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Inner Mongolia Zhongduo Yuanda Building Industry Heating Case Study

HTC09 radiant heating solution for a 40,000 sqm industrial plant in Horinger, Hohhot

Keywarm Case Study

Case Snapshot

User	Inner Mongolia Zhongduo Yuanda Building Industry Co., Ltd.
Company Background	A joint venture between Zhongduo Industrial Group and Changsha Broad Homes Industrial Group
Location	Horinger County, Hohhot, Inner Mongolia, China

Application	Industrialized construction technology and precast component manufacturing plant heating
Building Area	40,000 sqm
Plant Height	12 m
Model	HTC09
Quantity	220 units
Unit Capacity	28.5 kW
Heating Method	High-intensity ceramic tile radiant heating
Control Logic	Zoned control with point-to-point directional radiant heating

Project Overview

Inner Mongolia Zhongduo Yuanda Building Industry Co., Ltd. is a joint venture established by Zhongduo Industrial Group and Changsha Broad Homes Industrial Group, focusing on industrialized construction technology and precast component manufacturing. The plant has a building area of about 40,000 sqm and a height of about 12 m, representing a typical large-space industrial building. In this type of plant, not only the overall building volume matters, but also local workstation comfort, operating economy and production-environment stability. To address these conditions, the project adopted 220 units of HTC09 (28.5 kW) High-intensity ceramic tile radiant heaters. Through zoned, point-to-point directional radiant heating, the system provided a more targeted heating solution for the large industrial space.

Project Challenges

- The plant covers 40,000 sqm and is about 12 m high, making it a typical high-bay industrial building.
- Traditional boiler-based hydronic systems in large industrial plants often suffer from high thermal inertia, long system paths and slow local response.
- Industrial plants usually do not need to heat the entire air volume uniformly; they need more effective heat coverage at the working zones.
- When cold outdoor air enters the plant in winter, condensation can form indoors and affect both steel materials and the production environment.

Keywarm Solution

- The project used 220 units of HTC09 High-intensity ceramic tile radiant heaters to form a large-space radiant heating system.
- By means of infrared radiation, heat is delivered more directly to people, workstations, equipment and floor areas, enabling directional and zoned heating.
- The system supports zoned control, which better matches the real operating logic of industrial plants by workstation and area.
- Compared with traditional boiler hydronic systems, this solution is better suited to local comfort, fast response and zoned operation in industrial buildings.

Why the System Works

- It is more suitable for high-bay plants and reduces ineffective heat accumulation in upper space.

• It supports zoned control and better matches actual plant operation logic.
• Point-to-point directional heating shortens the heat path and improves target-area effectiveness.
• It helps reduce operating cost and improves the overall economic performance of the system.
• Radiant heat can quickly dry condensation brought indoors from outside, helping keep steel materials from rusting.

Performance & Customer Value

Based on the information you provided, after the High-intensity ceramic tile radiant heating system was adopted, the operating cost was reduced by more than 40% compared with a traditional hydronic system. At the same time, the one-time investment was also about 20% lower than a boiler-based hydronic system. Beyond the economic benefit, the radiant heat could also dry indoor condensation more quickly after cold outdoor air entered the plant, helping maintain a drier production environment and reducing the risk of rust on steel materials. This shows that in large industrial plants, radiant heating is not only a more energy-efficient option, but also a solution better aligned with production-environment requirements.

Key Highlights

• 40,000 sqm large industrial plant application
• 12 m high-bay industrial space
• 220 units of HTC09 High-intensity ceramic tile radiant heaters
• Zoned and point-to-point directional heating
• More than 40% lower operating cost than traditional hydronic heating
• About 20% lower one-time investment than boiler hydronic systems
• Faster drying of condensation and reduced rust risk for steel materials

Project Photos

Close-up of HTC09 ceramic plaque radiant heater installation

Multiple heater arrangement inside the large industrial space

Production area with radiant heating coverage

Side-wall zone and localized radiant heating scene

Recommended Applications

- Precast component plants
- Industrialized construction plants
- Large-space steel-structure factories
- Machinery manufacturing workshops
- Component processing shops
- Industrial buildings requiring zoned and directional radiant heating