



**COOLNOMIX™ ENERGY CONTROL SYSTEM  
PERFORMANCE REPORT FOR  
OVOLO HOTELS**



**COOLNOMIX™ Testing in your site at  
222 Hollywood Road, Sheung Wan, Hong Kong**



## **EXECUTIVE SUMMARY**

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OVOLO Hotels (OVOLO) had invited Agile8 Consulting Limited to demonstrate how the **COOLNOMIX™** Optimized Refrigerant Supply (ORS) technology can reduce the energy costs of air conditioning equipment installed in one of their boutique modern luxury serviced apartments.

The **COOLNOMIX™** device is an active energy intelligent thermostat which uses a comparison of the apartment temperature and cold supply air temperature to optimise the running time of the compressor while significantly improving temperature stability. The compressor is the main power consuming component in any air-conditioning system.

For this test two **COOLNOMIX™ AC-01 Energy Control Systems** were installed on 31st July 2013 in Apartment 18B at your 222 Hollywood Road, Sheung Wan, Hong Kong serviced apartment site. Here, for this one month testing program the **COOLNOMIX™** energy-saving units worked with two 18,000 BTU **Mitsubishi** air-conditioning units in energy-saving mode. Meanwhile, two similar **Mitsubishi** air-conditioning units without energy-saving technology were monitored in apartment 20B. The air conditioning units in the **COOLNOMIX™** equipped apartment 18B was set to operate at a working temperature of 23°C.

Energy consumption tests commenced on Thursday, 1<sup>st</sup> August and daily electricity meter readings were taken for both apartments throughout the month long trial. Throughout the month of August both apartments were in an occupied state. The **COOLNOMIX™** trial concluded on Monday, 2<sup>nd</sup> September July when a final power meter reading was taken in each of the two serviced apartments.

At the conclusion of the test it was confirmed that the **COOLNOMIX™** Energy Control Systems had reduced air-conditioning related operating costs by **58%** in apartment 18B compared with the energy consumption in apartment 20B during the testing programme, as shown in Table 1 on the next page.



	OVERALL POWER CONSUMPTION	OVERALL POWER CONSUMPTION	
	Apartment 20B Without COOLNOMIX	Apartment 18B With COOLNOMIX	% SAVINGS
Aug 1 <sup>st</sup> to Sept 2 <sup>nd</sup>	1.139.2 kWh	477.1 kWh	58.12%

**Table 1. Energy Consumption for OVOLO (summary)**

## 1. INTRODUCTION

Founded in 2002, Ovolo has become one of Hong Kong's larger independent hotel and serviced apartment operators in little over a decade. Ovolo currently owns and operates four hotels and two serviced apartment properties in Hong Kong Island and West Kowloon as well as a hotel in Melbourne, Australia. With a number of upcoming hotel projects in Hong Kong and abroad, Ovolo is now taking its brand to a larger international audience.

The **COOLNOMIX™** energy control system makes use of a patent applied for technology called Optimized Refrigerant Supply (ORS). Developed for use with air-conditioning and refrigeration units, **COOLNOMIX™** is designed to reduce operational costs by minimising energy consumption while improving temperature stability in business critical environments such as those encountered in serviced apartments.

In operation, once the **COOLNOMIX™** unit has achieved a required apartment temperature, energy savings are delivered by reducing the running time of the compressor which is the main energy consuming component in any air conditioning system.

The **COOLNOMIX™** AC-01 energy control system for air conditioning makes use of two temperature sensors to carry out important tasks, namely:

- **Firstly, temperature control at the required level.** The **COOLNOMIX™** unit will ensure that the compressor runs all the



- time until a required apartment temperature has been achieved (e.g. 23°C).
- **Secondly, optimising energy savings.** **COOLNOMIX™** achieves this by controlling hydraulic efficiency and space temperatures more effectively. A conventional thermostat with the set point of 23°C might allow temperatures to range between 22°C and 24°C. By contrast, **COOLNOMIX™** would attempt to maintain temperatures within +/-0.25°C of the target temperature.

Another benefit is that the **COOLNOMIX™** unit eliminates the problem of dripping which is increasingly a focus of legislation regarding air conditioning operations.

## **2. COOLNOMIX INSTALLATION**

For this test two **COOLNOMIX™ AC-01 Energy Control Systems** were installed on 31<sup>st</sup> July 2013 in Room 18B, a prestigious OVOLO apartment at 222 Hollywood Road, Sheung Wan, Hong Kong. Here the **COOLNOMIX™** units worked with two **Mitsubishi** air-conditioning units installed in the apartment as shown in Figure 1 below. Meanwhile apartment 20B at the same address was used as a non-energy saving control comparison apartment for this month long trial. For the purposes of the test the **COOLNOMIX™** unit in 18B was set to operate at a working temperature of 23°C.



**Figure 1. COOLNOMIX Installation in Apartment 18B**



Comparative energy consumption tests were carried out with both serviced apartments being occupied during the period 1<sup>st</sup> August to 2<sup>nd</sup> September 2013. As each serviced apartment was equipped with a dedicated electricity meter, power consumption readings were taken daily throughout the month long testing period.

### 3. RESULTS OBTAINED

Table 2 on the next page shows a summary of the power consumption figures for the two subject apartments throughout the month of August. It also provides a view of the kind of weather conditions prevailing on each day during the month long trial.

Although the power consumption and percentage energy savings changed on a day by day basis it can be seen that apartment 18 B with **COOLNOMIX™** consistently delivered a significant reduction in operating cost on every day throughout the month-long trial.

Overall, the average energy-saving delivered by **COOLNOMIX™** was 58.12%.

Based on an average electricity charge of HK \$1.2 per kilowatt hour this **COOLNOMIX™** delivered energy-saving will equate to **an annual cost reduction of HK \$ 9,534 per apartment**, or HK\$ 47,670 per OVolo apartment over a 5 year period.

As **COOLNOMIX™** delivered savings are derived from the excess capacity in any air-conditioning system the above savings are likely to be on the low side compared with those achievable during the cooler months of the year when air-conditioning systems have greater excess capacity.





## 5. REPORT ACCEPTANCE

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OVOLO had invited Agile8 Consulting Limited to demonstrate that the **COOLNOMIX™** energy control system can reduce operating costs within a prestige serviced apartment environment.

In comparative trials at 222 Hollywood Road, Sheung Wan, Hong Kong the **COOLNOMIX™** minimum temperature was maintained at **23°C** within an occupied prestige serviced apartment. The comparative energy savings between two serviced apartments during a one month trial from 1<sup>st</sup> August to 2<sup>nd</sup> September 2013 were as follows:

	<b>OVERALL POWER CONSUMPTION</b>	<b>OVERALL POWER CONSUMPTION</b>	
	<b>Apartment 20B Without COOLNOMIX</b>	<b>Apartment 18B With COOLNOMIX</b>	<b>% SAVINGS</b>
<b>Aug 1<sup>st</sup> to Sept 2<sup>nd</sup></b>	<b>1139.2 kWh</b>	<b>477.1 kWh</b>	<b>58.12%</b>

**OVOLO Hotels**

*Company*

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*Name*

\_\_\_\_\_  
*Signature & Company Chop*

**Agile8 Consulting Limited**

*Company*

*Kevin Moore  
CEO*

\_\_\_\_\_  
*Name*

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*Signature & Company Chop*