via Castegnato 6/C,
25050 Rodengo Saiano,
Brescia Italy

www.compes.com
info@compes.com

T +39 030 6815011
F +39 030 611848

www.compes.ca
compesfrance@compes.fr
compes.de@compes.com

OVEN

DIE PRE-HEATING OVEN

COMPES DIE PRE-HEATING OVEN is a technologically advanced system that uses independent drawers. An automated process that is widely being used in many extrusion plants.

The main advantages are:
Single cell drawers are designed to house a die, but upon request they can be modified to accept 2 dies. The opening is through a horizontal sliding mechanism.
• Tooling is quickly and consistently heated to the proper temperature while maintaining a tolerance of ± 5° C.
• Die cracks and profile scratches that are caused by inclusions of oxides are significantly reduced.
• Very little heat loss from loading and unloading which results in energy savings.
• Brief preheating time compared to conventional ovens.
• Each drawer has individual temperature control, which allows the extruder to adjust die temperatures according to the type and difficulty of the extrusion.
• Oven controls permit the operator to plan maintenance for chamber cleaning, monitor the temperature and record the time and preheating cycles for each drawer and relavant die.
• Throughout the preheat cycle, die oxidation is eliminated.
• Ovens can be built with stacked drawers in order to save space.
• Different size drawers can be ordered to suit the extruders needs.
• Modular designs allow for expansion of ovens at a later time.
• Built to Electrical and Safety Standards.
• Economical operation due to low power consumption and proper insulation.

DIE PRE-HEATING OVEN

Compes OVEN was invented and patented many years ago. It has and is **continuosly updated using the latest technology and heating advancements**. These methods have kept it as the industry benchmark. Many have tried to copy the equipment without reaching the same outcome. The design was specifically created to achieve results from the fist billet, by ensuring satisfactory profiles from the preliminary extrusion. This avoids the unnecessary use of a second or third billet and decreases wrong corrections from unreliable noses due to the homogeneous die temperature achieved. Correct die temperature and absence of oxidation preserve die life, which results in a quality aesthetic and mechanical extrusion.

The independent drawers optimise the die preheating time and significantly reduce electricity costs. At the same time the reduced drawer aperture protects the operator form potential burns that can occur from raising the large lids from chest ovens. The larger the opening, the more temperature is lost during loading and unloading as well as the added risk of contamination, these changes in temperature are harmful to the preheating chamber because they lower the overall temperature along with the cooling effect of the new (cold) dies added.

1 • MAIN STRONG POINTS

Preheating dies in an oven perfectly sealed in an inert atmosphere without oxygen offers substantial financial, technical and environmental benefits, This oven makes it simple to manipulate a single die, without disturbing other dies that are in the preheating phase.

• SAFETY

From the safety point of view the result is a significant reduction in discomfort and injury and an increase in the ergonomics of working by an extrusion press: the operator no longer has to lean over the oven in order to lift the tooling. The die is seated on a supporting cart with a very limited mass, with low thermal capacity and mild radiated heat.

• ERGONOMICS

The physical effort is reduced through the pneumatic movement of the supporting trolly which allows you to remove the die at ideal height, with increased ease and speed.

• PERFORMANCE

Compes OVEN design is completely different from traditional furnaces and can operate in an inert controlled atmosphere, in presence of pure nitrogen with less than 5 parts per million of oxygen.
This is possible due to the perfect sealing of each chamber, provided by special rubber gaskets properly cooled. The release of inert gas occurs after vacuum cleaning of chambers that can be programmed independently for each drawer, individually connected to the network of vacuum and inert gas distribution. This completely eliminates the possibility of oxidation on the bearings. It is a well known fact that nitrided dies are damaged during preheating with an oxidized atmosphere. This is comfirmed by studies carried out by researchers and documents form the steel producers. Detailed papers were presented in various national and international conferences on Steels and Heat Treatments: preheating in an oxidizing atmosphere leads to oxidation of the surface layers up to their total destruction; this phenomenon occurs already at temperatures between 250 (482) and 300 °C (572 °F). Oxidation is acting more or less on layers as a function of their porosity, the partial or total destruction of nitriding ultimately leads to early destruction of the tooling and increases costs. This fact has not been evaluated properly for a quite some time. Extruders have mainly considered the quality of the nitriding as the only parameter related to die efficiency. In shot Compes OVEN provides substantial savings, easy monitoring, both in terms of energy and production/management costs.

