

The Dutch company VSM Nieuwkoop is specialised in high-tech machines for pressing and spraying ceramic products. Thanks to more than 35 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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## FLEX 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 embossed 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 only**.

The FLEX 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-4-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 only 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 Flex 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-4-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 moulds with a long life span (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-4-Control, no mechanical adjustments;
- Suitable to fit in any production line because of small modular design;
- 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 mould making.

# INFO

## PRESS UNIT

The press head is driven by a reciprocating crank on a backlash free gearbox 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. The upper-mould rotation is controlled with a frequency inverter pump sprays releasing agent oil on the clay. Values like travelling distances, high speeds, pressing speeds, and times etc. are programmable in the CNC-4-Control. There are no mechanical adjustments. The crank has an overload spring with sensor, to avoid damage of the mould.

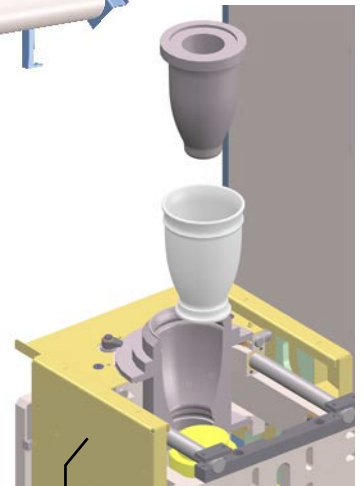
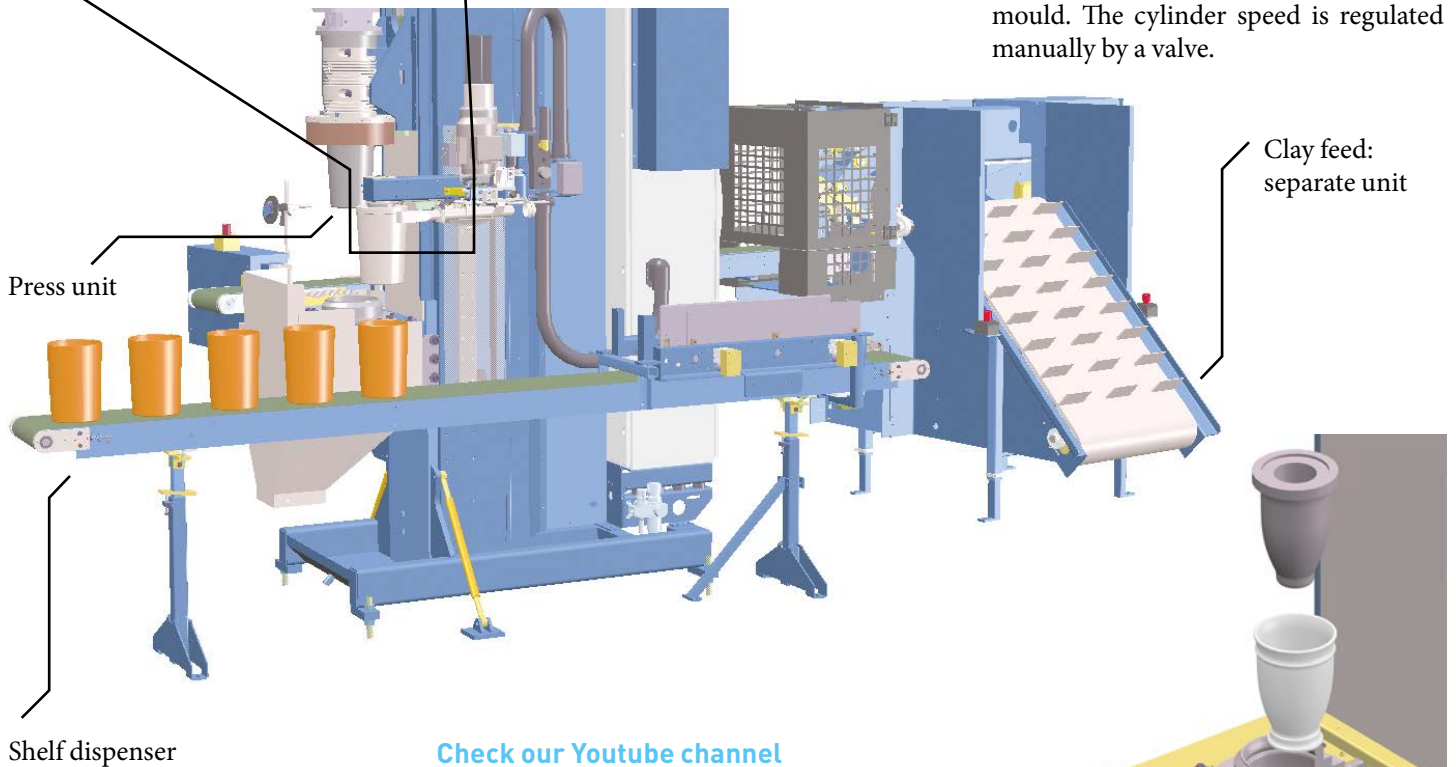
## VACUUM-HEAD

