

CML Northern Blower Inc.

Heavy Duty Airfoil and Backward Curved Fans



*Two Series 4000 BCI fans
(500 hp, 1800 rpm,
60" diameter)
installed on a regenerative
thermal oxidizer.*



High Efficiency Industrial Fans

Reduce Operating Costs

Northern's line of heavy duty airfoil and backward curved fans have been developed for mid to high pressure applications. Higher pressures are now common in many industrial processes as more restrictive devices that impede flow have been added to the airstream. As a consequence, the power consumption of fans placed in these systems has increased dramatically, so fan operating efficiency is of premium importance.

From combustion air to baghouse and scrubber systems, Northern has an efficient heavy duty fan for the job. Northern now offers an entire family of high efficiency airfoil and backward curved fans designed to meet the rigorous demands of today's complex air systems. Available in multiple arrangements with a broad range of accessories, Northern can provide a flexible solution to minimize fan operating costs.



**Series 4000
Industrial
Backward
Curved Wheel**



**Series 5900
Industrial
Airfoil Wheel**



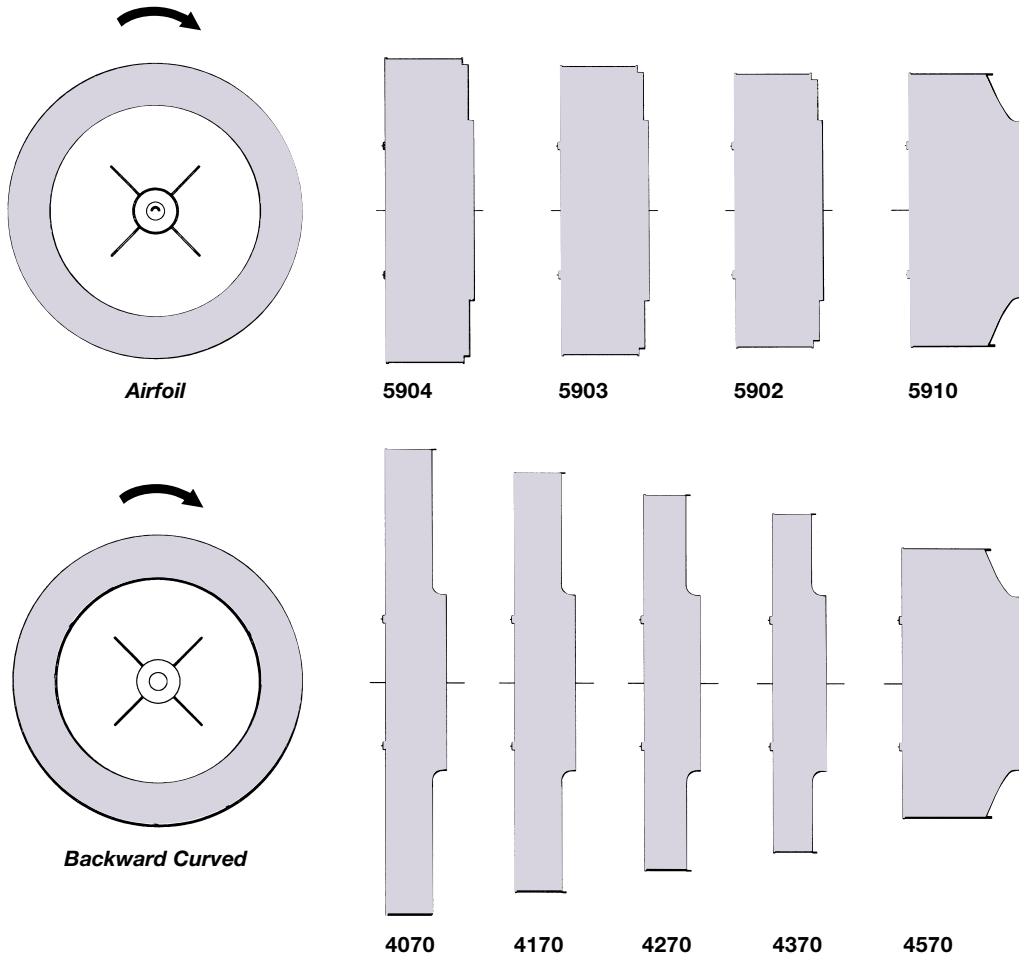
Optimal Wheel Designs



Multiple Wheels Optimize Efficiency

Northern's Series 4000 Backward Curved Industrial and Series 5900 Industrial Airfoil fans were designed to provide highly efficient operating characteristics over a very broad range of system requirements. The Series 4000 BCI and Series 5900 IAF each contain a sequence of aerodynamically similar non-overloading fan wheels.