2 • OVEN VERSIONS

The oven is available in 6 versions
- SVPV = Vacuum + Nitrogen with ventilation (performs with the world's best ovens)
- SVP = Vacuum + Nitrogen
- MFP = Nitrogen cleaning + ventilation
- LAP = Nitrogen cleaning
- MFA = Air + Ventilation
- MAP = Air

The use of ventilation reduces heating time by 25%.
The use of vacuum techology reduces the consumption of nitrogen by 10 times in comparison to using only continuous nitrogen cleaning.

3 • TECHNICAL SPECIFICATIONS

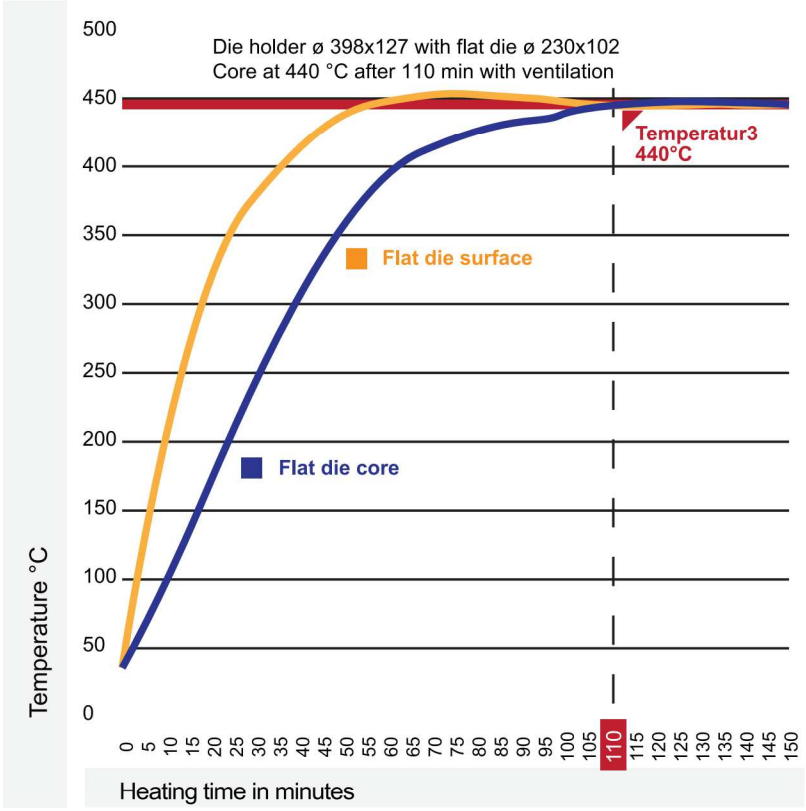
Ø	H	Estimated weight	Quantity of resistors	Installed power	Temperature uniformity	Recommended temperature	Minimum minutes with SVP oven without ventilation	Minimum minutes with SVPS oven WITH ventilation	Maximum number of die changes in 3 shifts with SVP oven WITHOUT ventilation	Maximum number of die changes in 3 shifts with SVPV oven WITH ventilation
320	120	60	6	9 Kw	± 5°C	450°C	107	96	13	–
320	140	70	6	9 Kw	± 5°C	450°C	125	112	12	–
345	160	95	6	9 Kw	± 5°C	450°C	143	128	10	–
360	170	110	6	9 Kw	± 5°C	450°C	152	136	9	–
400	200	160	6	9 Kw	± 5°C	450°C	179	159	8	–
450	200	200	6	12 Kw	± 5°C	450°C	179	159	8	–
490*	250	300	9	17 Kw	± 5°C	450°C	223	199	6	8
560*	260	400	9	21 Kw	± 5°C	450°C	232	207	6	8
600*	270	490	9	24 Kw	± 5°C	450°C	241	215	6	7
600*	300	540	12	24 Kw	± 5°C	450°C	268	239	5	6.5
650	350	720	12	24 Kw	± 5°C	450°C	-	279	–	–

