

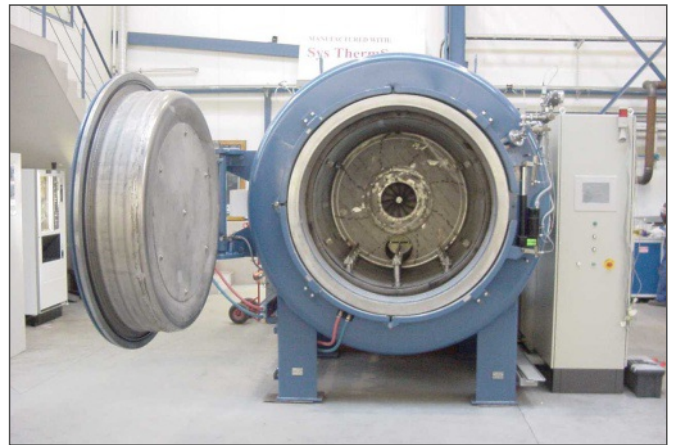
# Retort Tempering

Vacuum Purged Furnaces  
VTR series

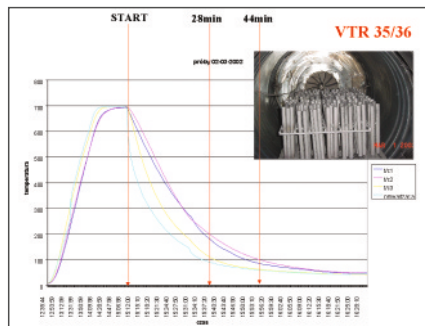
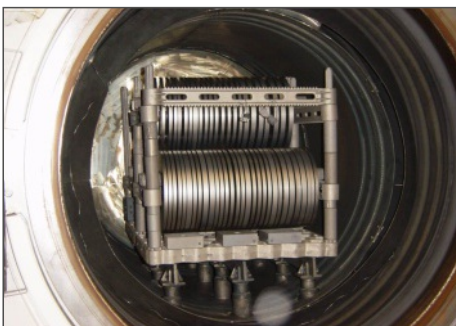
- Bright tempering
- Stress Relieving
- Protective Atmosphere Annealing
- Available Option – Gas nitriding type ZeroFlow® including nitrocarburizing
- Pre- and Post-oxidation

## Advantages of VTR furnaces:

- Shorter cycles, increased production output and precise process control.
- Horizontal loading (vertical loading available optionally).
- Electric (**E**) or gas (**G**) heating.
- Compact design, simple installation, fast start up and easy maintenance.
- Smart-sized low mass retort for fast heating, cooling and optimized energy consumption.
- Temperature uniformity better than  $\pm 5^{\circ}\text{C}$  (or  $\pm 3^{\circ}\text{C}$ ) according to AMS 2750D; meet SAT and TUS requirements.
- Door closing system with a clamping ring and lip seal prolongs the service life of the door lip seal.



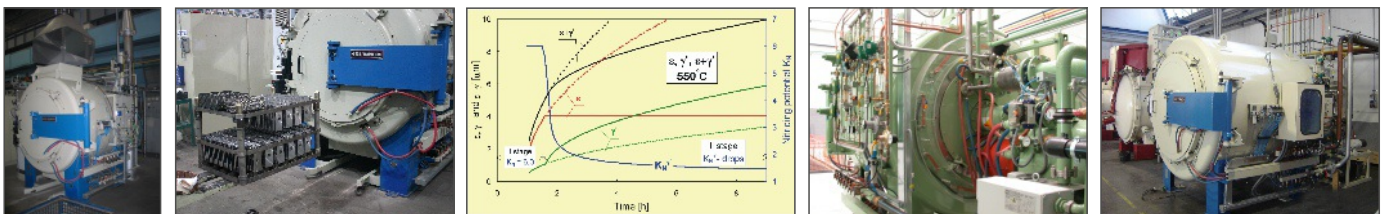
- Short evacuation time to purging vacuum level  $10^{-1}$  or  $10^{-2}$  mbar.
- Standard external forced cooling system with cooling air flow over the retort surface.
- Optional internal forced cooling system to improve and reduce cooling cycle.
- Optional configuration – furnace with two cooling systems for higher cooling efficiency with a minimum requirements of installation area.
- Furnaces meet both European and North American standards.





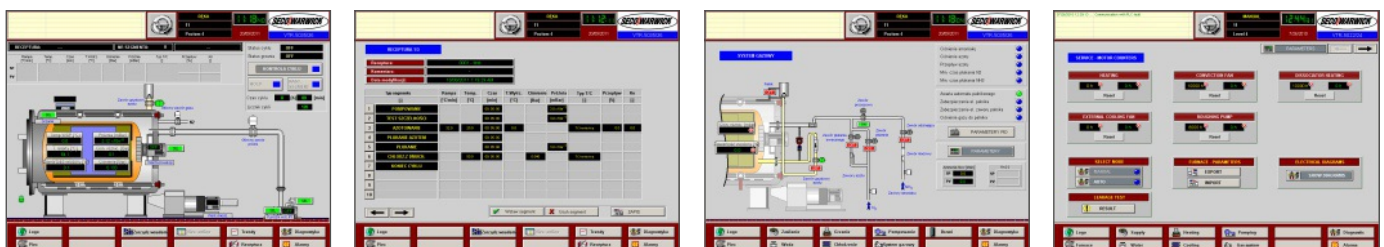
## Option – gas nitriding ZeroFlow® invented by prof. L. Małdziński

