

P-SERIES Nitriding/Nitrocarburizing System with United Process Controls' PROTHERM™ Process Controller

The P-SERIES is a new addition to the NITREX portfolio of nitriding / nitrocarburizing systems and is designed primarily for commercial heat treating companies.

It takes advantage of the best-of-class Nitrex nitriding / nitrocarburizing furnaces and features flexible controls based on United Process Controls' PROTHERM™ controllers, which are capable of running the most advanced user-configured recipes with % Diss, K_N , K_C and K_O setpoints to meet AMS 2759/10 and 2759/12[†] specifications. PROTHERM™ controllers are feature-rich and offer easy connectivity to the PROTHERM™ 9800 Production Management Software or to third party SCADA systems. The integrated recipe builder allows the user to design a recipe by configuring process parameters such as % Diss, K_N , K_C , K_O , temperature, atmosphere mixtures, furnace pressure and more.

The P-Series opens up new vistas for expert users looking to leverage and support their in-house recipe development and process design capabilities.



NXHP series system with horizontal batch furnace



NXP series system with pit furnace



[†] Depending on the options selected

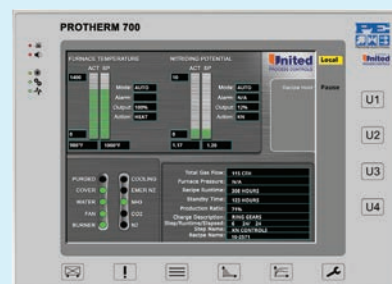
P-SERIES AT A GLANCE

FURNACE

Horizontal and vertical standard models with a load capacity of up to 1500 kg (3330 lb) and 10,000 kg (22,000 lb) respectively for a broad range of applications. Furnaces are designed to have fast heat-up and cooling rates, as well as uniform temperature and atmosphere throughout the work zone. By incorporating multiple controlled heating zones, temperature uniformity inside the retort is $\pm 5^\circ\text{C}$ (9°F) or better.

PROCESS CONTROLS

The PROTHERM™ controller monitors and regulates all furnace functions, nitriding / nitrocarburizing cycles with % Diss, K_N , K_C , K_O setpoints, alarms, and maintenance tasks. The integral *H₂Smart™* sampling system ensures extremely accurate measurement of hydrogen in the process atmosphere, thereby achieving precise control of processes.



AUXILIARY EQUIPMENT

A range of optional auxiliary equipment is available to enhance the P-Series capabilities and process efficiencies Water System, and others.

SMALL-SCALE BATCH PROCESSING



NXKP Series

The multipurpose NXKP series is a compact and economical choice for use in small-scale processing as well as for process development purposes.

NXKP SERIES COMPACT FURNACES

Standard Sizes †	Model	Diameter	Height	Load Capacity
Working Zone Dimensions	NXKP-409	15¾" / 400 mm	35½" / 900 mm	660 lbs / 300 kg
	NXKP-412	15¾" / 400 mm	47¼" / 1200 mm	880 lbs / 400 kg
	NXKP-609	23½" / 600 mm	35½" / 900 mm	1300 lbs / 600 kg
	NXKP-612	23½" / 600 mm	47¼" / 1200 mm	1700 lbs / 800 kg
	NXKP-812	31½" / 800 mm	47¼" / 1200 mm	2200 lbs / 1000 kg

SMALL TO HIGH VOLUME BATCH PROCESSING

The heavy-duty NXHP and NXP series provide flexibility for a wide range of applications. These systems are designed to have fast heat-up and cooling rates, as well as uniform temperature and atmosphere.

NXHP SERIES HORIZONTAL FURNACES

Standard Sizes †	Model	Dimensions Width x Height x Length	Load Capacity
Working Zone Dimensions	NXHP-669	23½" x 23½" x 35½" 600 x 600 x 900 mm	1300 lbs 600 kg
	NXHP-6612	23½" x 23½" x 47¼" 600 x 600 x 1200 mm	1700 lbs 800 kg
	NXHP-9812	35½" x 31½" x 47¼" 900 x 800 x 1200 mm	2200 lbs 1000 kg
	NXHP-9818	35½" x 31½" x 71" 900 x 800 x 1800 mm	3330 lbs 1500 kg



