Annex no. 1

Description of the object of the contract

This specification summarise the characteristics of the machinery necessary to:

- Special pressing using a press coupled with systems such as:
  - controlled injection of nitrogen (gas inerme) on dedicated die
  - controlled heating of the numerous heaters installed on dies (500 ° C)
- Tryout
- The production in steel and aluminum of the large size panels

Installation is foreseen at Oświęcim (Poland)

Technical specifications		
Press		
Adjustable press capacity	kN	2500 : 25000
Slide stroke	mm	1700 - 1900
Distance between slide face and and moving bolster/table	mm	2500 - 2800
Distance between uprights (LtoR)	mm	4800 - 5050
Window in the uprights	mm	2550 - 2600
Size of slide	mm	5000 x 2500
Height above the floor of working table in case of moving bolster	mm	750 - 900
Height above the floor of working table in case of moving table	mm	250 - 350
Fast approach speed of slide	mm.sec	min 500 max 600
Working speed of slide	mm.sec	min 10-24 : max 50-80
Return speed of slide	mm.sec	min 400 max 500
Height above the floor of the press	mm	10700
Base deflection on the 2/3 of surface	mm/m	0,17
Slide deflection on the 2/3 of surface	mm/m	0,17

Upper cushion with the function: **1. Extractor (Ejector)** **2. Cushion passive** **3. Active cushion**		
Upper cushion capacity	kN	250 : 2500
Upper cushion cylinders	N°	4
Independent adjustments of upper cushion	N°	4
Upper cushion stroke	mm	Min 280 a 320
Cushion pad size	mm	Min 3950 x 1550
Active upper cushion		
Adjustable capacity	kN	250 : 2500
Working speed	mm/sec	30 : 65
The parameters of the blank holder must be stored and saved in the memory of the die.		

Lower cushion		
Adjustable upper cushion capacity	kN	600 : 6000
Lower cushion cylinders	N°	4
Independent adjustments of lower cushion	N°	4
Lower cushion stroke	mm	Min 600
Lower cushion pad size	mm	Min 4250 x 1850

Moving bolster or moving table		
Frontal size of Moving Bolster or moving table	mm	5000 x 2500
Height from floor of working table	mm	Da 250 a 900
Moving bolster or moving table stroke between the uprights	mm	Min 7000
Moving bolster or moving table capacity	kN	500
Translation speed	mm.sec	10 - 100

Others		
Full installed capacity		Max 800
Three-phase voltage		400 - 50
Auxiliary voltage		110 - 24
Indicate the number of the motors and capacity		
Indicate the number of the pumps and capacity		

Die area	
Positions of clamps on working table (slide)	
Distance of T-slots on working table (slide)	
Distance of T-slots on working table (MB or moving table)	
Distance of Die centering pins on working table (MB or moving table)	
Distance of holes for die pin on working table (MB or moving table)	

Description of main components
Press frame
The different parts of the frame are assembled with 4 preloaded tie rods. The preloading of the rods is made with hydraulically drived top nuts. The length of the damper is established with rings inserted into two parts between the nut and the frame of the press in order to obtain identical damper quotes. An appropriate reference centering ensures maximum alignment of the structure and the perfect assembly of the different parts. The stand, uprights and crown are of the high-quality, welded steel, normalized in the oven before machinery to eliminate the internal tensions and to achieve the better resistance. The calculation of the design are based on the experimental methods of optimization, not only to ensure the strength of the frame but also the minimum deformation under load.
Slide
The slide is of welded steel, stabilized in the oven before the machinery; It runs on the 8 guides ways of considerable length with linings in antiscuff material. That solution allows the precise adjustment, independently in each direction, on the guides ways located in the uprights (the transversal clearance adjustment) and the guides located on the slide (the longitudinal clearance adjustment). The face of slide is completed with slots according the UNI norms for dies fixing and holes for the passage of the pins of the blank-holder cushion.
Dies change system with one moving table or moving bolster with longitudal translation between the press uprights
Moving table or moving bolster made in welded steel, subjected to stress relieving treatment to remove welding stresses. Completed with slots according to UNI norms for fixing the dies and holes for the passage of the pins.
Lifting and translation group consisting of:

