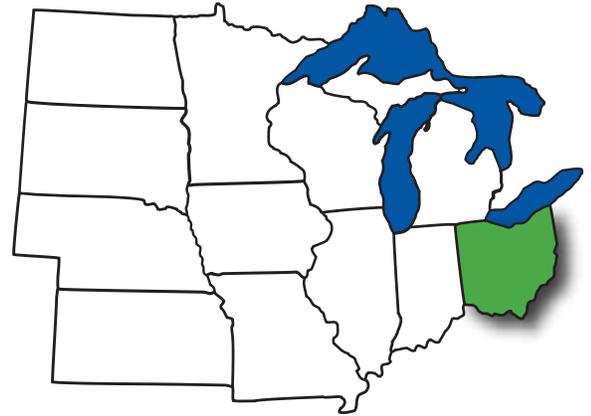


Growing Ohio's Green Economy

THE BOOM IN CLEAN ENERGY DEVELOPMENT, ESPECIALLY WIND POWER, PRESENTS a tremendous opportunity for economic growth in the Ohio and the Midwest. This boom is creating new construction jobs, long-term operations and maintenance positions, and positive indirect economic benefits from payroll spending, property tax revenues and land leases. Some of the best long-term economic opportunities are coming directly from the manufacturing of wind machine components.

As the Midwest wind industry continues to grow, more wind equipment is being manufactured here—near where it is being installed. That simplifies construction and transportation logistics. That locational advantage is spurring new good-paying manufacturing jobs.

A modern wind turbine has more than 4,000 parts, most of which are not “high tech” or “cutting edge” but basic components like gears, structural towers, ball bearings and electrical switches. Ohio has hundreds of firms and thousands of skilled workers which have been making these types of components for decades and could participate in the wind industry supply chain. Some of these firms are already doing so. Some of the oldest names in Ohio manufacturing are now active in the wind industry:



Owens Corning, Toledo:

Owens Corning has developed a new fiberglass fiber reinforcement called WindStrand which allows turbine blade manufacturers to increase the length of the blades without increasing the weight.

Parker Hannifin, Cleveland:

Parker Hannifin is a fluid power and motion control products manufacturer, was recently awarded a \$1 million grant to commercialize an advanced hydraulic system for wind turbines.

Timken, Canton:

Timken is producing a variety of highly-engineered bearings for wind gearboxes, power trains and turbines. Timken has also recently entered into a joint venture with a Chinese manufacturer to produce bearings for the fast-growing Chinese wind market.

Cincinnati Gear Company, Cincinnati:

This company is making gearing systems and gearboxes for turbines as large as 2 MW.





Part of Ohio's success is due to the Great Lakes Wind Network, a non-profit partnership of Ohio manufacturers and several foundations, whose mission is to increase the participation of Ohio manufacturers in the wind industry supply chain. The network hosts workshops and matches turbine manufacturers with potential Ohio component suppliers. Ohio's recent passage of an aggressive Renewable Energy Standard will also send the signal to turbine suppliers that Ohio is serious about the wind industry.

A number of smaller firms are active in the industry as well:

- **Advanced Manufacturing, Cleveland:** Advanced Manufacturing is a machine tool company that's producing precision gearboxes for the wind industry.
- **Avon Bearings Corporation, Avon:** A leading custom designer and manufacturer of high precision large diameter turntable bearings, Avon has been involved in the wind energy business for about 20 years. Wind generation accounts for more than 20% of sales at the company, which employs about 100 people.
- **Magna Machine, Forest Park:** Magna Machine specializes in machining very large metal parts and has a multi-year agreement to machine support bases and 40,000-pound turbine rotor hubs for Clipper Windpower. The company has added about 25 jobs, increasing employment to 125 in the past couple of years, because of its wind turbine work.
- **Rotek Incorporated, Aurora:** Rotek is a leader in the design, development and manufacture of large diameter slewing ring bearings, announced plans in May to invest \$82 million to expand its plant in Aurora, Ohio. The expansion is expected to create up to 150 new jobs. Wind components make up about 25% of the company's U.S. sales.

