in the hotel. As the hot water is produced for "free" from the waste heat of the Cogeneration engine, it reduces costs by decreasing the amount of hot water needed from the site's natural gas-fired hot water boilers.

## System Details

The packaged Cogeneration System consists of a 70kW unit with engine supplied by MAN. The system was supplied as a complete, factory tested, skid mounted unit with engine, generator set, controls and heat recovery systems all on board.

The unit was configured to run in two different modes:

1. Grid Parallel connection, whereby the System provides base-load power to the site whenever it is more cost effective to do so.
2. Emergency Island Mode connection, which will provide power to pre-selected "critical services" in the case of grid failure.

The hot water produced by the unit is stored in 3 x Edwards LEX350 hot water storage tanks located on the roof of the building with a total capacity of 10,500 litres.

## Delivering Results

The System is capable of producing up to 350,000 kWh of electricity and close to 485,000 kWh of thermal energy per year, thereby reducing energy costs dramatically.

## Benefits

- Reduces the hotel's energy costs significantly
- Provides back-up power supply in case of grid failure
- Reduces carbon emissions by up to 251 tonnes per year which is the equivalent to planting 2510 new trees per year.
- Produces 70kW of electricity
- Provides operational safety through control and monitoring systems

## About Simons Green Energy

Simons Green Energy, as part of the Simons Engineering Group, is a leading provider of sustainable energy, heating and cooling solutions in Australia. With over 80 years of operation in the field of thermal engineering, Simons provides solutions tailored to customer's needs with reliable products, technology and service quality. Simons offers a range of sustainable and renewable energy equipment including Cogeneration & Trigeration systems, waste heat recovery systems and high efficiency steam & hot water boilers. Simons will design, size, deliver, maintain and finance sustainable energy solutions and technologies Australia wide.

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