



**中国航空器材集团公司**

CHINA AVIATION SUPPLIES HOLDING COMPANY

# **Promote the Application of Professional Technologies in Energy Saving, and Contribute to the Construction of a Strong Country in Civil Aviation Industry**

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**I. The strategy of CAAC to build a strong country in green civil aviation industry**

**II. CAS's dedication to the application and promotion of new professional technologies in energy saving**

**III. Introduction to the key new technologies in energy saving and exhaust reduction**

- **The Chinese strategic consideration for a strong country in civil aviation: insisting on the principles of green development**
- **The 12<sup>th</sup> Five-Year Plan for Chinese Civil Aviation Industry: the energy consumption and emission of carbon dioxide per ton-kilometer shall be 3% lower on average than the 11<sup>th</sup> Five-year period; the ratio of biosafety disposal and sewage treatment for newly constructed airports shall reach 85% on average.**
- ***CAAC Guidelines on the Accelerated Promotion of Energy Saving and Exhaust Reduction: an increasing speed of energy consumption and carbon emission lower than the speed of the industry's development shall be realized; and the energy consumption and emission per unit of output (energy consumption and carbon emission per Revenue-Ton-Kilometer) in 2020 shall reduce by 22% compared with that in 2005.***

**How can we reach the targets above, and realize the strategic goal of building a strong country in green civil aviation industry.**



**The application and promotion of new professional technologies in energy saving and exhaust reduction are the to the solution.**



**I. The strategy of CAAC to build a strong country in green civil aviation industry**

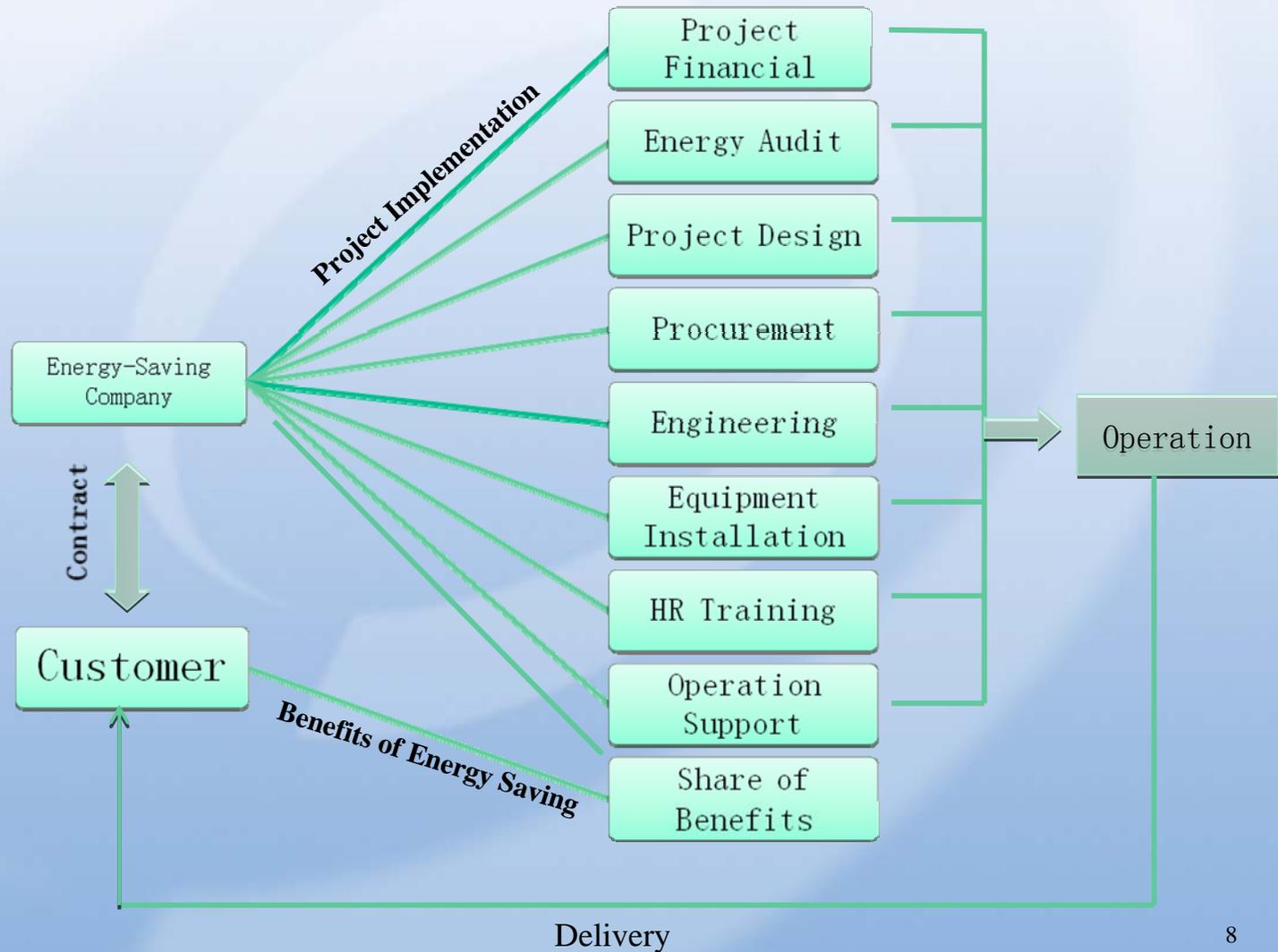
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- **The civil aviation industry requires the participation of an energy-saving company which is very familiar with the industry and experienced in providing relevant services in order to promote the application and implementation of the energy-saving technologies.**
- **CAS has rich service experiences, a professional service team, neutrality position in the industry, good customer relationships, good reputation, and strong capability in finance, and other advantages.**

