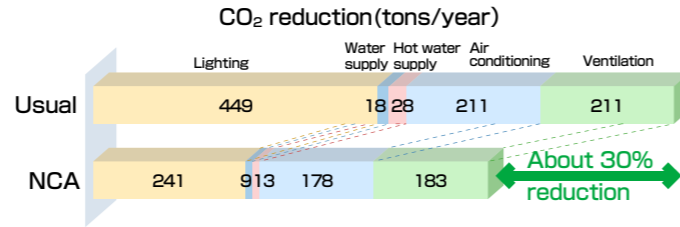


# Environment-Friendly Hangar

The hangar incorporates a range of environment-friendly measures. The hangar has been designed to let in as much natural light as possible. Other eco features include an advanced automatic ventilation system, fuselage washing devise that uses rainwater, and a garden roof. These energy saving and other eco features will reduce annual CO<sub>2</sub> emissions from the figure of 900 tons for conventional hangars by 30% to 620 tons.



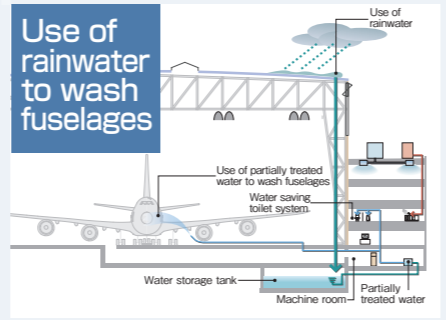
**Light wall**  
CO<sub>2</sub> reduction 87t/year

- Outline**
- A system to bring natural light into the hangar by using polycarbonate with high light permeability for the wall
- Effects**
- To cut CO<sub>2</sub> emissions by 159 tons a year by combining its use with top lighting
  - Compared to glass windows, it has higher insulation efficiency.



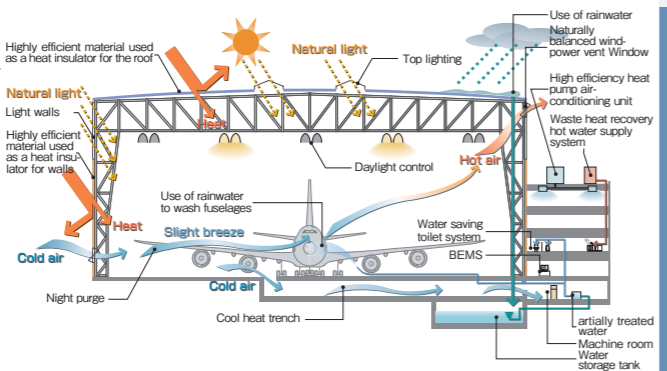
**Solar water-heating system**  
CO<sub>2</sub> reduction 5.7t/year

- Outline**
- A water heating system that utilizes clean solar heat
- Effects**
- To reduce the volume of electricity and gas used to heat water



**Use of rainwater to wash fuselages**

- Outline**
- A system to reduce the volume of mains water used by using rain water to wash fuselages and toilet flush
- Effect**
- To drastically cut use of mains water.
  - The quality of rain water can be improved to the level of mains water via a filtration system



**Top lighting**  
CO<sub>2</sub> reduction 72t/year

- Outline**
- A system to bring natural light into the hangar. Used together with the light wall, it keeps the illumination level at the center of the hangar to 3000lx. During the daytime, no artificial light is needed to conduct maintenance work.
- Effect**
- To cut CO<sub>2</sub> emissions by 159 tons a year through combined use with the light wall.
  - During the day, no artificial light is needed to conduct maintenance work.



**Garden roof**  
CO<sub>2</sub> reduction 2.0t/year

- Outline**
- Green roof using light soil with high water-retention properties
- Effect**
- To reduce the air conditioning load through heat insulation.
  - To improve the rooftop scenery and create a place to relax.

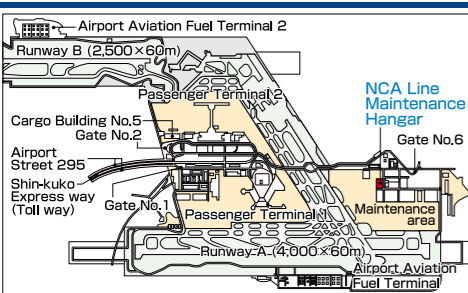


**Naturally balanced wind-power vent window**  
CO<sub>2</sub> reduction 16t/year

- Outline**
- Effective ventilation system using pressure difference and temperature difference to open/close the vent windows and create wind passage in order to ventilate efficiently.
- Effect**
- Possible to ventilate without using power
  - Allows around-the-clock ventilation.