After the product has been pressed, it is 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.

## CLAY SLIDER

If the machine needs a piece of clay, this will be moved by the slider into the under mould. The cylinder speed is regulated manually by a valve.

Vacuum-head  
+ finishing system

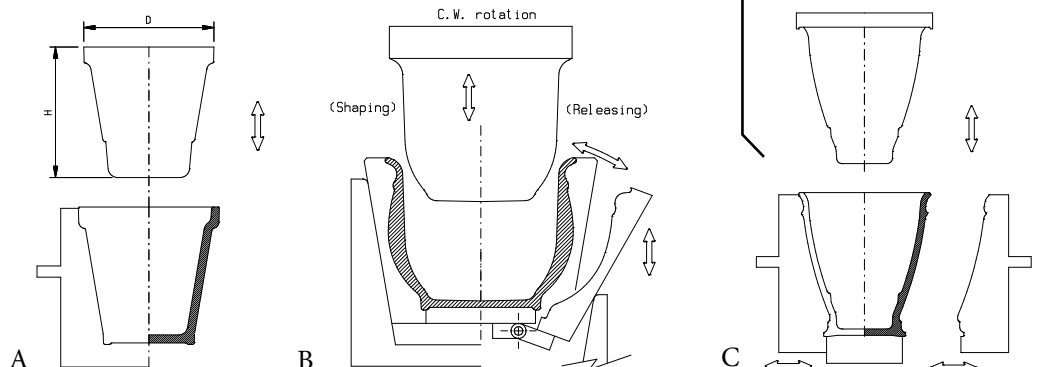


# MAKING

Process A:  
in- and outside conical min. 1°  
D: H max. 1:4

Process B (option F-V-3-SpitM):  
Inside conical min. 1°  
Outside horizontal releasing.  
“Tulip” type up to  $\varnothing$  150.

Process C (option F-H-2-SpitM):  
Inside conical min 1°. Up to  $\varnothing$  230.  
Outside with vertical split mould.



# OPTIONS: see *all* options in separate folders

## CLAY FEED

Conveyor system: with use of auxiliary extruder. Here we cut clay with a “flying saw” and tilt them over and with 3 conveyors it's transported into 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, and after transported to the mould.

## PRODUCT OUTPUT

The product output can be In 3 ways:

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

A shelf dispensing unit: the shelves are dropped onto a Conveyor servo system, to be filled with products. In any setting.