NXHP Series

NXP SERIES PIT FURNACES

Standard Sizes †	Model	Diameter	Height	Load Capacity
Working Zone Dimensions	NXP-615	23½" / 600 mm	59" / 1500 mm	2200 lbs / 1000 kg
	NXP-620	23½" / 600 mm	78¾" / 2000 mm	2600 lbs / 1200 kg
	NXP-815	31½" / 800 mm	59" / 1500 mm	3300 lbs / 1500 kg
	NXP-820	31½" / 800 mm	78¾" / 2000 mm	3850 lbs / 1750 kg
	NXP-825	31½" / 800 mm	98½" / 2500 mm	4400 lbs / 2000 kg
	NXP-1015	39" / 1000 mm	59" / 1500 mm	4400 lbs / 2000 kg
	NXP-1020	39" / 1000 mm	78¾" / 2000 mm	5500 lbs / 2500 kg
	NXP-1025	39" / 1000 mm	98½" / 2500 mm	6600 lbs / 3000 kg
	NXP-1215	47¼" / 1200 mm	59" / 1500 mm	6600 lbs / 3000 kg
	NXP-1220	47¼" / 1200 mm	78¾" / 2000 mm	8400 lbs / 3800 kg
	NXP-1225	47¼" / 1200 mm	98½" / 2500 mm	9900 lbs / 4500 kg
	NXP-1230	47¼" / 1200 mm	118" / 3000 mm	11570 lbs / 5250 kg
	NXP-1625	61" / 1550 mm	98½" / 2500 mm	13200 lbs / 6000 kg
	NXP-1630	61" / 1550 mm	118" / 3000 mm	15400 lbs / 7000 kg
	NXP-1635	61" / 1550 mm	137¾" / 3500 mm	17600 lbs / 8000 kg
NXP-1645	61" / 1550 mm	177" / 4500 mm	22000 lbs / 10000 kg	



NXP Series

† Most popular sizes are shown. Please contact Nitrex Metal for other furnace sizes



PROTHERM™ 470



PROTHERM™ 600

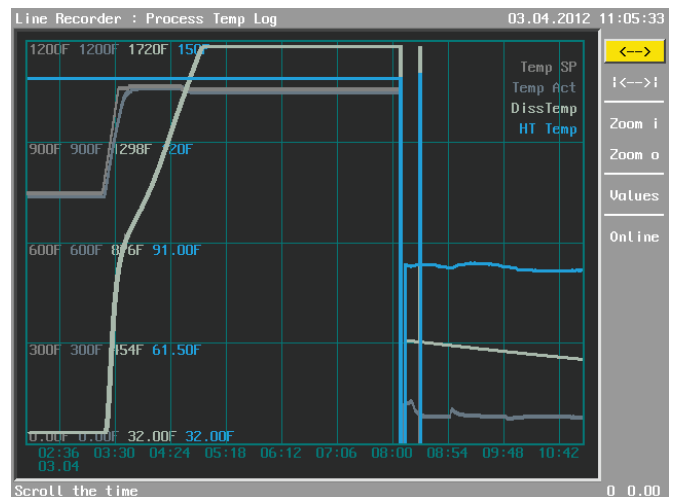


PROTHERM™ 700



The PROTHERM™ series of controllers enable flexible and convenient control of a Nitrex batch-type furnace, providing the ability to run, monitor, record, and archive even the most complex nitriding or nitrocarburizing processes.

PROTHERM™ 470, 500, 600, and 700 controllers include features such as live trending, built-in data logging, integrated web server, SCADA connectivity, as well as a bevy of maintenance and safety functions.



User receives live feedback of process parameters via an integrated chart recorder.

KEY FEATURES

- PID control loops to regulate configured process parameters such as temperature, furnace pressure, flows as well as atmosphere parameters (e.g.: K_N , K_C and K_O)
- Real-time control of all process stages
- Process parameters configured with alarm limits
- Notification and processing of alarms
- Chart recorder to provide continuous recording of process variables
- Recipe library to create and save up to 999 recipes
- Built-in user and group security with multiple access levels

INTEGRATED WEB SERVER

- Facilitates the user to access the PROTHERM™ controller from any PC through a web browser
- Available functions include the ability to access the status overview of the controller, monitor work in progress, read current parameters, observe and download graphs, trends and alarms of the active recipe
- Access up to 30 days of process logs stored in ASCII format for data processing and analysis with a spreadsheet software or portable document format (PDF)
- Built-in backup and restore utility to protect all system data and to quickly restore operations



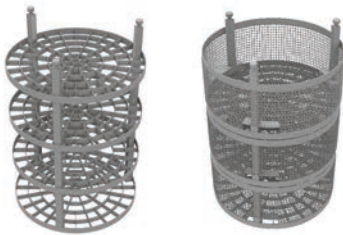
The **H2Smart™** is a powerful hydrogen sampling tool for precise measurement of the furnace atmosphere.

The **H2Smart™** is at the heart of the P-Series process control. It is an integrated sampling system that measures hydrogen content with high accuracy in nitriding and nitrocarburizing atmospheres.

The unique design with a variable output integral pump allows the set sampling flow rate to be automatically maintained. A flow control circuit complete with pump saturation warning and flow alarm insure reliable sampling and accurate readings.

OPTIONAL AUXILIARY EQUIPMENT

RACKING



Easy-to-assemble Inconel baskets and trays constructed for safe and easy loading.

ACCELERATED COOLING



Internal accelerated cooling system to reduce cooling time by 40% or more.

AMMONIA DISSOCIATOR



Economical and safe supply of dissociated ammonia.



Eliminates residual ammonia and/or other pollutant gases from nitriding/nitrocarburizing system exhaust.

EFFLUENT NEUTRALIZER



Recirculates clean cooling water to prolong the longevity of furnace elements.

WATER COOLING



NitroCarb™ oxygen probe used with **H2Smart™** for nitrocarburizing process control.

NITROCARBURIZING

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