# NCA Line Maintenance Hangar

NARITA INTERNATIONAL AIRPORT in Japan



**NCA Nippon Cargo Airlines**  
**Nippon Cargo Airlines Co., Ltd.**  
**Line Maintenance Hangar**  
 Narita International Airport, Narita-shi, Chiba 282-0011,  
 Japan Phone:81-476-30-3940 Fax:81-476-30-3796  
 URL:http://www.nca.aero

# Line Maintenance Hangar

This hangar is a facility to undertake maintenance on NCA's aircraft. A-checks are performed approximately every 1.5 months, as well as repairs between flights, replacing large parts, and washing fuselage/engines.

The hangar can hold a Boeing 747-8F. Moreover, this facility includes a 4-story annex building where maintenance engineers and staff can undertake their tasks.



## Facility Features

The hangar is a "luminous hangar," which is environmentally friendly and maintenance staff friendly.

## Maintenance Work Features

Due to the special characteristic of the international air cargo business, our flights arrive during the morning and depart at night. Therefore, maintenance of our aircraft is normally undertaken during day time.

## Maintenance System

Engineering & Maintenance consists of Maintenance Audit, Maintenance Administration, Maintenance Planning, Engineering, Quality Assurance, and Line Maintenance. Our site has obtained the Approval of "AMA" (Aircraft Maintenance or Alteration) and "AMI" (Aircraft Maintenance and Inspection) from the Japan Civil Aviation Bureau.



## Maintenance Facilities

### Nose Stand



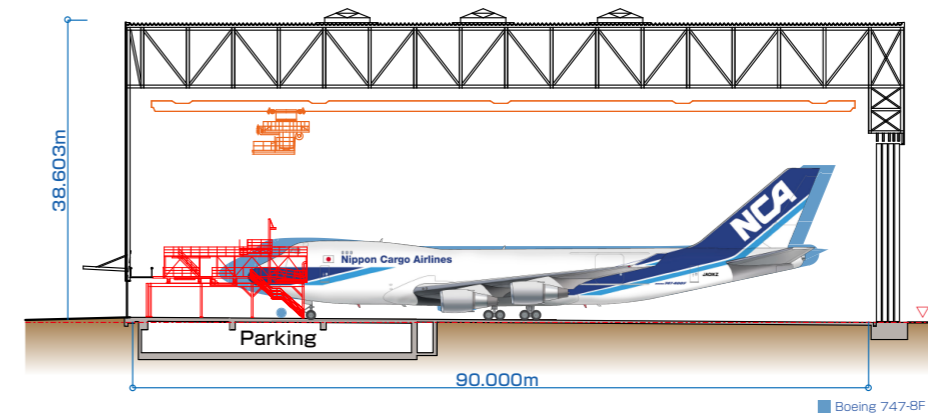
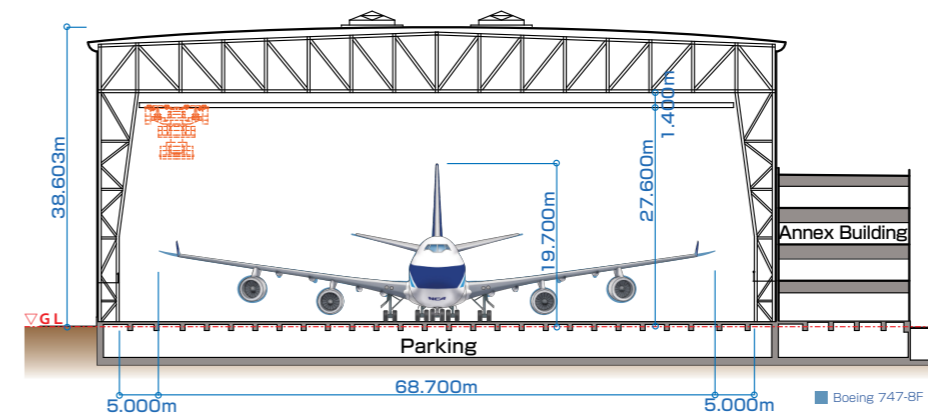
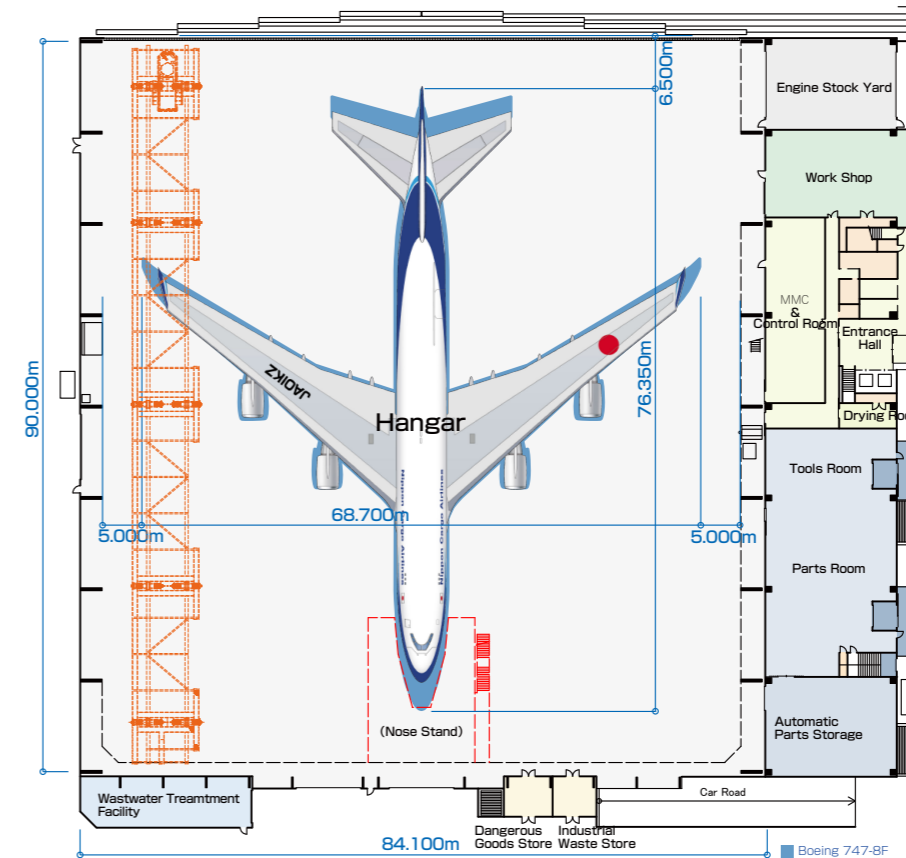
### Gondola Crane



