

Nordson iDry[®] – ST

Induction heating for steel tubing

Fast, Efficient Heating for Steel Tubing

The Nordson iDry induction heating system is designed to heat small-diameter welded tubing used in automotive fluid management systems. Typical applications are to dry or cure coatings applied to the tube exterior, or to preheat the tube for polymer resin coatings. The Nordson iDry system allows for instant-ON and instant-OFF heating, and is applied only to the target component. This is a fast and economically-efficient energy transfer, resulting in accurately heated parts at minimal operating costs.

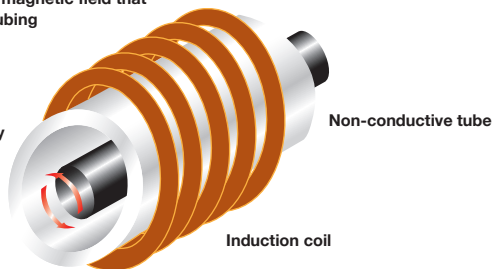
Induction heating is a fast, economically-efficient technology for quickly heating metal. The iDry system uses air-cooled medium frequency induction to do so. Welded or brazed tubing is fed through a coater and then through the iDry system. The induction heating path is a non-conductive tube, 2-3" in diameter, mounted through the center of the working coil(s). All coils are air-cooled using specially wound wire. When activated by either an external command signal or by sensing material movement, the energy field will activate and the tube will be heated to the desired temperature within seconds.

In many applications, the iDry system will cure coatings on diameters from 3/32" to 1/2" (2.4 to 12.7 mm) without a tooling change. With built-in recipe control, changing the curing profile requires very little time.

Basic Principles of Induction

When an alternating current is applied, the coil generates an alternating magnetic field that cuts through the brake tubing

This results in large eddy currents circulating in the brake tubing



The resistance to this circulating current results in heating the brake tubing



System operation includes:

- The ability to heat tubing to 500°–525°F (260°– 275°C) in three seconds.
- A system of 4 or 5 modules (each 54" long) in series can provide a three second heating cycle at line speeds of 300 to 450 ft/min (90-135 m/min).
- Total heating system length ranges from 10 to 27 feet (3.05 to 8.23 meters), depending upon the line speed and heating requirements.

Nordson Advanced Induction – Efficient and Economical

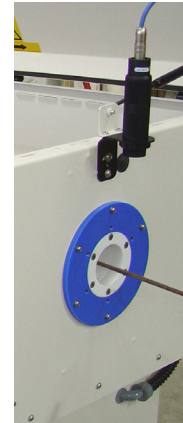
Nordson induction heating technology heats steel, aluminum and many alloy treated components rapidly and efficiently. With induction heating, only the part is heated to the desired cure temperature – not the ambient air – which results in a rapid and controlled process. Drying occurs from the metal surface outward, rather than heating the surface of the liquid coating which could result in skinning of the coating causing blisters and entrapped moisture or solvents.

Nordson induction dryers are air-cooled only, avoiding the complications of a water-cooled system. The Nordson system provides uniform controllable induction heating without the maintenance, corrosion and leaks and costs associated with circulating water-cooled systems.



Simple, Automatic Operation

A touchscreen HMI provides the controls and HMI for the entire system. It features a touch-screen color display with special software to provide intuitive navigation for visual observation of set-up and operating parameters, plus system diagnostics and alarms. On larger systems (4 or more modules), the HMI is mounted to a pedestal. In the event of an electronic malfunction, a message display identifies the source of the malfunction. Multi-language capability is included with the system. Helpful LED diagnostic lights are installed on the printed circuit boards to assist in trouble-shooting and system analysis. During start-up the PLC performs an extensive self-diagnostic check for proper operation of the system.



Precision and Accuracy in Heating

Heating is controlled by adjusting the percentage of power applied to the load. A recipe system is included which allows for repeatable curing, by storing the settings for each product type. All settings for each profile are stored on a non-volatile SD card. An accurate infra-red heat sensor is installed immediately at the exit of the induction heater to ensure proper temperature is achieved. Emissivity settings are included in the recipe feature, so accuracy in temperature measurement is maintained.

Safe, Consistent Operation

The patented induction-heating method operates at frequencies well below 20 kHz. The lower frequency provides safe, controllable heating within the metal tubing, resulting in fast and thorough curing. Lower frequency also results in less electrical noise that could interfere with other electronic and communications devices.

For more information, speak with your Nordson representative or contact your Nordson regional office.

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