VSM

The Dutch company VSM Nieuwkoop is specialised in high-tech machines for pressing and spraying ceramic products. Thanks to more than 30 years of experience in developing innovative machines, based on modular designs, we are able to find a suitable solution of any specific production problem in the field of ceramic manufacturing. VSM is renowned for its outstanding after-sales practice.

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POTTER CNC PRESSING MACHINES FOR:

1. Ball / hollow shaped products
2. Square products
3. Products with more curves
4. Basic shaped products
5. Tall products
6. Decorated products
7. Products with more curves on outside

CERAMICS

For high production of flower pots and round dinnerware made from earthen or stone ware ball clay, up to ø 550 mm.

The POTTER CNC press series are designed for producing ceramic products with steel moulds. With this press a very high product quality can be achieved: all products are identical, smooth and exactly round, have a constant wall thickness and a perfect finish.

Its high capacity is achieved by energy saving Servo motors. While the CNC-3-Control allows for a quick change over and easy settings of production.

To increase the daily production there are sensors with extra software who recognize early production failures and then tries to cure them. Due to this there are less stand-stills and the press stops automatically ónly when needed.

The machine has an outstanding robust design and finishing, a well-considered configuration of machine components, e.g. all linear ways are perfectly covered and sealed from clay and releasing oil. In this way a very long life span is achieved.

The POTTER machine includes: a pressing unit with upper and lower mould, a pick up arm with a vacuum-head and finishing system, clay sliding-in unit and CNC-3-Control unit. The modular construction with multiple options makes the press easy to fit in all production lines.

ADVANTAGES

- No plaster moulds anymore, but steel long life span moulds (up to 1.000.000 pcs);
- High quality finished products in one go;
- High daily output due quick motions and production surveillance Software;
- Possible to automatically reshape or make imprints after production. (many options);
- Energy saving production machine;
- Faster set ups and quick change over's with CNC-3-Control, with touch screen;
- Suitable to fit in any production line because of small modular designs;
- Long life span and little planned maintenance required;
- Internet connection to VSM for monitoring;
- Clear list of warnings plus feedback on machine status to operator in case of problems or machine failure;
- Turn key delivery;
- Excellent after-sales service and training;
- Many favourable references from customers;
- Safety according European standards (CE mark);
- State- of the art safety PLC for quick and safe starting the machine after a standstill.

INFO

PRESS UNIT

The press head is driven by a reciprocating ball spindle directly connected with servo motor. The speed is fast and can be CNC adjusted to the exact height of the product. This results in a very short production cycle. The lower mould is easy to place in the open front of the lower mould holder. A pump sprays releasing agent oil on the clay values like travelling distances, high speeds, pressing speeds, and times etc. are programmable in the CNC-3-Control. There are no mechanical adjustments. The press has an overload sensor, to avoid machine damage.

