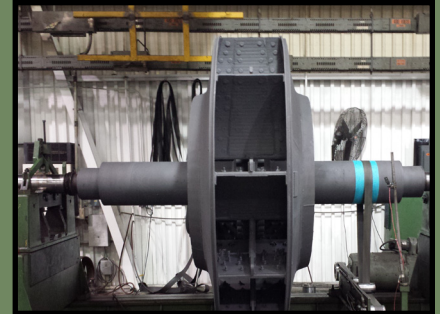
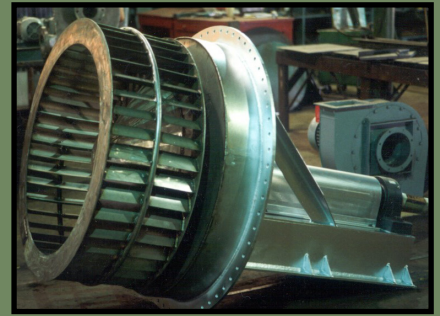


# INDUSTRIAL FURNACE FANS



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- ▶ Forward-Curved and Paddlewheel Centrifugal Fans
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- ▶ Diameter sizes from 12-84" (305-2130 mm)\*
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# HIGH TEMPERATURE FAN APPLICATIONS

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**NYB** provides high temperature fans for a wide variety of applications ranging in temperature from 1,200-1,800 degrees Fahrenheit. We provide both centrifugal and axial high temperature fans in sizes from 12-84 inches in diameter. Our centrifugal fans are available in both forward-curved and paddlewheel configurations, and our axial fans are available in both one-directional and reversible configurations.

Depending on the application requirements, our high temperature fans are typically constructed from 316 stainless steel for temperatures up to 1,500 °F. Fans operating at even higher temperatures up to 1,800 °F are generally constructed from a 309, 800H, 625, 617 Haynes 230, or Super 22H alloy.

High temperature fan accessories include insulation between alloy hot surfaces and mild steel cold surfaces, packing gland shaft seals, water-cooled, shaft, heat slingers, and/or flowing construction to accommodate thermal growth. We have experience delivering rugged, reliable solutions for high temperature applications in industries like aluminum, steel, copper, carbon/charcoal, waste incineration, and more.

## **ALUMINUM HOMOGENIZING FURNACES**

In aluminum homogenizing furnaces, material is loaded into the bottom of the furnace while the heat source is located at the top of the furnace. These furnaces typically require high-temperature axial fans with a size range between 48-60 inches in diameter, and the fans can be either direct drive or belt drive. The fans are located at the top of the furnace near the heat source, and they push air from the heat source and recirculate heated air throughout the furnace.

## **NYB'S SOLUTIONS FOR ALUMINUM HOMOGENIZING**

furnaces utilize high temperature axial fans with patented reversing airflow design. The fan wheel reverses rotation on a timed basis to reverse the direction of the horizontal flow through the load, while the air stream temperature is monitored and controlled on each side of the load. A thermal head is used during the early stages of the cycle for fast, efficient heating. This design increases both the heating rate and temperature uniformity of the load compared with one-way airflow, resulting in better efficiency, lower fuel cost, and improved metallurgical results.

## **ALUMINUM COIL ANNEALING FURNACES**

In aluminum annealing furnaces, the load of aluminum coils or plates feeds into the bottom of the furnace while the heat source is located at the top of the furnace. These applications require very precise temperature uniformity throughout the furnace. Fans must move a large volume of air at a high temperature to bring the load temperature to a defined setpoint, then ramp down the air temperature. A high velocity of air is required to optimize the convection of heat transfer.

To meet these requirements, aluminum coil annealing furnaces typically use forward-curved centrifugal fans mounted vertically in the roof of the furnace. The fans pull air up through the load and then push air down the side walls. This solution ensures extremely uniform temperature distribution throughout the furnace during the annealing process.

## **CARBON BAKING FURNACES**

In steel mills, large carbon baking furnaces process carbon electrodes, which are generally around 2 feet in diameter and 15 feet tall. In many of these applications, there will be multiple rows of carbon baking furnaces, and cars will load batches of carbon electrodes into each furnace. Inside the furnace, a heat source located in the ceiling injects heat into the furnace, bringing the temperature up to 1500 °F.

Three axial fans are mounted to the top of the furnace in the roof along the center line. The fans provide vertical downflow (single direction airflow) and deliver uniform temperature distribution inside the furnace. To withstand the exceptionally high heat of the application, the fans are generally constructed using an Inconel alloy.