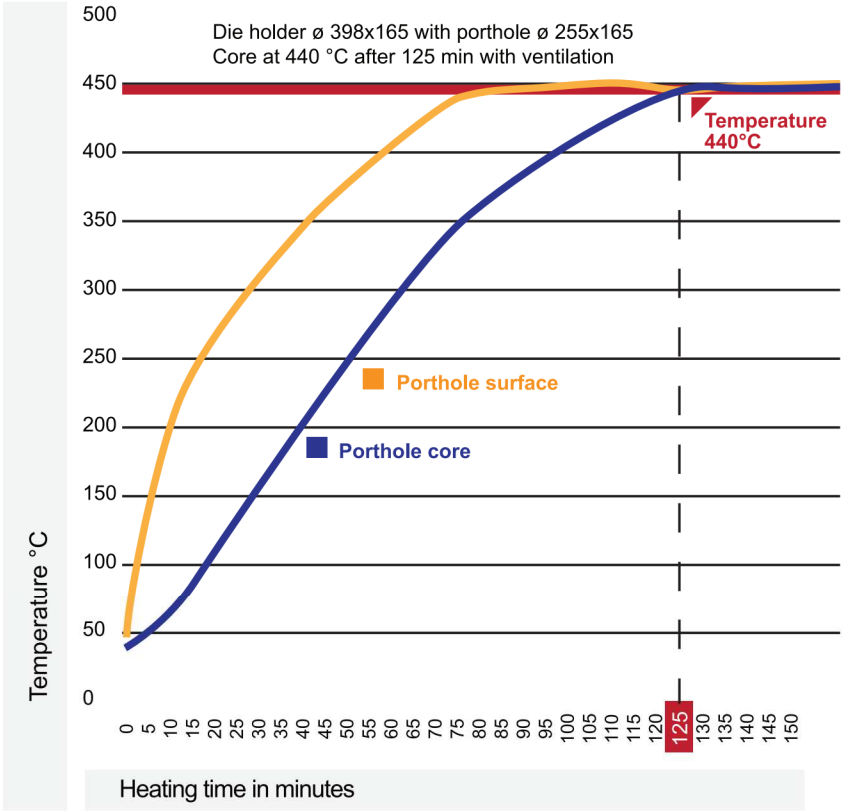
Ø	Theoretical energy cost per die	total consumption per heating cycle	Consumption for following hours with SVP	Consumption following hours with SVPV	Cooling water flow	Nitrogen consumption per each die change
320	0,84€	7,0 Kw	1,8 Kw	2,2 Kw	40,0 l/h	0,2 Nmc
320	0,98€	8,1 Kw	1,8 Kw	2,2 Kw	40,0 l/h	0,2 Nmc
345	1,23€	10,3 Kw	1,8 Kw	2,2 Kw	40,0 l/h	0,2 Nmc
360	1,38€	11,5 Kw	1,8 Kw	2,2 Kw	40,0 l/h	0,2 Nmc
400	1,85€	15,4 Kw	1,8 Kw	2,2 Kw	40,0 l/h	0,2 Nmc
450	2,29€	19,1 Kw	2,2 Kw	2,5 Kw	50,0 l/h	0,3 Nmc
490*	3,38€	28,1 Kw	2,5 Kw	2,8 Kw	60,0 l/h	0,3 Nmc
560*	4,27€	35,6 Kw	2,7 Kw	3,0 Kw	60,0 l/h	0,4 Nmc
600*	4,99€	41,6 Kw	2,7 Kw	3,0 Kw	60,0 l/h	0,4 Nmc
600*	6,00€	50,0 Kw	3,6 Kw	4,0 Kw	100,0 l/h	0,7 Nmc
650	7,66€	63,8 Kw	3,6 Kw	4,0 Kw	100,0 l/h	0,7 Nmc

* SVPV version advised
For diameters higher than 600 mm only SVPV version should be used.