### Automatic Parts Storage



# Plan/Cross Section Facility Outline



## Facility Outline

Design/Construction  
Nippon Steel Engineering Co.,Ltd.

● Scale	
Rented Land Area	13,826.17mf
Building Area	10,380.05mf
Total Floor Area	18,975.04mf
Floors	1 basement, 4 floors 1 tower floor
Maximum Building Height	38,603mm
Main Span Hangar	84,100mm×11,250mm
Main Structure	Iron Framework, Ferroconcrete
Parking Space	105 cars (basement) 3 cars (ground)

● Construction Period	
Design	Jul. 2007–Jan. 2008
Construction	Feb. 2008–Apr.2009

● Construction Materials	
Roof Hangar	Insulate Double Twisted Boards
Annex Building	Waterproof Asphalt
Wall	Metallic Insulate Sandwich Panels
Hangar Door Panels	Polycarbonate Honey-Comb Panels (Lume-wall by Takiron Co.,Ltd.)
Floor	Steel Fiber Reinforce Concrete and Aggregate added Inorganic Thickness Painted Floor

● Equipment	
Ventilation Equipment	
Ventilation System	Cool Air Heat Pump Package System
Heat Source	Electricity

Hygiene Equipment	
Water Supply	Water Tank
Hot Water Supply System	Storage Water Heaters / Instantaneous Water Heaters
Drainage Equipment	Public Sewerage

Electronic Equipment	
Power Receiving System	High-Voltage Power Receiving System
Capacity	1,700KVA
Spare Power	Self-Power Generation Equipment

Fire Extinguishing System	
Extinguishing	Indoor/ Outdoor Fire Hydrant Powder Monitor Nozzle Extinguishing Equipment Foam Extinguishing Equipment Mobile Powder Extinguishing Equipment Connected Watering Equipment

Smoke Ventilation	Natural Ventilation, Mechanical Ventilation
Other	Automatic Fire Alarms systems
Elevators	Passenger Elevator (For 13 persons)×2
Special Equipment	Automatic Large Door Control Rain Utilization Facilities Maintenance Work Facilities