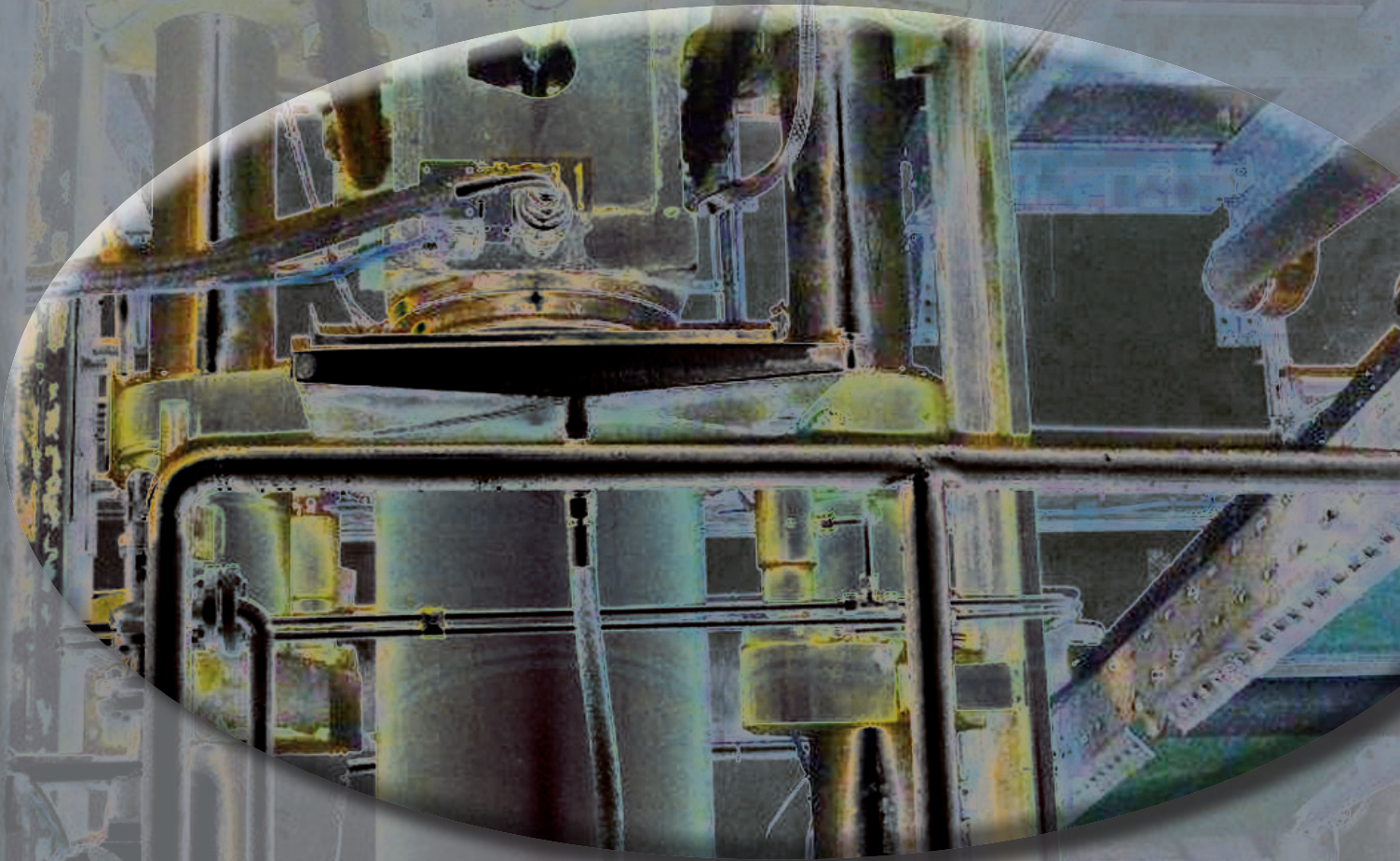


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DEHYDRATION PRESS

SU 400/3000/4800/8400





DEHYDRATION PRESS

SU 400/3000/4800/8400

Main Operation

■ The *dehydration press* is used for displacing water by Ethanol for water wet NC raw material, as needed for the production of *propellants*.

Available Capacities

■ *Dehydration presses* are available for 400 kN, 3000 kN, 4800 kN and 8400 kN main cylinder force.

BOWAS dehydration process

BOWAS is in a position to offer a modern, state of the art plant concept which fits into the concept of existing *client's* plant sections actually under modernization and as stand alone solutions. The plant concept aims at offering the most economic solution which follow the *client's* requirements.