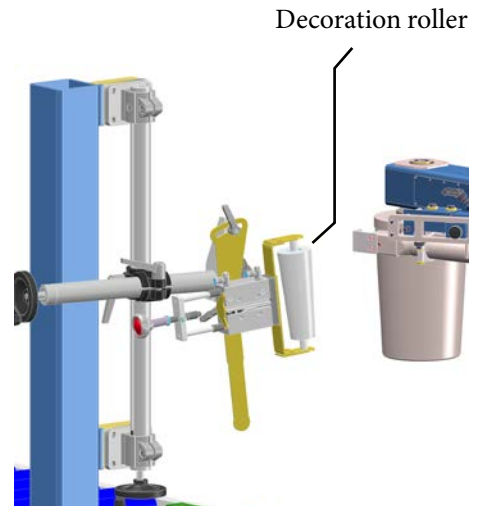
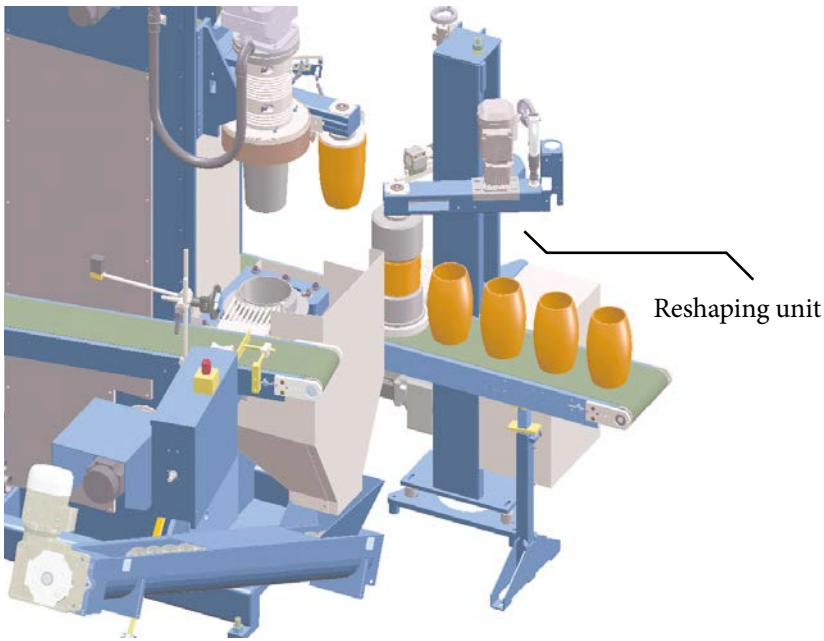
To put products on a post-reshaping machine: we use a belt, or set of directly. We also use robots to put products directly in a dryer.

## SF

The machine with SF option is “super-fast” and capable of making up to 1500 pcs/H. for products to 170 mm high only. The high speeds are possible due to parts from aluminium, the software is optimized and high speed mould drive motors.

## DECORATION AFTER PRESSING

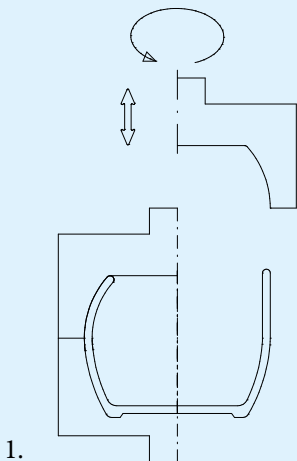
The product is decorated on the vacuum head by rolling onto it (limited), even with a one to one servo system, or to make a stamp in it. Also product number 3 on the first page of this document is made this way.



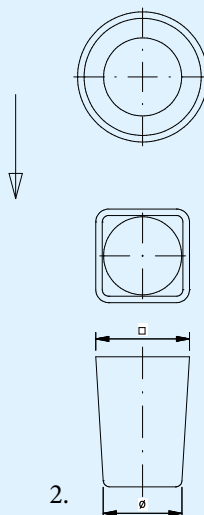
## RESHAPING

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

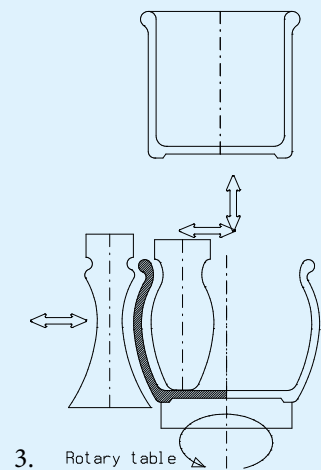
In the first one is shown that the reshaping is made by an upper mould part which rotates, to make the product ball shaped. See product number 1 on this- and the first page. And the image above.