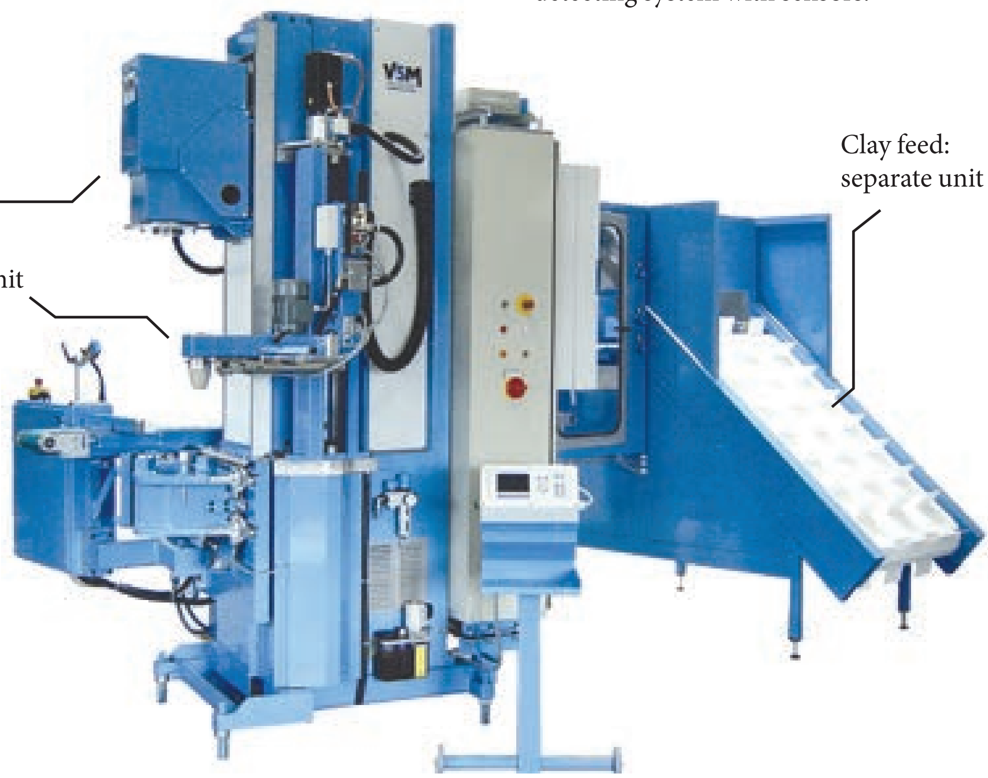
VACUUM-HEAD

After the product has been pressed, is it lifted out of the lower mould by a vacuum-head attached to an arm that swings-in and moves up and down. Then the mould closing seam is finished on the product while on the move. Two tools are fitted on the arm: Tungsten Carbide 4 sided knife and a roller. The clay that is cut off by the knife is collected by vacuum for re-use. Now the product can be set off on a drying board or conveyor. The head is quickly interchangeable. This unit is driven by 2 servomotors and backlash free gearboxes, and has an over load detecting system with sensors.

POTTER 650

POTTER 350-5

Press unit



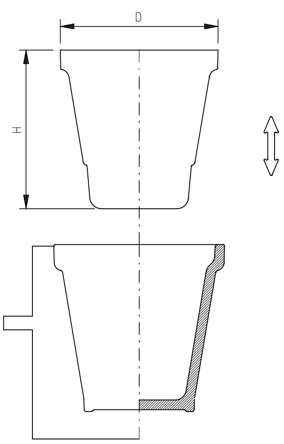
Clay feed:
separate unit

MAKING

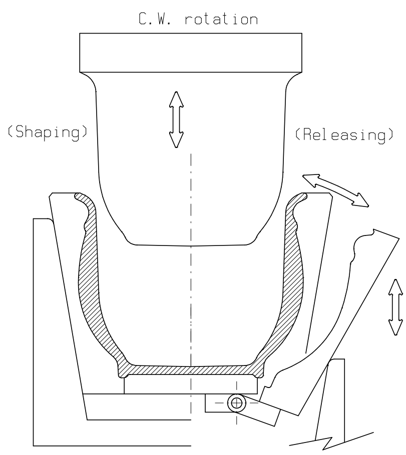
Process A:
in- and outside
conical min. 1°
D: H max. 1:4
If you take a look at the front page, pots 4 and 5 are made by the process below. Pots 1, 2, and 6 are also made by this process, but with the reshaping option after the making.

Process B (option):
Inside conical min. 1 °
Outside horizontal releasing.
"Tulip" type up to ø 200.
See pot number 3 on the front page.

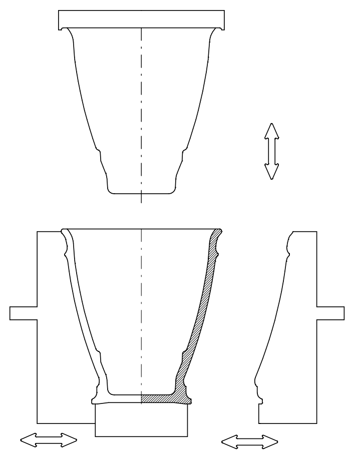
Process C:
Inside conical min 1°.
Outside with vertical split mould
(up to Potter 350. Note: smaller and quicker potters are available).
See pot number 7 on the front page.