n ° 4 wheels of which n ° 2 driven by hydraulic motors (for lift) and electric motors (for the translation) with electrical supply under the floor for longitudinal translation. For the realization of the translation groups will be used the high quality materials and in particular the wheels and the rails will be subjected to the heat treatment on the supporting surface to achieve an adequate lifetime (to be defined in the engineering phase)
Rails with groove "V" for running the moving table or moving bolster during the translation. The rails must be completed with fixing plates welded to the HEA of the press foundation.
Delivery of the locking devices of the moving table or MB - Devices consisting of: - hardened bushing placed in moving table or MB - hardened conic pin placed in stand of the press which is inserted in the bushnig of the moving table or MB - locators with bumper in hardened steel for precision stopping of the moving table or MB inside the press
Lower hydraulic cushion
In case of MB: The press is equipped with a hydraulic cushion composed of cylinders placed in the containers that in the upstroke phase (for return) impact on the support plate candles of the moving bolster. The lower part of the moving bolster must be shaped in such a way to ensure that the containers impact on the plate. This type of realization ensures the extract of MB with the pins without interfering with the location of the cushion.
In case of moving table: The press is equipped with a hydraulic cushion composed of cylinders fixed on the table that in the upstroke phase impact on the pins and in the return phase on the die. This type of realization ensure the extract of the moving table without interfering with the location of the cushion.
The cushion structure is of welded metal sheet, with stiffening ribs, with no. 4 cylinders and independent adjustment. It runs on 4 columns in chromed steel C40; these guides are fixed in the lower part to the stand and in the upper parts to machine surface.
Upper hydraulic cushion
In the slide there will be an appropriate place to contain an hydraulic cushion drived by 4 cylinders. The slide structure will be ribbed and strengthened so to avoid any deflections under load.
Acting slide cylinders
The cylinder liners is of the forged steel and the piston is full.
The cylinders liner in special steel is designed for a high operating pressure of 315 bar. A lapped high quality surface finish is provided for the running surfaces. The cylinders rod is of turned, adjusted, chromed (50 micron)and polished steel (C40). Sliding guides in phenolic resin generously dimensioned. The seal system and rod are of PTE bronze loaded.
Safety devices
The mechanical slide locking devices against the accidental fall of the slide are the pins that are inserted in the appropriate seats when the slide is the PMS position. The position of the pins is controlled by special limit switches and visualized by warning lights. The insertion and the extraction of the pins is controlled by the pushbuttons panel with dual control in the single cycle and when the press is in the programming (or tryout phase) the control is acting by the operator panel, but always when the slide is in PMS position coincident with the three predetermined points. There are 3 standard points of the insertion: Mm 2800 Mm 2575

Mm 2350
Antivibration dampers
To be foreseen the mechanical predisposition for the application in the future of anti-vibration dampers. Installation of the press with containers of the same height and with the possibility of replacing them with anti-vibration dampers.
Mechanical preparation for compensation cylinders and supply of construction drawing of the distances to apply to the slide. The device t is sized to support the weight of the mobile masses (slide+ upper die + + pistons)
Mechanical predisposition for the second Moving Bolster or moving table
To be foreseen the mechanical predisposition for the second Moving Bolster or moving table including the rails to be placed on the floor so to put in the future a 2 ° moving bolster without additional building works and mechanical and electrical adjustments
Hydraulic system
This is divided into sections so to control the working pressures and strokes of the slide and cushions, using in all cases cartridge type valves designed for low energy losses. The system facilitates easy inspection and maintenance
The main pumps with piston and variable capacity are driven by electric motors. The pumps are completed with the automatic controller with constant power capacity.
Low pressure gear pump (Dual type) for the control of the auxiliary circuits and the water cooling unit and the oil filter.
Control slide block. This block controls both the working pressure and the movements of the slide.
Control lower blank holder block. This block controls the working pressure and the upstroke/downstroke of the cylinders of the hydraulic cushion of blank holder placed in the press stand.
Control upper blank holder block. This block controls the working pressure and the upstroke/downstroke of the cylinders of the hydraulic cushion blank holder placed in the slide of the press. On blocks there should be mounted cartridge valves with high capacity and low pressure drop. This system facilitates an easy inspection and maintenance
Compact blocks complete with distributors for the control of the auxiliary circuits of the press.
The pre-filling valve system of slide cylinders with main cone and the pre-opening cone that ensures smooth release of pressure in the slide cylinders
Heat exchanger water cooled type ("lost water system") removable for the eventual cleaning of calcareous deposits
Cartridge filter for the hydraulic oil, arranged for easy replacement and with electric indicatore for clogging Degree of filtration of the cartridge 10 micron absolute.
All the main filters must be double type with manual by-pass for the replacement of the filters during the work press. The manufacturer of the press must supply cartridge filter for the first replacement.
Air cartridge filter for filtering the air sucked into the tank
Thermostat to provide a warning signal if the maximum temperature of 60° is reached.
Oil min level monitor, electric with indicator light on the control panel.
Oil max level indicator window and thermometer
Automatic lubrication system
Lubricating system must be centralized, automatic and controlled type.
Automatic lubrication system consisting in: oil recovery tank, electric gear pump, high pressure oil filter positioned at the entry and wire gauze filter at the return, max. oil level indicator and filling cap. The system of distribution of the oil complete with tubes and dozers for each single point of lubrication.
The hydraulic unit with total capacity of tank of more than 380 litres must be completed with device for oil leakage control. The lubrication container is sized to contain all the lubrication oil.
All the main filters must be double type with manual by-pass
All the main filters must be supplied with the electrical indicator for clogging
The installation of the electrical heater for the heating of the main tank must be foreseen.
Clamps for locking of upper dies
No. 8 of clamps for locking the dies on the slide with the manual placement and hydraulic hooking