4 • DIAGRAMS FOR SVPV OVENS

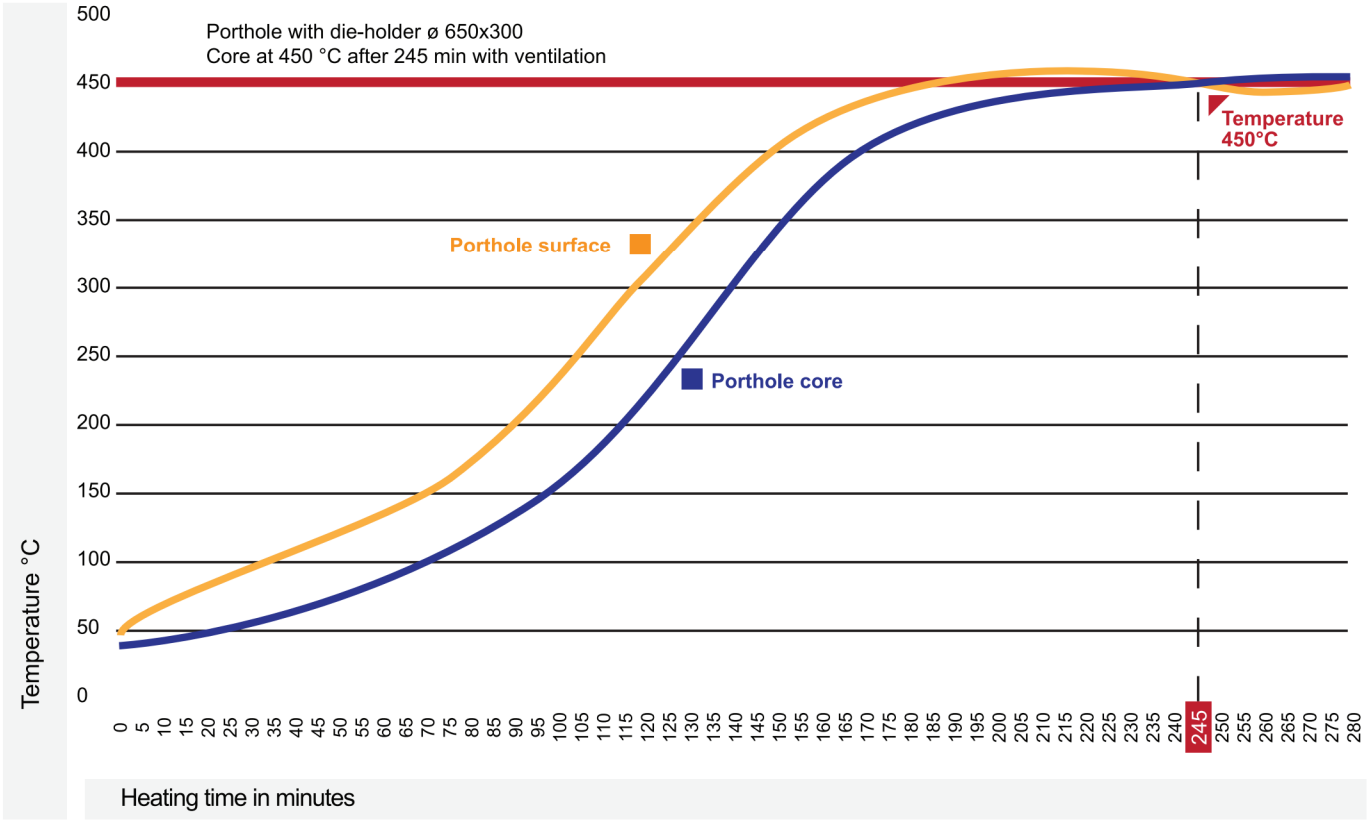
vuoto con ventilazione

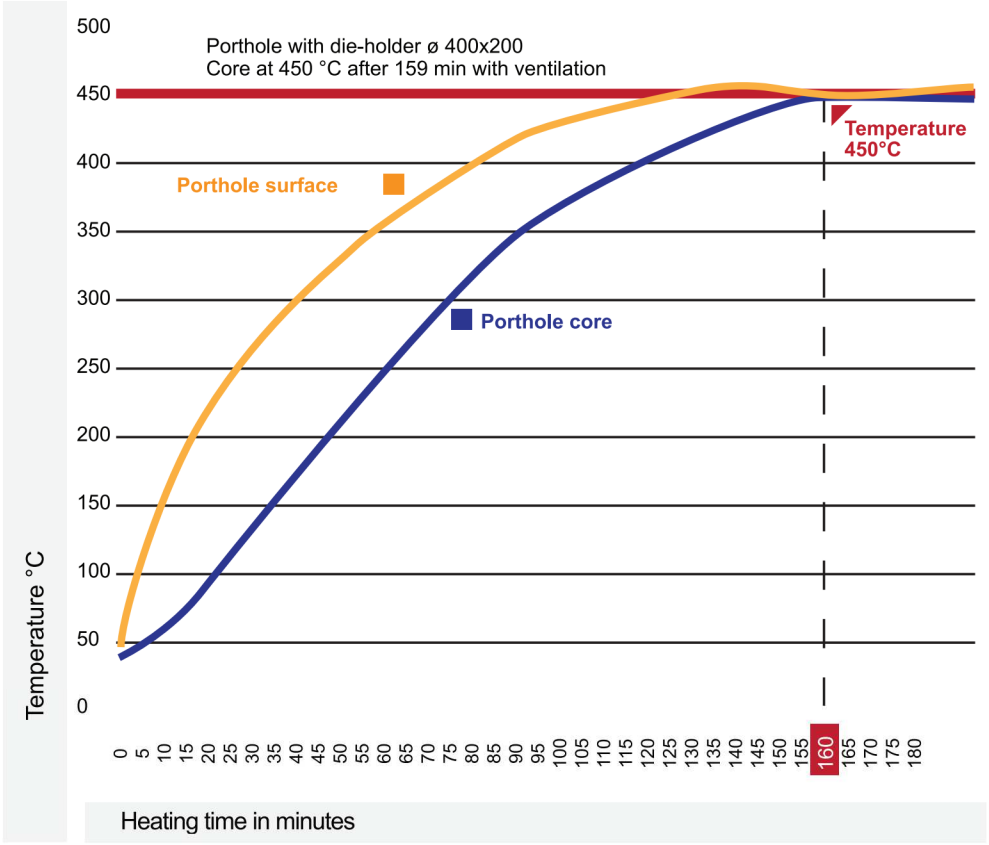




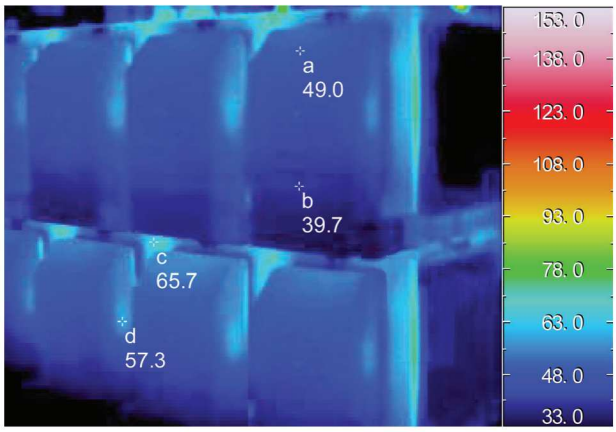
Inspection of the amount
of oxygen in SVPV - SVP Ovens