In turn, for any given fan size, each wheel is available in multiple diameters or widths to provide a full performance spectrum. As a result, a specific fan can be very precisely matched to a system's volume and pressure requirements for optimum efficiency and reduced operating costs.



Welding personnel with fifty years combined fan experience inspect Series 4000 BCI housing weldment (80.75" diameter, arrangement 8S1).



Engineered to Last

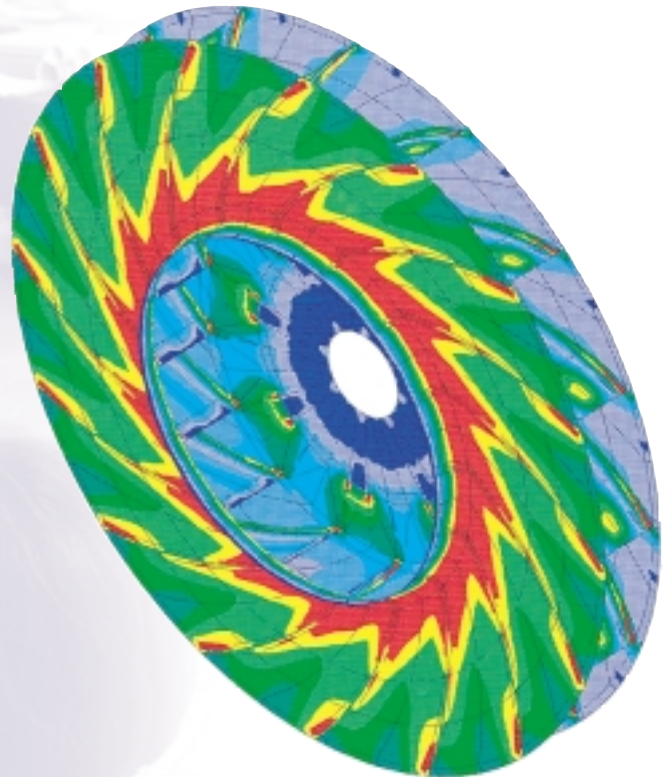
Northern Blower... Engineered to Last

Northern develops its industrial fan designs with the aid of sophisticated engineering tools including finite element analysis, strain gauge testing, and destructive testing. Initial aerodynamic performance capabilities are modeled with a predictive program and final performance envelopes are verified using the standards of the Air Movement and Control association. The result is a product that is thoroughly engineered for reliable operation.

Built Rugged for Reliable Operation

Every Northern heavy duty fan is built to last. Material gauges and alloys chosen to suit the application and welding by Northern's CWB certified welders provides a solid structure. The Series 4000 wheel is manufactured with solid blades for operation in mildly erosive environments while the Series 5900 uses hollow airfoil blades for clean air applications. All wheels feature heavy gauge steel or alloy construction and are dynamically balanced to provide smooth running characteristics.

Finite element stress distribution plots are a key component used by Northern's engineers in the design process to ensure structurally sound components.