Clamps must be movable type with irreversible clamping movement (safety in case of lack of feeding energy).
The clamping device consist in: hydraulic unit, installation with electrical control with the safety and control device
Height of the clamping 69-73 mm
Must be supply the schematical drawing and the characteristic of the component.

Press uprights
To be indicated for each uprights the equipment installed (i.e. electrical panels, sockets, pneumatic connectors, etc) N ° 2 panels (no. 1 front left upright + no. 1 rear right upright), each with • no. 1 electrical socket 230V 16A • no. 1 three-phase electrical socket 400V 16A • no. 2 magnetic switches N ° 2 panels (one for each rear upright), each with • no. 2 pneumatic socket with electrovalve on / off • no. 1 standard pneumatic socket (The electrovalves should be controlled by electronic cams)
Side openings must be protected with photo sensors or controlled fences
Front and back opening must be equipped with photo sensors.
Moving table or MB
To be foreseen no.1 of MB or moving table . To be specified the minimun distance available from the upright of press to the edge of the bolster in outside position , to guarantee the load of the dies on working table.
Supply shall include the rails to be placed on floor
To be indicated the drive system of moving table/MB and the translation speed.
The energy supply must be placed under floor as the connection for the die automation
Machining of the surface of the MB or moving table in accordance with the attached and approved drawing.
The MB or moving table shall carry total max. die weigh of 50.000 kg and overpass a slope of 5/1000 at full load.
The max deflection allowable for lower table must be <=0,16 mm/m
In order to allow operators to go up on the moving bolster or moving table, it's necessary install a specify steel stairs. The upper part of the step, must be foreseen by antislipsteel plate. No. 2 of stairs with length 5000 mmm and height approx.. 660 mm

Pin plate for MB
To be supplied No. 100 pins (straight type) as per attached schema (dn 50) Material 39 NiCrMo3
To be foreseen the bronze bushes in the seat of pin hole and the replacing method.

Oil recovery pan in the pit
In the press pit shall be foreseen suitable recovery pans of oil dropping (to be located on the floor)
Ladders for crown access
To be foreseen the ladder for access to crown
Protections
The moving parts must be covered .
The crown in its accessible parts must be protected against accidental falls of people and objects

Electrical specifications

Electrical general rules

All the purchasing material, if not specified, shall be of the primary quality for the industrial use, available on the market, perfectly suitable to the operation conditions.

Equipments
The supply, the lay-down and the connection of the wiring between electrical cabinets, utilities, interface panels, safety protections and presses are exclusive care of the supplier.
All the activity requested shall be accomplished completely by the supplier people.
The interconnection cables between the press and electrical cabinets can't be shorter than 30 m.
The wire channels shall be optimized to limit the lengths, to make easy the inspection and the eventual installation of further cables.
The channel of signal cable shall be separated from the power cables.
The filling of the channels shall be less than the 70% of the capacity.
Supply shall include all the necessary materials to complete the installation(Tubes, channels, supports, etc.).
Shall be foreseen antivibrating supports for all the electrical enclosures and pendant panels
For the numbering of the cables shall be used "GRAFOPLAST" terminal rings or the others with the similar parameters.
All the plug/sockets shall be "Harting" with mechanical lock.
All the drive and control connections between mobile parts and fixed parts shall be made with flexible cables , anti cut , equipped with plug and socket.
It must be supplied a main electrovalve for the connection to the shop line of air compressed network, to be managed through the auxiliary circuits of the press. The main electrovalve should be located at the entrance of compressed air pipe and should be controlled by the press operator panel. Shall be foreseen the piping for the connecting to the other utilities on the press.
All the connections for drive and control between fixed and movable parts shall be made by flexible cable equipped with plug and socket.