- **CAS has identified energy-saving services in the civil aviation industry as one of its strategic business segments during the 12<sup>th</sup> Five-Year Plan period.**
- **CAS Energy Management Company will make unreserved efforts to make itself a promoter and solution provider, and become the flagship company in energy-saving services.**

- **Business Mode: Contracted Energy Management**



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# **Advanced Surface Movement Guidance and Control Systems (S-MAN)**

- **Existing problem: with the increase of traffic flow and operation under low visibility at the airport, the traditional way of monitoring the surface movement by view by the Air Traffic Controller has led to the decrease of traffic flow, the longer waiting time for the aircraft, the difficulty for landing, the increased fuel consumption, and the decrease of safety level, etc.**
- **Solution: S-MAN realizes the creation and optimized-allocation of taxi route for the aircraft with an integrated lighting control system. When the aircraft enters the taxiway, the integrated lighting control system will automatically turn on the green taxiway lights in front of the aircraft, indicating the right taxi route for the pilot, and guiding the taxiing in a visual way.**

# Allocated Taxiing Route



## **Three contributions of the S-MAN System:**

- **Effectively reduce runway invasion and wrong taxiing, thus improve safety level;**
- **Reduce the time for taxiing, delay, and waiting, thus reducing energy consumption and carbon dioxide emission;**
- **Effectively increase the airport's capacity**

# Simulated Calculation

The application of the S-MAN System can reduce runway invasion by 75%, and increase 10 take-off/landing per hour under low visibility

	<b>Saving in fuel and maintenance, etc.</b>	<b>Reduction of greenhouse gas emission</b>	<b>Reduction in taxiing time</b>
<b>An airport with an annual passenger volume of 20,000,000 people and 160,000 take-off/landing</b>	<b>100,000,000RMB</b>	<b>20,000 tons</b>	<b>2,000 hours</b>
<b>The 20 largest airports in China</b>	<b>2,500,000,000RMB</b>	<b>500,000 tons</b>	<b>5,000 hours</b>

## **New energy-saving technology for heating system based on absorptive heat exchange**

- **Existing problem:** Currently, the main heating source for the airports in China is still the centralized boiler plants; with the speed-up of new airport construction and airport expansion, the energy consumption for heating is continuously climbing up; and there are lots of residual heats reclaimable from the flue gas.
- **Solution:** New energy-saving technology for heating system based on absorptive heat exchange creatively use direct contact heat exchanger to collect the condensation residual heats from the boiler flue gas, and can realize a maximum increase of the heating capacity of the sourcing end by 50% to 80%.

## Case of a Gas-Burning Boiler Plant at an Airport

Connecting the  
exhaust gas from  
the boiler plant:  
120 °C



Flue gas: 25-30 °C



Natural gas



Heat consumer



Residual heat reclaiming unit for gas boiler plant

### Technology for Deep Reclaim of the Condensation Residual Heats for Gas-Burning Boiler Plant (Patent No.: 200910238452.2)

- The temperature of the boiler plant flue gas is lower than 30°C.
  - The boiler efficiency is higher 100%, at least 10% higher than the traditional boiler plant.
  - White smoke from the chimney can be avoided, and the condensation water can be recycled.
- The benefits to environment are remarkable.