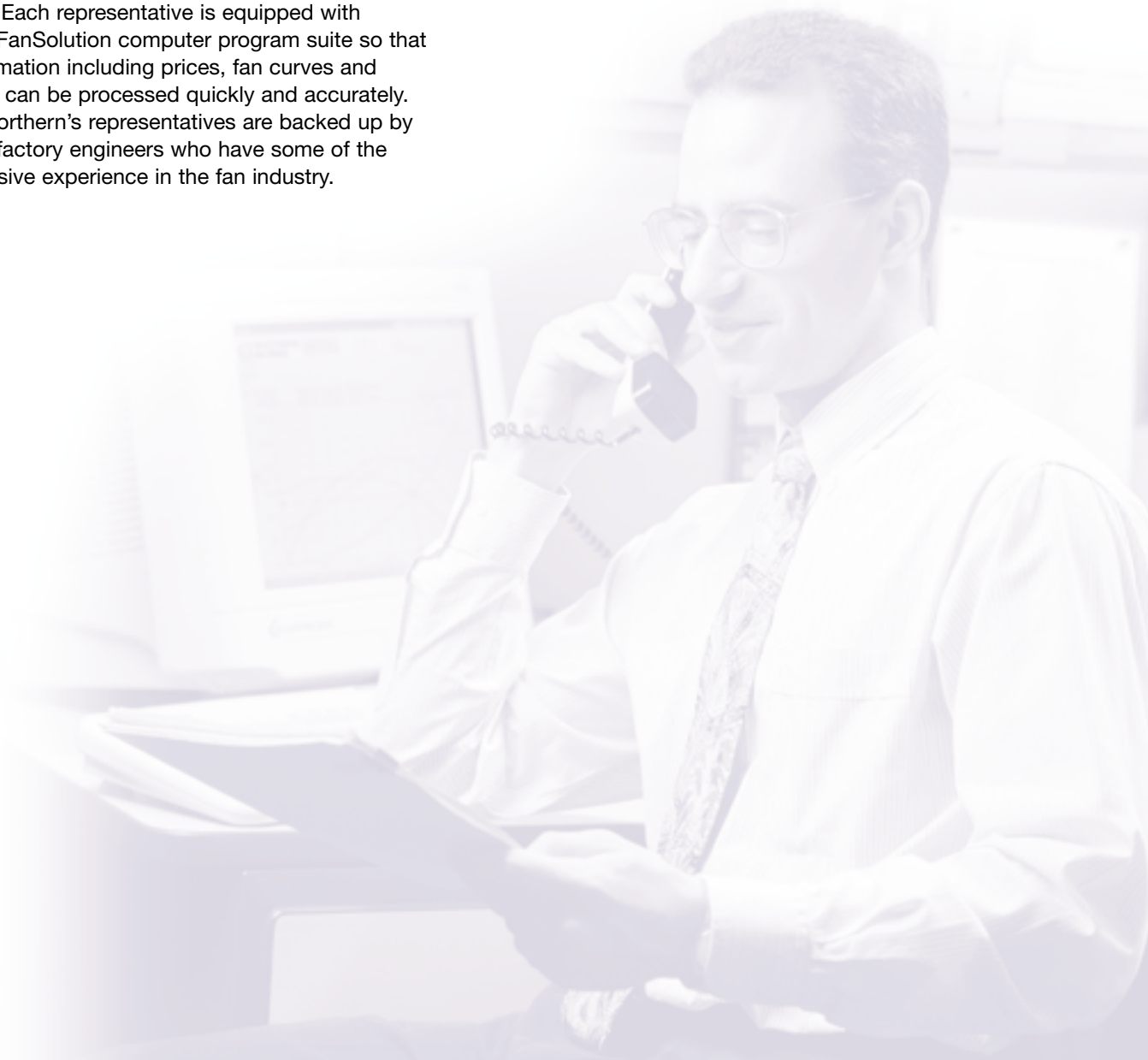


Industrial fan selection is fast and easy with Northern's FanFinder software. Fan curves, tip speeds, sound data and more are available at the touch of a button.

Selection Made Easy



While the fan design itself is complex, the fan selection process is simple. Northern's sales representatives are available across North America to provide technical expertise and help you specify the right Northern fan for the job. Each representative is equipped with Northern's FanSolution computer program suite so that quote information including prices, fan curves and sound data can be processed quickly and accurately. And only Northern's representatives are backed up by Northern's factory engineers who have some of the most extensive experience in the fan industry.

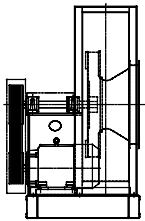


Arrangements and Options

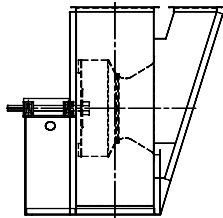
Northern Arrangements and Options

Northern's industrial fans can be built in the configuration needed to suit your exact requirements. Available in multiple arrangements with an infinite number of rotation, discharge, and inlet geometries almost any requirement can be accommodated in the design process.