- New gas nitriding technology provides alternative to the current industry standard.
- High precision of the nitrided layer formation attained with precise control of atmosphere.
- Process control by ammonia proportioning and flow stopping (ZeroFlow®).
- Option – nitrocarburizing and post-oxidation.
- Low consumption of process gases and low emission of exhaust gases (significantly lower than in traditional processes).
- Quick and accurate on-line reporting of atmosphere composition in a closed system; no complex sampling system.
- Simplified gas system.
- Low capital costs.
- ZeroFlow® simulation software.



## Control system advantages

- Fully automated furnace operation controlled by PLC (Programmable Logic Controller) and IPC (Industrial PC-class computer).
- LCD touch screen visually displays all technological parameters of heat treatment processes.
- Large capacity of a hard disc (HDD) recording of unlimited number of recipes. It eliminates errors resulting from creating new recipes by a furnace operator.
- All process data are recorded, and can be displayed as a diagrams on a separate screen or saved on HDD or a CD.
- Export of historical data and alarm messages to external system for further analysis (e.g. to \*.csv files).
- Easy integration with any data base.
- The furnace is equipped with the internal Ethernet network; remote furnace service is available through Internet or modem connection using dedicated software.
- Optionally the control system can be equipped with advanced batch reporting and history analyzing software which can present data using templates for standard MS Office applications, such as Word and Excel.
- A separate diagnostic screen reminds about maintenance requirements of individual components of the furnace.



## Technical data

- Electric (E) or gas (G) heating.

		VTR 4035/36	VTR 4050/48	VTR 4056/60
Uniform zone (WxHxL)	mm	600x600x900	900x800x1200	1000x1000x1500
Max. load	kg	600	1500	2500
Operating temperature	°C	150-750		
Temperature uniformity	°C	± 5		
Heating power	kW	90	150/240	240/300
Coling gas pressure	bar abs.	1,3		

*\*Other sizes and parameters available on request*



SECO/WARWICK Group

POLAND  
SECO/WARWICK S.A.  
Sobieskiego 8  
66-200 Świebodzin, Poland  
tel. +48 68 3820 500  
fax +48 68 3820 555  
info@secowarwick.com.pl  
www.secowarwick.com

POLAND  
SECO/WARWICK Europe Sp. z o.o.  
Świerczewskiego 76  
66-200 Świebodzin, Poland  
tel. +48 68 3819 800  
fax +48 68 3819 805  
europe@secowarwick.com.pl  
www.secowarwick.com

USA  
SECO/WARWICK Corp.  
P.O. Box 908  
Meadville, PA 16335-6908, USA  
tel. +1 814 332 8400  
fax +1 814 724 1407  
info@secowarwick.com  
www.secowarwick.com

USA  
RETECH SYSTEMS LLC  
100 Henry Station Rd.  
Ukiah, CA 95482, USA  
tel. +1 707 462 6522  
fax +1 707 462 4103  
leroy.b.leland@retechsystemsllc.com  
www.retechsystemsllc.com

GERMANY  
SECO/WARWICK Service GmbH  
An der Molkerei 15  
D-47551 Bedburg-Hau, Germany  
tel. +49 (2821) 713 100  
fax +49 (2821) 713 10-29  
service@secowarwick.com  
www.secowarwick.com

CHINA  
SECO/WARWICK RETECH  
Thermal Equipment Manufacturing  
(Tianjin) Co., Ltd.  
7B Second Xeda Road  
Tianjin, China 300385  
tel. +86 22 238 28 300  
fax +86 22 238 28 305  
china@secowarwick.com  
www.swretech.com.cn

INDIA  
SECO WARWICK Allied Pvt. Ltd.  
5th Floor, Amfotech It Park  
Road No. 8, Wagle Estate  
Thane (W) - 400 604, India  
tel. +91 22 6730 1400  
fax +91 22 6730 1488  
swa-info@secowarwick.com  
www.secowarwick.com

BRAZIL  
SECO/WARWICK do Brasil Industria  
de Fornos Ltda.  
Parque Industrial II  
Jundiá, SP - Brasil  
CEP: 13213-170  
tel. +55 (11) 3109-5900  
fax +55 11 4525-1047  
vendas@secowarwick.com  
www.secowarwick.com

RUSSIA  
SECO/WARWICK Rus Office  
Pyzhevskiy pereulok, bld 5/1,  
office № 400  
119017 Moscow, Russia  
tel. +7 499 788 9721  
moscow@secowarwick.com.pl  
www.secowarwick.com

BELARUS  
SECO/WARWICK OOO Minsk Office  
8 Mielnikajte str., office 26  
220004 Mińsk, Belarus  
tel./fax: + 375 17306 23 71  
secom@infonet.by  
www.secowarwick.com