

First Mold's Smart Injection Molding Factory Completes Low-Carbon Transformation

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GERMANY, September 17, 2025 /EINPresswire.com/ -- First Mold claimed that its [smart plastic injection molding factory](#) has achieved significant results in energy consumption management through a "centralized control + dynamic adjustment" model. This provides the industry with a referenceable low-carbon solution.



Smart Factory Overview

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Inside the production workshop, several large injection molding machines are running fully automatically. From raw material input to finished product output, the entire process relies on an information system to achieve coordinated regulation of multiple elements like electricity, water, and gas. The facility is also adept at handling highly customized orders, including [small batch production](#). Bowen Huang, the factory's production manager, said: "Injection molding is a typical

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One of the most successful parts manufacturers in China in the last decade.”

First Mold

manufacturing and processing field. The molding process has several steps—things like water, electricity, gas, and chemical raw materials. It doesn't just use a lot of energy. It also has problems with complicated management and slow response times. Back in 2020, we took the chance when the factory was moving. We did plenty of research and planning first. After analyzing everything thoroughly, the injection molding workshop came up with a management model called 'centralized control + dynamic adjustment'."

Emission Control Tech

It is reported that First Mold built an integrated central control system focusing on key

production links like chilled water, cooling water, electricity, compressed air, raw materials, environmental protection, and negative pressure air. This system can intelligently adjust resource supply based on the real-time equipment utilization rate, achieving refined management and optimization of energy. And this series of improvements is also tangibly reflected in the data. Inside First Mold's workshop, there is a chart graphing the "energy cost per ton of material." At a glance, this curve shows a yearly declining trend. The chart shows that the comprehensive processing energy cost per ton of raw material decreased from \$107.3/ton in 2019 to \$94/ton in 2024. "Through centralized control and dynamic adjustment, we have greatly reduced our management difficulty and also optimized labor usage. For example, the number of feeding personnel was reduced by 1-2 people per shift."



Emission Control Tech



Future Green Goals

Regarding waste gas treatment, the factory introduced an integrated treatment process of "activated carbon adsorption + catalytic combustion." "In industrial production, workshops make organic waste gas. If you let that gas out directly, it doesn't just pollute the environment. It also hurts people's health," Bowen Huang said. "This is the situation we're in. So a new process came along—it uses activated carbon adsorption concentration plus CO VOCs organic waste gas purification equipment."

It is understood that this process happens during operation. First, air collection hoods collect the organic waste gas. Then, the main fan draws this collected organic waste gas in. It pulls the gas into the activated carbon adsorption beds. These adsorption beds are located within the environmental equipment. Finally, the adsorption of the organic waste gas takes place in these beds. After reaching a certain concentration or adsorbing for a certain time, a high-temperature (180-250°C) desorption treatment is performed. The desorbed high-concentration waste gas is then sent to a catalytic combustion furnace—also known as a CO furnace. The combustion happens at a high temperature inside it, specifically between 300°C and 400°C. This high-temperature combustion effectively breaks down the organic waste gas into water and carbon dioxide. In this way, the goal of purifying the waste gas is successfully reached.

Future Green Goals

At a time when injection molding technology is already very mature, green and low-carbon development is no longer just a slogan but a major issue facing enterprises. This expertise extends to advanced techniques like [double shot molding](#). Bowen Huang said, "Going forward, First Mold will keep putting the green development idea into practice. We'll make green, low-carbon changes in a bunch of areas—like technology, processes, and production. And that'll help us hit our sustainable development goals."

About First Mold

First Mold is a high-tech manufacturing enterprise specializing in plastic injection molding. First Mold offers a one-stop solution for custom plastic parts, from design and prototyping to mass production. The services include standard plastic injection molding, insert molding, overmolding, and two-color injection molding. With a focus on precision and quality, First Mold serves a wide range of industries, including automotive, aerospace, medical, and consumer electronics, from their locations in China and Mexico.

Young Lee

First Mold

+86 139 2532 6660

sales@firstmold.com

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