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.



# SPECIFICATIONS FLEX CNC PRESS



2022

MACHINE SIZE		200 Ø	250 Ø	300 Ø
dimensions (L.x W.x H.)		automatic machine excl. clay feed and product removal: 1600 x 1100 x 2600 mm		
total weight and colour		2000 kg - blue Ral 5012		
power and rating 400V - 50 Hz		18,5 kW 25A	20 kW 25A	25kW 32 A
max. capacity (depending on Ø product)		1100 pcs/h Ø 150	1000 pcs/h Ø 150 600 pcs/h Ø 230	900 pcs/h Ø 150 450 pcs/h Ø 270
safety		according to European standards (CE); fence and doors with interlock, optional due to layout.		
PRESS UNIT	power mould motor (S3)	7.5 kW	7,5 kW	7,5 kW
	mould spindle (variable)	300 – 1800 Rpm	300 – 1200 Rpm	300 – 1000 Rpm
	max. stroke / speed	700mm / 1300 mm/sec.	700mm / 1300 mm/sec.	700mm / 1000 mm/sec.
	mould take up fixing	upper mould by 3 bolts M8 and undermould by 4 swivel clamps, or to specification.		
VACUUM-HEAD	rotation (variable)	50 – 600 Rpm	50 – 600 Rpm	50 – 600 Rpm
	stroke / speed	550mm / 1600 mm/sec.		
	air pressure product drop off	0 - 5 bar, 0 - 9 sec.		
	vacuum	0 - 0,9 bar, 0 - 9 sec.		
cutting knife and roller		0,0 – 9 sec. and 0,0 – 9 sec. Pauze		
PRODUCTS (WET)	max. diameter plates	Ø 200 mm	Ø 250 mm	Ø 300 mm
	max. diameter cylinder shape products	Ø 170 mm	Ø 220 mm	Ø 270 mm
	min. diameter	Ø 75 mm	Ø 75 mm	Ø 75 mm
	max. product height	265 mm	265 mm	320 mm
CNC-4-CONTROL	sigma –Tek PLC with On board servo axis controll, 100 programs, back-up: on USB stick: Program, machine and Parameters, with internet connection for long distance help. "feed override" 10-100%, glass capacitive touch colour screen 12" The machine is with a safety plc.			
OPTIONS				
SUPER-FAST	max Ø product x height	Ø 150 x 170	Ø 200 x 170mm	Not available
	press max. stroke / speed	500mm / 2000 mm/sec	500mm / 2000 mm/sec	Not available
	max. capacity	1500 pcs/h Ø 90	1500 pcs/h Ø 90	Not available
	mould spindle (variable), power	800-2700 Rpm, 5,5KW	800-2200 Rpm, 7,5KW	Not available
CLAY FEED: SEPARATE UNIT	system	pieces of clay are cut off from roll, conveyed for stock and slided into lower mould.		
	diameter clay rolls	Ø 50 – 150 mm		
	clay	stock 6, 8 or 12 rolls, each max. 900 mm long (chain sectioned in 90-140-190 mm)		
CLAY FEED: FOR USE WITH EXTRUDER (AUTOMATIC SYSTEM)	clay is cut of with "flying saw" cutter, stocked onto 3 conveyors and slided into lower mould.			
	diameter clay	Ø 60 – 150 mm		
PRODUCT DISCHARGE: ON SHELFES OR CONVEYOR				
shelf system shelf size		stock of shelves. 18 - 22 mm thick. 180-260 wide x 800/1000/1250/1500 mm long, possible to put in any pattern		
conveyor		200, 250 or 300 mm wide		
MOULDS	system	cast steel or hardend steel with porous resin vacuum take out heads.		

## CLAY FEED: CONVEYOR SYSTEM