Connection to the network
The feeding voltage is 400 Volt AC 50 Hz. Three -phase five wire
Shall be supplied the certification of the connection to the main bus in accordance of the actual laws. The type of connection to the main bus shall be agreed during the engineering

Electrical enclosures
On all the contactors, the electrovalves and other inductive components shall be installed the protection filter.
Electrical enclosures shall be dimensioned to allow at least a 20% spare room The PLC shall be dimensioned in order to have a 20% of I/O available for spare and a 20% of spare memory. The spare I/O shall be already wired to let then be available on terminal box.
The cabinet of the PLC and of the driver must be already equipped with their own conditioner and thermo-regulator for 20 to 60°C . At the door opening the conditioner shall stop. The cooling gas shall be R134A. The conditioners shall be dimensioned to dissipate the heating generated at the worst environment conditions (Environment temperature 40°C and 95% humidity).
All the electrical enclosures and related equipment shall be foreseen to work continuously at the worst environment conditions of temperature and humidity.
The lighting inside the enclosures shall be made with fluorescent lamps 24 VDC. To be foreseen the automatic light-on at the opening of the doors, separate wiring and protected circuit.
Inside every enclosure shall be foreseen service socket at 230V AC
Managing of the machinery
For safety reasons the press cycle shall be managed by safety PLC ProfiSafe (the circuit for managing upstroke and downstroke of the slide cylinders, the emergency circuits, the safety circuits, etc.) while the auxiliary functions of the machine could be managed by normal PLC.

Access to the press crown
On the accesses to the crown of the press shall be installed one safety plug/socket with relative monitoring label indicating “SAFETY PLUG TO BE REMOVED FOR MAINTENANCE PURPOSE”. The removal of the plug must interlock all the movements and the rotation of the motors. Moreover must be foreseen on the terminal box of the cabinet the signal that will be use for the stopping the translation movements of the crane (risk of injury of the people on site)
On the top of the crown shall be installed a man-presence control, and shall be installed to rotating yellow lamp.

Press operator’s panel
The press must be controlled from a panel placed on the front right side of the press, or on pendant panel hanged on right-front upright.
Terminal shall be placed on the panel and shall visualize the press parameters, the PLC programming unit, and the interface functions of diagnostics, driven guide and input parameters (electrovalves, safety etc),and the data for the die automation.
Operator’s panel will brings the titles in Polish, English and Italian language with the option of choice
The supply of no. 2 of the mobile pushbutton.

Devices on board equipment
All the mobile pushbutton should be connected by plug and socket. Each pushbutton should have the emergency button and 2 buttons to run cycle.
Shall be foreseen socket type Harting Han E with blind plug on each of the other 3 uprights (to connect the mobile pushbutton). Such circuit shall foresee the simultaneously call of the machine and the anti-repeating stroke as referred to the double run pushbutton. Must be controlled the simultaneity of the buttons. In case of no use of the back side pushbuttons the safety shall be guaranteed by photocells.
Each pushbutton shall be activated by selector placed on operator’s panel
To be foreseen emergency pushbuttons with mechanical lock, to be placed one each upright and one on operator’s panel.
To be installed on the press uprights equipped with female socket at 400V – 50Hz with electromechanical lock and magnetotherm switch, fed downstream the main switch with start-stop control. See the previous point, socket 5 pins 3F+N+ground
Press cycles
SINGLE CYCLE Interlocked with the closed safety photocells. Start cycle with mobile pushbutton.

DIE AUTOMATION
Supply and application of 4 electrovalves, solenoid type with spring return, at 24VDC. This supply shall be complete with pipe connection on both parts of the press and connectors (air socket)for utilities connection., The 4 quick connectors Press Block type V85F3/8”gas. HW: included in uprights panels – see the previous point SW: add 4 electronic cam
From PLC shall be foreseen the managing of the control of the 4 electrovalves depending on the slide stroke (the angles shall be set on interface panel on a suitable graphic page, including visualization). The drive of electrovalves shall be possible also manually from the operator’s panel. On machine function control shall be foreseen the possibility to use or not use the controls.
Supply and application of 24-pin Harting socket for the control of die automation The related wiring must be connected to the PLC No. 2 sockets Harting 24-pin interface for dies (x double dies) consisting of: • No. 8 for binary coding inputs (die’s recognition) • No. 8 for dies’s control inputs • Managing SW for the sensors
All quick air connectors for die feeding shall be of both 1-inch and 3/8-inch size.

DIE AREA LIGHTING
Supply and application of a set of led lamps waterproof type and protected from vibrations, for no-glaring lightening of the die area, minimum intensity 200 lux, fed and protected by the auxiliary press circuit.
It shall be foreseen a separate control panel for selection of feeding and cut-out of lightening.