A



B



C

OPTIONS

CLAY FEED

Conveyor system: with use of extruder. Here we cut clay with a “flying saw” and tilt them over to a 1st conveyor when this is full, the extruder stops. As the 2nd conveyor empties to the 3rd the whole lot from 1st is quickly transported to 2nd The 3rd has just 3 or 4 pieces on it and supplies the mould. All is to run the extruder as little as possible.

Separate unit: a conveyor with clay bars in slots transports them to a cutter where at first a clean cut is made, the clay is pushed forward and than a vacuum nap holds it, it is cut, and the nap pivots it onto a belt, and so transported to the mould.

PRODUCT OUTPUT

The product output can be in 2 ways:

Conveyor servo system: set products in one or more rows, to feed a drying machine.

To put products on a post-reshaping machine: we use a belt, or set of directly. We also use robots to set products directly in a dryer

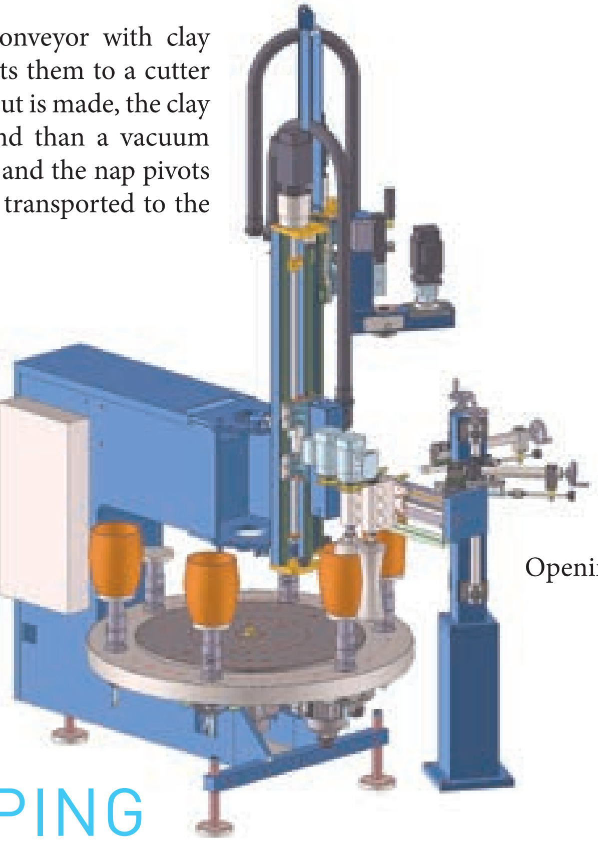
DECORATION AFTER PRESSING

The product can be decorated on the vacuum head by rolling onto it (limited) even with a one to one servo system, or to make a stamp in it, side ways or under the product.

VERTICAL OPENING MOULD

With this option it’s possible to quickly produce pots with an undercut on the outside, like pot number 7 on the front page. For the making or these kinds of pots see Process C on the second page. The under-mould is vertically split and opens and closes by the hydraulic cylinders. The seam is not present on the product, as the clay spins in the mould. The image below shows an opening mould.

Reshaping



Opening mould

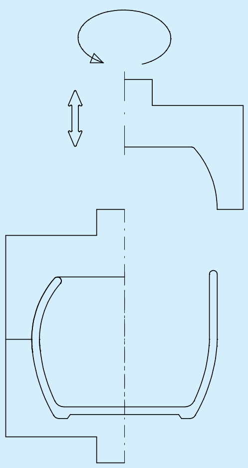
RESHAPING

The possibility to reshape products after pressing gives you many options. They are explained by the drawings below.

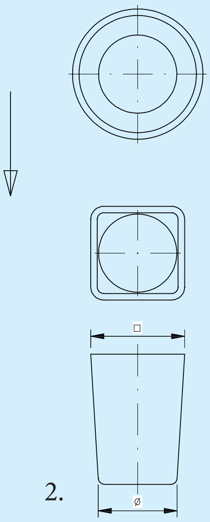
In the first one is shown that the reshaping is made by an upper mould part which rotates, to make the product ball shaped. See product number 1 on this- and the first page.