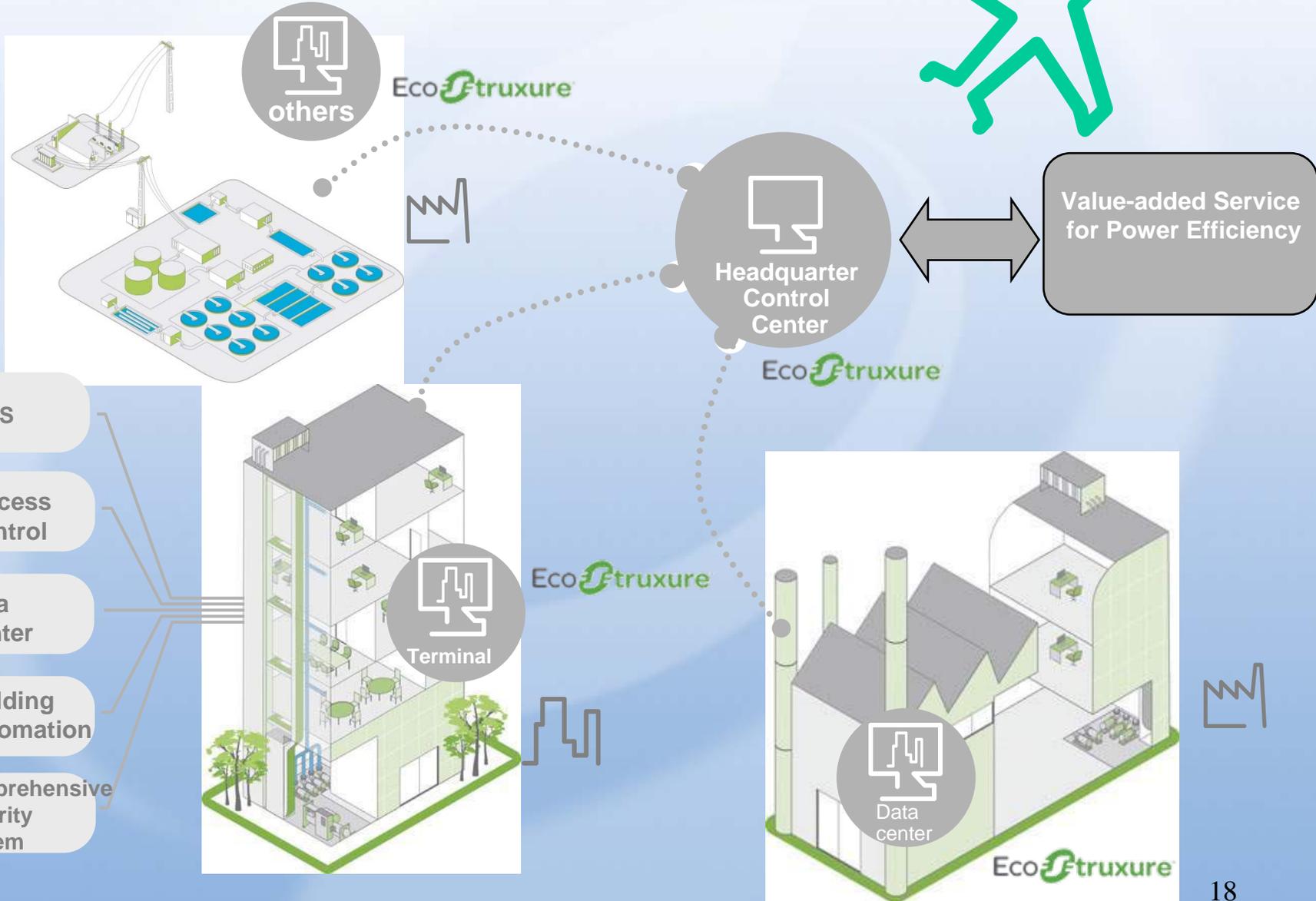
## **Simulated Calculation**

**A wide application of this series of technologies at airports and airline ground service handlers can save energies equal to 1,000,000 tons of standard coals, and contribute 3% to 5% to the goal of reducing the ratio of output/energy-consumption by 22% compared with 2005**

## **Ecostruxure Power Efficiency Management Platform**

- Through the comprehensive application of various energy-saving technologies and control policies, the platform can help the terminal buildings reduce power consumption, optimize their power cost, and improve the effectivity and reliability of power supply.**
- The Ecostruxure Power Efficiency Management Platform is based on the successful experiences in power distribution management system, process control, building automation, comprehensive security system, and data center. It can take into consideration the individual characteristics of the terminal buildings and provide a complete package of customized solutions for power efficiency optimization to meet a preset goal of ROI.**

# Overview of the Solution



## **Conclusion**

**CAS Energy Management Company have received lots of supports from CAAC and the associate organizations for its establishment and development. It has established a good cooperation relationship with international and domestic research institutes of energy-saving technologies and manufacturers of energy-saving equipment.**

**China Aviation Supplies Holding Company will continue to provide excellent professional services to the civil aviation industry. In the energy-saving fields, we will make use of new technologies and do our best to promote our service level in professional energy saving, and contribute our part to the green, low-carbon, and highly efficient development of the Chinese civil aviation industry.**

**Thank You!**