EMERGENCY/SAFETY
The emergency shall be made by depressing a red mushroom pushbutton on yellow label with the EMERGENCY word that will immediately stop the machinery.
The opening of the access doors will be allowed only after the operator have asked for and when all the press parts are in safety positions.
The opening of the emergency door will stop press.
DIAGNOSTIC REQUIREMENTS
For diagnostic is intended the whole functions suitable for identification and signalization of the faults and related possible source of trouble, as to easily and correctly indicate the procedure for maintenance intervention.
DISPLAY OF DIAGNOSTIC STATUS
On the interface to be foreseen specific windows to display massages of the following classification:
ALARM Fault of functioning that generates a machine stop revealed by a sensor connected to the machine (red coloured message)
EMERGENCY Machine stop related to a manual intervention of the operator by depressing the emergency pushbutton on the machine (red coloured message) **FAULT:** Malfunctioning of a component of the machinery that causes the machine stop after a fixed time-out (red coloured message)
PRE-ALARM: Malfunctioning that do not cause the machine stop (yellow coloured message)
SIGNALIZATION: Message for the operator for the drive of the machine not stopping the cycle. (green coloured message)
Graphic representation To inform on the components it shall be arranged video pages showing the position of the broken component, the input or the output number of the PLC interested to the component.
The clogging of the filters shall be controlled and signalized.

Operating modes
The press can take three different operating modes: MANUAL, SINGLE CYCLE and PROGRAMMING. Only the first two involve movements from parts of the press. The third is service and is used to enter and modify the operating parameters that characterize the other two.
Manual cycle
This operating mode permits all the press functions under direct control of the operator; it's i.e. possible to control the movements of upstroke and downstroke of the slide and of the blankholder.
Single cycle
Pushing simultaneously the two-hand control push-buttons on the mobile pushbuttons, the safety pins are automatically disconnected, slide descent speedly, brakes and executes the phase of work. Phase of work completed the slide return to the initial position and automatically the safety pins are connected.(For safety, during the slide downstroke the control push-buttons must be pressed till the slide reversal.) If into the cycle is available together the work of lower blankholder cushion, the repositioning became with the slide return or at the end of the slide cycle. As a third possibility the return of the lower cushion is given by the setting of a variable part of the slide upstroke (shorter cycle time)
Special cycle for work with die dies with nitrogen cylinders
In single cycle it is possible to use dies with nitrogen cylinders with the special cycle for work with nitrogen cylinders. For this, you can program (setting the slide stroke with PLC) an easy decompression and a slow climb of the slide while the nitrogen cylinders are not returned in an open position.
Cycle with nitrogen (See the application special devices)
MODEM Must be foreseen the module for remote support **(MODEM)** that permits the direct connection, via phone line, between the PLC of the press and our maintenance office for the search and immediate resolving of eventual problems is included.

• Photocell on front and rear of press
• Photocell or safety fence on the output side of the MB or moving table