With the option below (no. 2), the round product can be reshaped into a product which is square at the top. See product number 2 at this- and the first page.

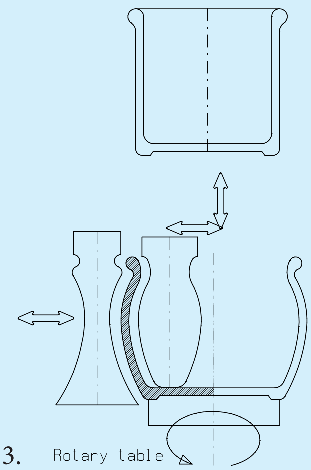
This re-shape option is on a rotary table with two driven rollers. A product made this way is shown on the first page of this document, number 3.



1.



2.



3.

SPECIFICATIONS POTTER CNC PRESS

2014

MACHINE SIZE	350 Ø	450 Ø	650 Ø
dimensions (L.x W.x H.)	1500 x 1200 x 2900 mm		4300 x 1600 x 2700
total weight	circa 3500 kg		circa 6000 kg
colour	blue Ral 5012		
power 400 V-50 Hz	30 kW 50A	40 kW 63 A	70 kW 120A
max. capacity (depending on Ø product)	900 pieces per hour (Ø 160) 550 pieces per hour (Ø 270)	650 pieces per hour (Ø 200) 450 pieces per hour (Ø 270)	600 pieces per hour (Ø 200) 450 pieces per hour (Ø 270)
safety	according to European standards (CE); doors with interlock		
PRESS UNIT power mould motor	18 kW	22 kW	37 kW
spindle	350 - 1000 Rpm	150 - 600 Rpm	100 - 600 Rpm
max. weight of moulds	30 kg	70 kg	350 kg
mould take up	Upper mould by SK50 taper and central bolt M24		Flange to spec.
max. speed / stroke	1200 mm/sec. - 900mm	700 mm/sec. - 900mm	800 mm/sec. 1250mm
VACUUM-HEAD rotation (variable)	50 - 500 Rpm	20 - 300 Rpm	20 - 200 Rpm
max speed - stroke	1 – 1600 mm/sec. - 750 mm		1 - 1000 mm/sec - 1200
air pressure product drop off	0 – 5 bar, 0 – 9 sec.		
vacuum	0 – 0,9 bar, 0 – 9 sec.		
cutting knife and roller	0 – 9 sec. with 0 – 9 sec. interval		
PRODUCTS (WET) max. diameter plates	Ø 350 mm	Ø 450 mm	Ø 650 mm
max. diameter cylinder shape products	Ø 320 mm	Ø 410 mm	Ø 550 mm
min. diameter	Ø 100 mm	Ø 120 mm	Ø 180 mm
max. product height	370 mm	370 mm	550 mm (option 700)
CNC -3 CONTROL	Sigma-Tek PLC with on board servo axis control, 100 programs, back-up: on USB stick. Program, machine and parameters, with internet connection for long distance help."feed override" 10-100%, LCD Touch colour screen 12" The machine is with a safety plc.		
OPTIONS			
CLAY FEED: FOR USE WITH EXTRUDER (AUTOMATIC SYSTEM)	pieces of clay are cut off with a flying saw type cutter, stocked on 3 belts and slides into the mould		
diameter clay rolls	Ø 70 - 150 mm	Ø 80 - 250 mm	
CLAY FEED: SEPARATE UNIT system	pieces of clay are cut off roll and shoved (clay shooter) into lower mould		
diameter clay rolls	Ø 70 - 150 mm	Ø 80 - 250 mm	
clay supply	6 rolls, each max. 900 mm long		
DECORATING system	with take –out arm rolling a "time" into a fixed roller CNC controlled, other systems on request.		
MOULDS system	cast steel or hardened steel (max 170mm) with porous resin vacuum take out heads.		

EXAMPLE POTTER COMPLETE SET-UP