



SONARAY

Success Story

Changi Airport Group

Client background



The seventh busiest international airport today, Changi Airport is a major air hub in Asia. It handled more than 51 million passenger movements in 2012 and registered a monthly record of 4.92 million in December 2012. Presently, Changi Airport serves some 110 airlines flying to over 240 cities in about 60 countries and territories worldwide. A flight takes off or lands at Changi Airport roughly once every 100 seconds. With over 70,000 square metres of commercial space across its four terminals, Changi Airport is also one of Singapore's best places for shopping and dining. Increasingly, the airport has become a favourite haunt for Singapore residents, especially families.

Sonaray Applicable Product:

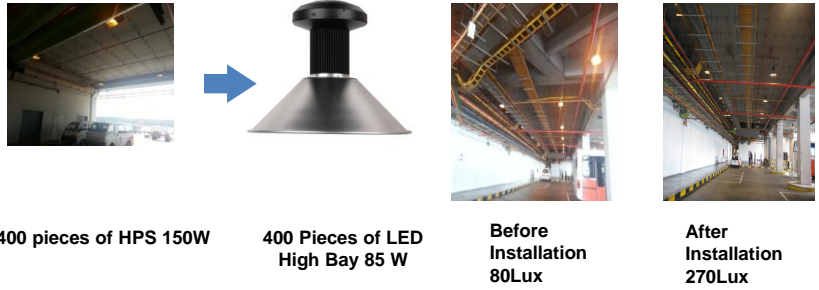
85W
LED High Bay Lighting
HB-2085



Client Requirement	Success
Increase Lumens	✓
Energy Savings	✓
Overall Lumens Uniformity	✓
Operating Temperature	✓
Low Glare	✓

SONARAY Solution

Comparison of before and after installation



400 pieces of HPS 150W

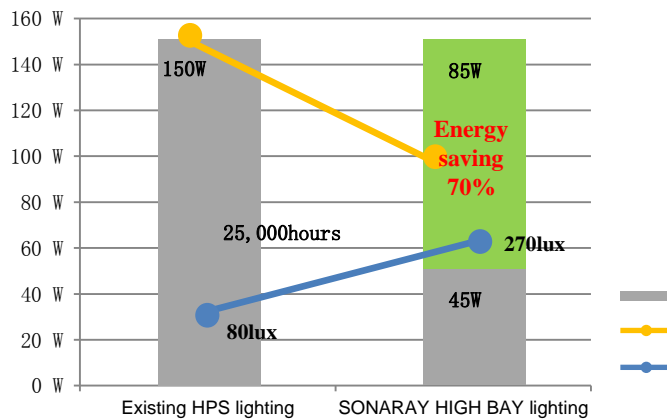
400 Pieces of LED High Bay 85 W

Before Installation
80Lux

After Installation
270Lux

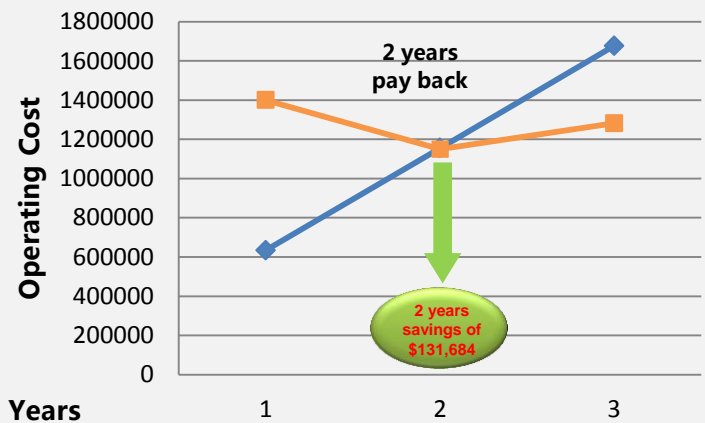
Client Benefits

1. Reduction of total electrical consumption, compare to existing lighting of 43%: Lumens maintenance 40,000 hours: reducing replacement of spare bulb and lowering of maintenance



2. Excellent cost and benefit:

Saving electricity and maintenance cost: Return of investment is 2.17 years; 2 years ROI operating cost compare to existing lighting is a difference of \$131,684



SONARAY High Bay lighting project for CAG will be featured in International LED magazine as an case study. Pending approval from CAG Corporate Communication Management.