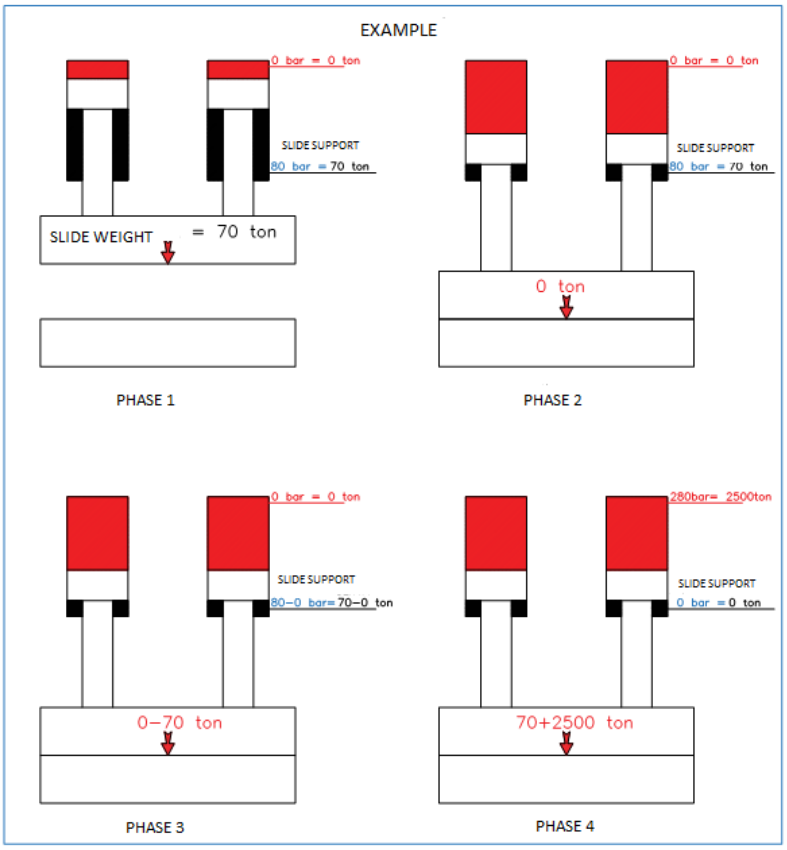
Special devices

System for the back pressure
Special system complete with high pressure and low flow rate pump controlled by the variable speed motor with the inverter.
On-off valves with perfect seal and proportional, small size valve with high precision to adjust the pressure (pressed) of the slide cylinders.
Pressure transducers dedicated to the reading of the same in the piston side, the cylinders rod side of the slide cylinders, nitrogen side and air die side.
Main press motors equipped with soft start. (If the special cycle, i.e. with the back pressure, lasts longer than 10 minutes you can stop them for energy saving).
Electrical connections (to the terminal box of the electrical panel) for interfacing of the press and of our loading and unloading nitrogen unit to the die.
Special cycle management software (i.e. with back pressure)
The software must be accessible and editable from IPB Polska.
Tests with our equipment in our plant in the presence of your technical (software)
Press operation in the special cycle:
- fast-approaching of slide
- slowing of slide making with precision until the closing of the dies - stop of the main engine (if necessary)
- realse pressure (annular slide cylinder side) to increase the force on the die up to the maximum weight of the movable parts of the press.
- managing of the piston side of cylinders slide up to the nominal power of the press
- injection and management of nitrogen pressure by the external control unit
- decompression of slide cylinders and simultaneous activation of main presses engines
- upstroke of slide
N.B. ** The pressure of slide cylinders must be managed in base of the inputs that come from our equipment and from pressure transducers lower nitrogen side and upper nitrogen side of the die

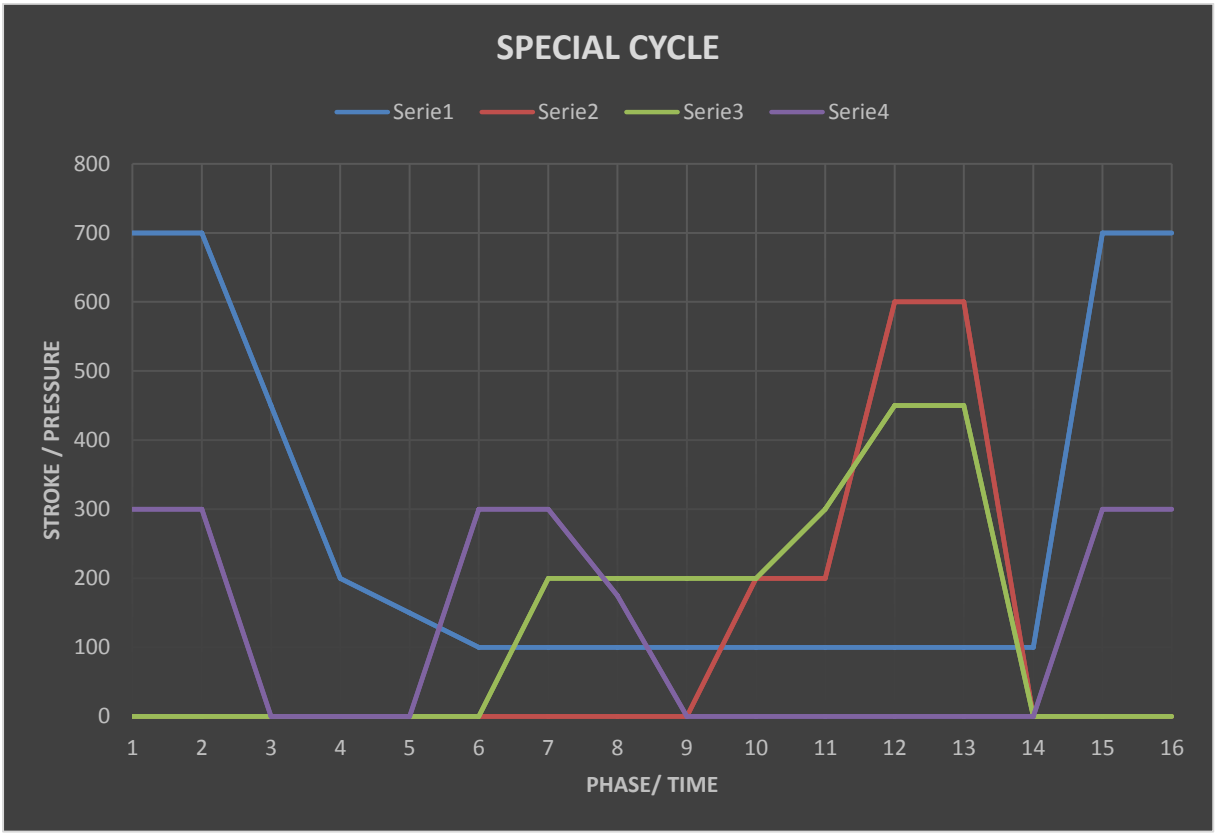
System for the back pressure

Simulation of the progressive managing of the weight of the slid on the formed piece

* - The release of pressure (annular slide cylinder side) to increase the force on the die up to the maximum weight of the movable parts of the press.