## **STEEL BATCH COIL ANNEALING**

In steel mills and other metal industries, a typical shop includes dozens of batch coil annealing furnaces. Each furnace has a fan mounted in the base of the furnace. A diffuser distributes the air from the fan wheel and pushes air uniformly and radially from the center, to the outside of the unit, and then back down through the center.

Coils of steel are stacked on top of one another, and convection plates are placed between each coil to support the load and distribute the air. The unit is then sealed with an inner cover, and the furnace heat source lowered over the top. Fan wheels range in size from 24" to 40" and are typically constructed from either 316 stainless or nickel alloy.

**ALUMINUM INGOT PREHEATING FURNACE**

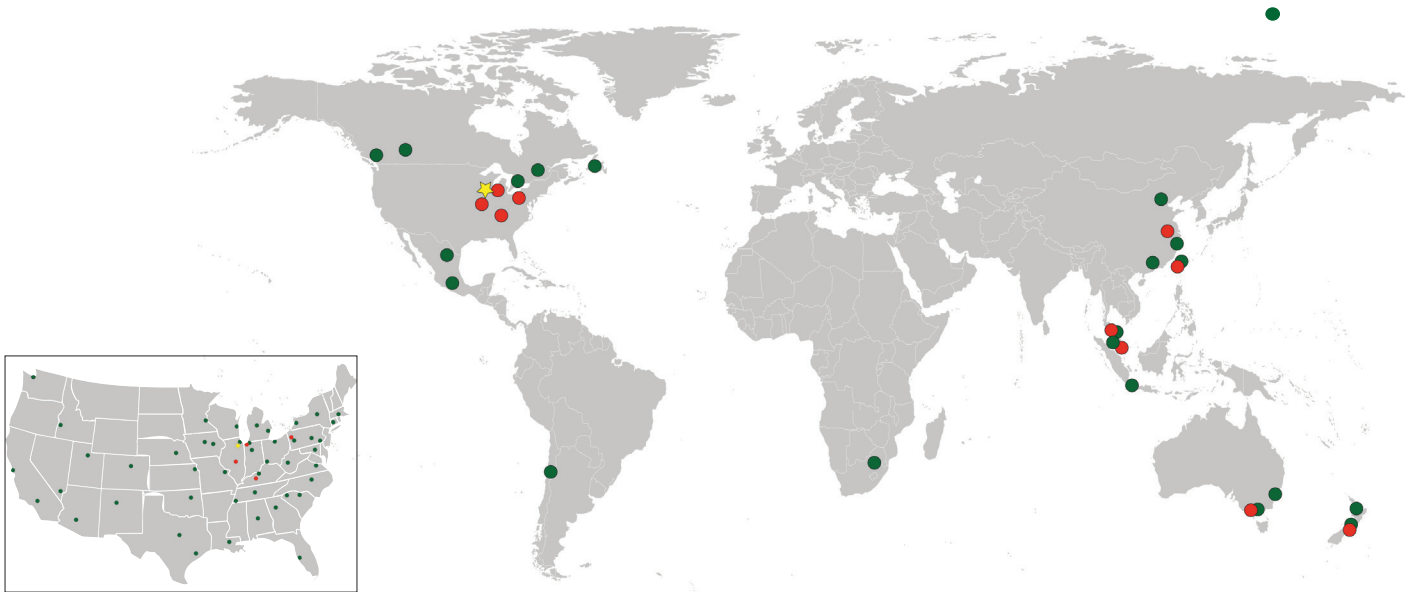
Aluminum ingot preheating furnaces are used to heat aluminum ingots to prepare them to be rolled into plates. In these furnaces, the load feeds into the bottom of the furnace, while the heating element is mounted in the upper portion of the furnace. Either high temperature centrifugal fans or axial fans can be used provide uniform airflow throughout the furnace.

Centrifugal fan arrangements discharge air radially, down the side of the load, and back up through the center. Meanwhile, axial fan configurations typically move the air in one direction, but reverse airflow technology may also be used depending on the application. Fan size is typically between 48 inches to 60 inches in diameter for these applications.

**ALUMINUM HEAT TREATING FURNACE**

In aluminum heat treating furnaces, axial flow fans are mounted to the upper section of the furnace near the heat source, while the load enters through the bottom of the furnace. The high temperature axial fans push air in one direction to evenly distribute the heated air throughout the furnace.

The fans are rated to perform at temperatures up to 1,300 °F, although typical operating temperature is around 1,100 °F for these applications. These high temperature axial fans are typically constructed from 316 stainless steel or an Inconel alloy, and fan size is generally between 48” to 60” in diameter.



- - representative office
- - manufacturing facility
- ★ - corporate headquarters



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