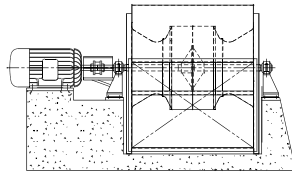
In addition to custom geometries, Northern is capable of providing a multitude of accessories including vibration and temperature detectors, dampers, actuators, insulation clips or full insulation packages, special coatings and special alloys to name a few. Customer drawings are also available in an optional AUTOCAD® format. Our intention is to provide an integrated fan package suited to your exact needs.



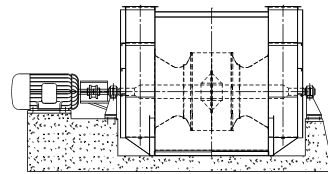
Arrangement 1
Belt Drive



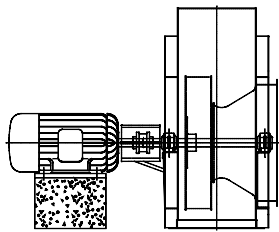
Arrangement 1S1



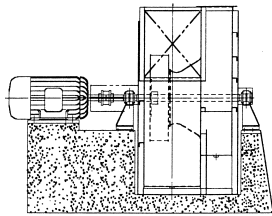
Arrangement 3D



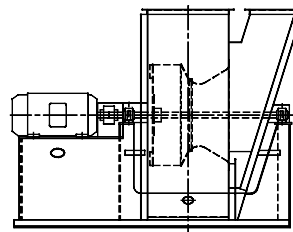
Arrangement 3D2



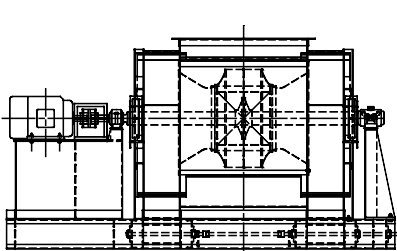
Arrangement 3S



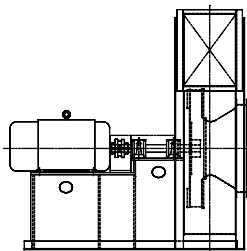
Arrangement 3S1



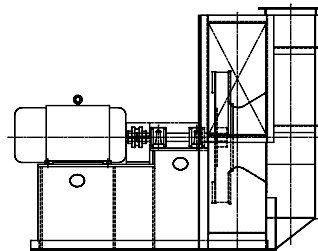
Arrangement 7S1



Arrangement 7D2



Arrangement 8



Arrangement 8S1

Service doesn't stop after the fan is sold. We work in partnership with you to provide service solutions tailored to your particular needs. From on-site training seminars to start-up assistance or warranty requirements, Northern is able to respond.



Service, service, service...

Your Needs	Our Response	Benefits to You
Reduced Costs	Custom Build Standards <ul style="list-style-type: none"> • Multiple wheel and housing configurations for a specific application matched fan. • Computerized selection. • Multiple accessory choices. 	<ul style="list-style-type: none"> • Optimized fan efficiency for reduced operating costs. • Reduced initial cost – no more, no less fan than required.
Technical Assistance	Engineering Support <ul style="list-style-type: none"> • Regional Sales Reps across North America. • Factory Sales Engineers with extensive fan and systems backgrounds. • We are capable of sending an engineering team to your facility to determine your specific needs. • On site training and technical seminars. 	<ul style="list-style-type: none"> • Fast expert response. • Working relationships built on personal contact.
Support Material	Special Details <ul style="list-style-type: none"> • Heavy duty equipment drawings available in blueprint or optional AUTOCAD® dxf file format. • Custom Operation Manual development. 	<ul style="list-style-type: none"> • Reduced project drawing time. • All inclusive instructions.
On-time Delivery	Production Control <ul style="list-style-type: none"> • Order process chart available covering detailed aspects of order flow from entry to shipment. • Effective integrated MAPICS MRP System and weekly cross functional meetings address potential delivery issues. 	<ul style="list-style-type: none"> • No more costly surprises.
After Sales Service	Site Inspection <ul style="list-style-type: none"> • Experienced technicians are available for optional on-site diagnostics or start-up assistance. 	<ul style="list-style-type: none"> • Reduced start-up time.



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