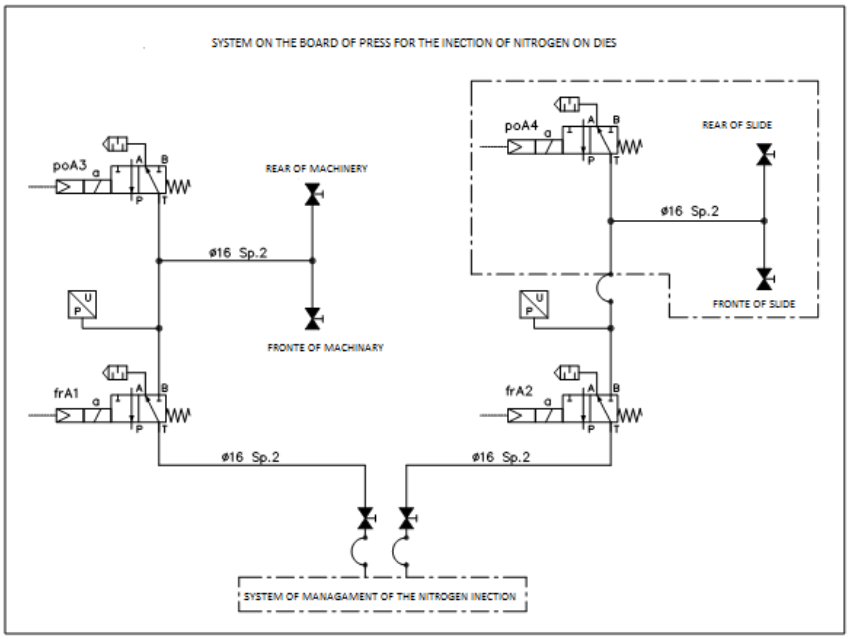
INDICATIVE CYCLOGRAM



SLIDE STROKE
PRESSURE CYLINDERS UPSTROKE SLIDE SIDE (SLIDE SUPPOR)
PRESSURE DOWNSTROKE SLIDE SIDE
NITROGEN PRESSURE IN DIE

ATTENTION: The time scale-each number is equal to 18 sec.

PRELIMINARY SCHEDULE OF THE SYSTEM ON BOARD PRESS FOR THE MANAGEMENT OF NITROGEN
** Valid for Special system



The system on the press board to the nitrogen load of dies as the attached diagram (see above), including:
• no. 4 pneumatically and electrical controlled electrovalves, working at 125 bar up to 150 ° C; opening / closing time approx. 0.5 sec
• no. 2 ball tap valves high pressure G1 / 2 "
• no. 4 ball tap valves high pressure G3 / 8 "
• no. 2 pressure transducers
• rigid piping on board Ø16x2 and flessible pipe to bring nitrogen into the slide

The valves will be located inside the slide (No. 2) and in the rear right uprights (n ° 2)

NB: The delivery of the unit nitrogen load at IPB Polska's charge.

Documents

The constructor of the press supply the following documentations:
- definitive draw of the press foundations (format PDF and DWG)
- lay out of the press (format PDF and DWG)
- user and maintenance manuals of the press in Italian and Polish
- cyclograms
- mechanical drawings (cylinders, MB etc)
- list of the purchasing, pneumatic and electrical components with their symbol
- CE certification of the press

Exclusions

- The lifting and unloading means-must be defined
- Building works and foundations (which will be made according our drawings)
- Hydraulical and lubrification oil
- Brackets and screws for die fixing
- Electrical, hydraulic and pneumatic connections from the network to the press and channels between the press and electrical cabinet.

GENERAL SPECIFICATIONS

Utility
To be specify : Power supply, power and consumption detail Air, pressure and consumption Water, quantity and temperature requested Oil, quantity and type
Oil
Please specify all type of proposal oil : For press lubrication For hydraulic system For lubrification of air pipelines Grease The oil will be delivered by the IPB Polska
Packing, transportation and installation
To be foreseen the suitable packing, the transportand relevant insurance up to the unloading point.
It is requested the “turn-key” installation, that shall include:
Transportation to the unloading point of the plant
Anchor bolts and levelling means, support blocks, eventual antivibrating blocks,
Lifting means (truck crane, travelling cranes, lifting carriages, etc.)

In advance the supplier will submit a program schedule for the main installation phase.
IPB Polska supply will be limited to the preparation of the foundation, all the remaining supply is at supplier’s charge.
The ducts for containing tubes and wires in the foundation are at supplier’s charge
The disposal of packings is at supplier’s charge at supplier’s charge

Training courses
Shall be foreseen the instruction courses for the following people: • Machine operators • Electrical and electronics maintenance people • Mechanical maintenance people
For each course please indicate:

- the detailed program
- duration (working days)
- max. number of attendants

Training courses shall be held at the plant and supply factory

All the training courses shall be in Polish language, including the technical documents that will be distributed to participants.