DIE PRE-HEATING OVEN

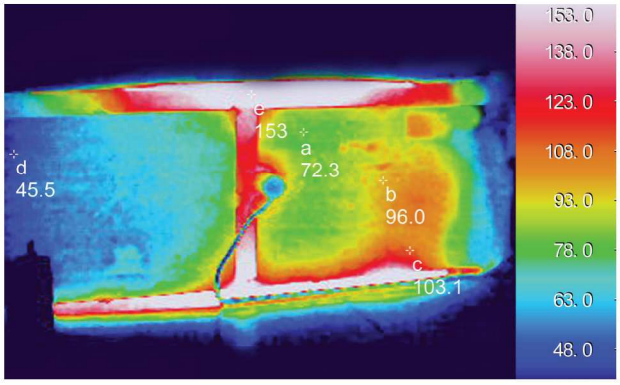




5 • HEAT LOSS



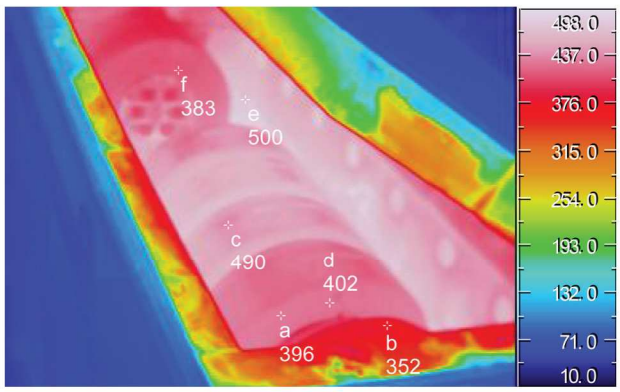
COMPES DIE OVEN SVPV / SVP



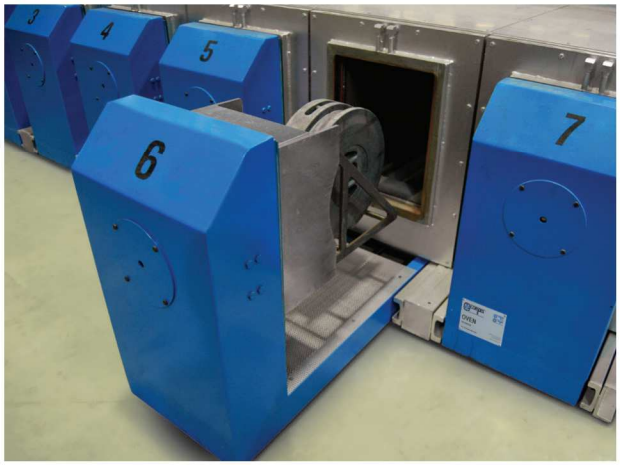
Traditional oven

Traditional oven

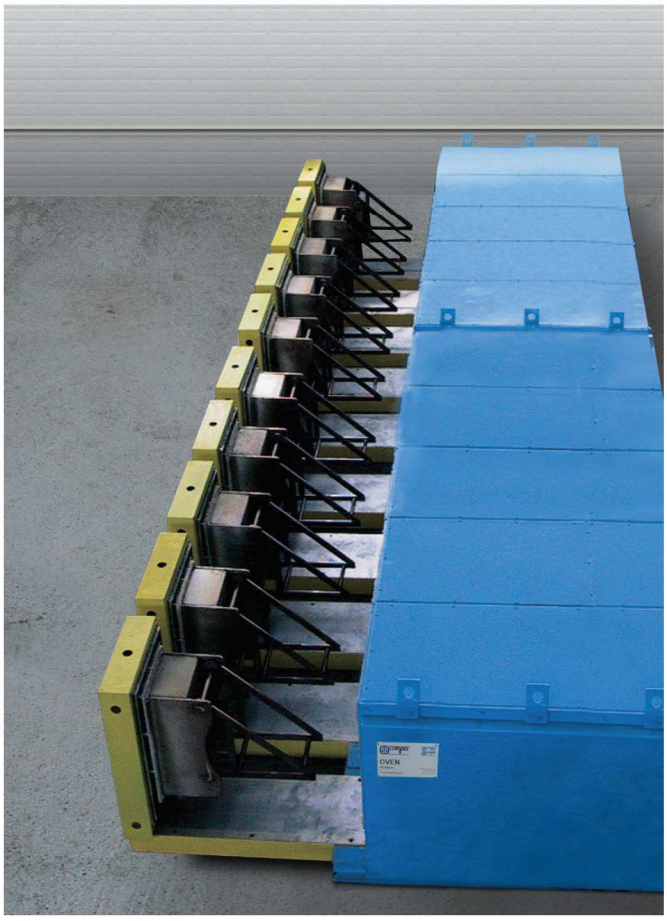
The traditional ovens do not guarantee either the requested temperature or temperature uniformity among all the dies in the oven, while the Compes Oven guarantees the set temperature for each chamber at any point of the die with a Tolerance ± 5 °C.



6 • CASE HISTORY SVPV / SVP



7 • CASE HISTORY MFP / LAP / MFA / MAP



The machine is supplied in compliance with CE standards or alternative ones.
DIE PRE-HEATING OVEN ®: a CO.M.P.ES. S.p.A. patent.
Compes reserves the right to apply without prior notification any technical modification deemed necessary or as a function of specific requests.

Via Castegnato, 6/C - 25050 Rodengo Saiano, Brescia - Italia
T +39 030 6815011 - www.compes.com