The main goal is to replace the maximum water content in the water wet NC by Ethanol. The following process steps

are done fully automatically and remote controlled:

During the manual filling of water wet NC into the dosing hopper metal parts will be removed by a metal separator immediately out of the downdraft.

After that the NC is weighed, dosed and fed by a screw conveyor in 3 to 5 portions into the mass container of the dehydration press. During feeding process the volume in the cylinder is compressed with the help of a pre-press cylinder to avoid adiabatic compression in the main press cycle as a safety aspect. After the correct amount of NC is filled into the mass container the volume will be continuously compressed by the main press ram.

The dehydration process is carried out in 3 main steps:

Step 1: Pre-compression with Ethanol injection with low mass pressure

Step 2: Main compression with Ethanol for displacing the water with increased pressure

Step 3: Dry pressing for the adjustment of the total remaining moisture

Ethanol/water mixture escapes through the retaining piece and

the top of the cylinder. The percentage of $\leq 3\%$ water is remaining in the final product, so called "cake" of Ethanol wet NC.

The cake is ejected on top of the cylinder and transported ideally via conveyor belt to the crusher room. There the cake will be shredded with the help of a bale breaker device with cutting mill and then stored in conductive barrels. These barrels get immediately closed with a lid, so the stored NC will keep the wanted solvent content.

Advantages of the process

Compared to other existing press-dehydration processes BOWAS offers the following advantages:

Safety – Special care has been dedicated to increase the safety of the dehydration process. All equipment has been designed and built in accordance with the latest and most advanced technology and is based on our extensive experience in the field of explosives and propellant production. An important increase in safety is achieved by *remote controlled* pressing stages. CCTV cameras are used for monitoring critical and hazardous operations where operating personnel is not allowed to be present during operation.

The process is designed with the necessary *automation* level in order to minimize the number of operating personnel in areas of potential risk. This also reduces the frequency and duration of the operators' activities in these areas. The dehydration press is equipped with *interlocking* of doors and controls to safeguard the remote operation and

a *double* independent process control instrumentation may be installed additionally as an option. A *metal detection* of the NC cake, as well as *ventilation arrangements* are important for the safety. The floor has to be kept always water-wet. Going along with safety equipment BOWAS provides a detailed *risk analysis*, focusing the special demands of safety of the dehydration process, such as adiabatic compression of air and solvent vapour, presence of dry NC, overfilling of the press cylinder etc.

Ergonomics for the operating personnel in the different operation steps are improved by mechanized handling providing safety and cost effective production with known and tested technology.

Better economic results

The design and concept of the BOWAS dehydration process together with a high-level automation offer an optimum balance between investment costs and necessary personnel requirements. The equipment is designed for a high availability at low maintenance costs.

There is no other automatic process which results in such a high quality knot free final product which is the precondition for an excellent gelatinization during kneading process for Single base and Double base propellant production.

Compared to the pusher centrifuge system there are two big advantages:

- Residual water content $\leq 3\%$
- Ethanol consumption 5-10 times less

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DEHYDRATION
PRESS

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DEHYDRATION PRESS

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Technical characteristics

Dehydration Press Type **SU 400** **SU 3000** **SU 4800** **SU 8400**

main cylinder force	400 kN	3000 kN	4800 kN	8400 kN
max. hydraulic working pressure	260 bar	250 bar	300 bar	300 bar
effective working stroke	305 mm	900 mm	1.100 mm	1.150 mm
stroke	400 mm	995 mm	1.150 mm	1.300 mm
max. pressing speed	17 mm/sec	25 mm/sec	20 mm/sec	18 mm/sec
bull back speed	by gravitation	by gravitation	by gravitation	by gravitation
pre-pressing	--	125 kN	125 kN	280 kN
max. hydraulic working pressure	--	160 bar	160 bar	250 bar
spec. pre pressing pressure	--	105 da/N/cm ²	79 da/N/cm ²	10 da/N/cm ²
stroke	--	1.200 mm	1.300 mm	1.500 mm
masscontainer diameter	140 mm	394 mm	450 mm	600 mm
effective filling height	300 mm	900 mm	1.100 mm	1.200 mm
volumina masscontainer	4,5 ltr.	100 ltr.	175 ltr.	310 ltr.
max. spec. mass pressure	350 da/N/cm ²	250 da/N/cm ²	300 da/N/cm ²	300 da/N/cm ²
contact pre force	--	140 kN	140 kN	140 kN
stroke	--	80 mm	80 mm	80 mm
supply voltage	400 V/50 Hz	400 V/50 Hz	400 V/50 Hz	400 V/50 Hz
power capacity	4 kW	40 kW	40 kW	55 kW
body material	carbon steel			
press cylinder	inside honed, screwed cover lids			
colouring	Ral 7035 light grey			



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