ACCEPTANCE TEST

The acceptance test is made on two phases

- Preliminary: To the supplier plant
- Final: To the final user plant

Test run at the Supplier's plant

The supplier prepare the test book that deliver in advance to IPB Polska for the acceptance.

Shall be checked the idle movement of the machine and the functioning with pressure, and the noise level.

At the end of checking will be written a "preliminary certification".

Test run at IPB Polska plant

Shall be checked again everything already checked at Supplier's plant according to the proceeding applied during the preliminary test.

Shall be completed the test book.

Shall be checked the idle running of the machinery and the functioning by the use of a stamping dies

Shall be checked the noise level of the machinery (the obtained results shall be placed on a written certificate by supplier).

Shall be verified that all the technical final documentation related to the machinery

Shall be checked the following efficiency related exclusively to the machinery:

- 98% on the idle running without dies

The efficiency test will be made during the 50 working hours with die and the supplier must guarantee 90% of efficiency in this period.

Shall be excluded the stop times related to dies, operators, lack of blank sand lack of feeding energies.
At the end of the test run shall be written a "Functioning certificate"

Norms

The machinery shall be engineered, manufactured and supplied according the state of the art for safety and health, so to eliminate every possible risk for people. Must be specify the applicable standards.

The manufacturing shall comply with European standard 2006/42 CE Directive for machine, 2006/95 Low voltage directive, 2004/108 Electric magnetic compatibility

For that purpose shall be respected the following safety norms for safety, hygiene and technology
EU norms for the good technics (CEN, CENELEC)
and when not specified shall be followed national norms (i.e. UNI and CEI) as integration
EN 692 / EN 693
EN ISO 14122
ISO 4413 norms for the oil-hydraulic equipment
ISO 4414 norms for the pneumatic equipment
ISO 5170 norms for the lubricating equipment
CEI 64.8 -44.05 and CEI 20.22 (last edition)
European norms EN 60204 and EN 292/1 and 292/2

Referring to the Directive CE 2006/42 shall be supplied the "CE Mark" with related technical documentation and certification.

Noise/insonorization

The machinery shall be engineered and manufactured to reduce the risk related to the noise and vibrations, according to the actual state of the art in that field to avoid risk from the source. avoid risk from the source.

To be indicated the max. sound emission level measured during the idle running without dies.

For the measurement shall be used used a hi-precision phonometer .

The measurements shall be made both at the head level of operators and to the most noisy point among those at 1,6 m height from floor or platform level at a distance of 1 metre from the machinery.

The supplier after the measuring shall write a certificate where must be stated that the instruments gave

measures within the max. levels allowed.
The antifall fencing located on perimeter of the crown deck should be of deadening material.
The fencing shall be placed in order to leave at least 600 mm passage around the machine components.
The noise level of machinery can't exceed 82 dB (A) during the idle running measured in working zone (CE norm) The measuring should be done during acceptance test at the Supplier's plant.

Additional specifications
The adjusting, the lubricating and maintenance points shall placed far from the dangerous area, and shall be allowable with the machine completely stopped.
All the pneumatic exhausts shall be silenced.
All the pneumatic filters shall be double with by-pass to grant the continuity of production in case of changing the filters.
Shall be foreseen an electrovalve, with by-pass, to cut the main supply of compressed air
The feeding energies supplied by the shop will be limited to:
1. Electric power, available 400V for power and 230V for lighting
2. Pneumatic supply , main piping of the plant . All the quick pneumatic connection to the dies shall be of 3/8" size.
All the interconnections (pipes, filtering, lubrication, etc.) shall be at supplier's care

Indicate the brands of the components that will be used to:
Hydraulic system
Lubrication system
Electrical system
Electrical engines
PLC
Hydraulic fittings
Filtrs

Assistance to the production start up
To be foreseen the assistance and supervision to the production start up with two technicians (one electric and one mechanic) for a period of at least 1 weeks on for 5 days a week.

Assistance after final acceptance (buy off)
In the quotation shall be specified:
1. The name of the company that will supply the assistance service
2. The place from where the assistance service will be given
3. The time for the intervention after call
4. The timing of availability during the day/week
5. The mode required for intervention

First supply of spare parts
The supplier must prepare the list of parts/spare parts with the long delivery term or the greater risk of failure.
Guarantee
The guarantee begins on the date of elimination of all non-conformities found during the final buy-off and consists of:
- 12 months for the purchasing components
- 24 months for the manufactured components

Attachments
Shall be attached to the offer:
• MB or moving table drawing
• Face slide drawing