Ernest Gill & Son Ltd
Hope Street
Halifax
HX1 5DW

24th October, 2001

For the attention of Mr Ronald Gill

Sales Proposal No. Q548/01

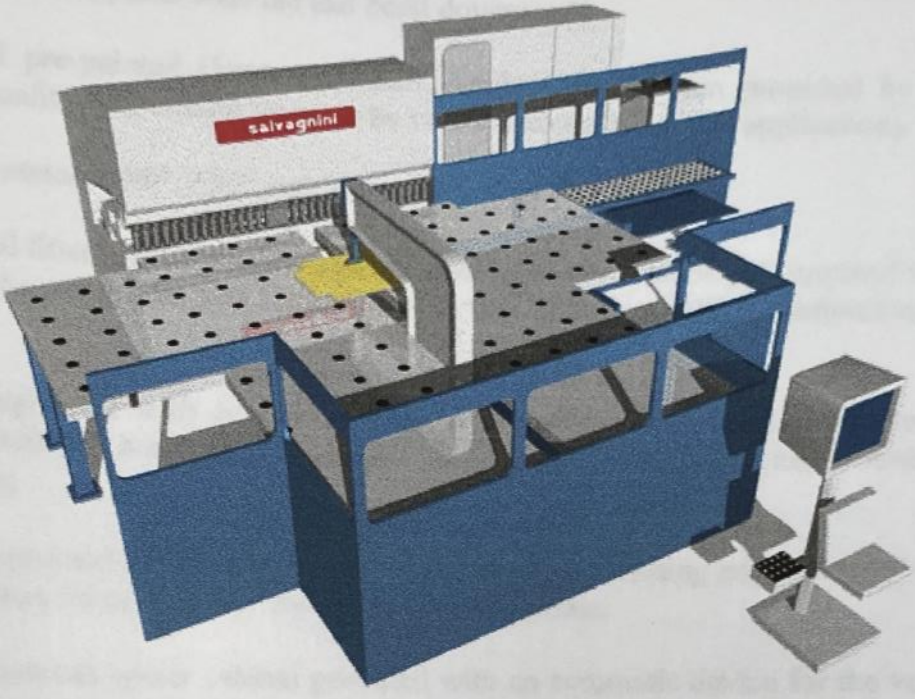
Dear Ron,

Further to your request, we have pleasure in submitting our Sales Proposal for the supply of a P4 Panel Bender, corresponding to the following configuration:

HPT 2715	Feeder-Unloader
P4-2512.ABT.LSA1.LIA.VFAST.MMACHNT	Panel Bender
ALA 30/510/200	Automatic Length Adjustment of Blankholder
CLA	Tab Bending Unit
UC1000/2	Set of Tab bending tools
R81	Water-Air Chiller
JOBP4.DIARIO	Software
STATP4	Diagnostic software

The above specification agrees with the Short delivery machinery identified in the Notes of Quotation No.Q541/01, dated 16th October 2001.

•HPT2715+P4.2512.ABT.LSA1.LIA.VFAST.MMACHNT+ALA30/510/200+CLA+UC1000/2+R81+JOBP4.DIARIO+STATP4



The various acronyms have the following meanings:

HPT2715 – Feeder-Unloader

Feeder-Unloader on the right hand side of the P4-2512 Panel Bender, on which the operator positions the punched blank against fixed references. The feeding pincer picks the sheet up and automatically places it on the work-surface of the Panel Bender; at the end of the bending cycle, the same pincer pushes the panel onto a lower level of the feeder-unloader which is equipped with idle rollers.

The operator must manually set the reference rulers for correctly positioning the sheet, before each different batch of panels is produced.

P4 2512.ABT.LSA1.LIA - Panel Bender

Programmable and automatic machine for the production of sheet metal panels through the formation of a number of bends on each of the four sides. It has the following specifications:

- Numeric control of the sheet feeding and positioning pincer, of the sheet centering references on both axes; automatic set up of the references.

- Ability to produce the first bend flattened at 180 degrees (positive and negative safe edge).

- Capacity to program the stop of the descending blankholder from 0 to 127mm in order to obtain, for example, an open safe edge.

- Maximum number of bends on each side: free.
- Ability to make both upwards and downwards bends, but the last bend on each side must be an upwards bend; the last bend on one side only can be a downwards bend; the unloading carriage is also able to unload a panel with the last bend downwards.
- Ability to bend pre-painted sheets or silked stainless steel, when protected by plastic film (however, the quality of the material must be verified according to the application).
- Discontinuous rotator at 90°, 180° and 270°.
- An electrical coil fitted in the hydraulic power pack's oil tank can be programmed to come on in order to bring the oil in the hydraulic circuit to the optimum working temperature before the shift starts.
- Work surface equipped with circular inserts with plastic brushes; it allows the panel to be moved easily without marking the contact surface and reduce the noise level during the production cycle.
- **LSA1.LIA:** Upper and Lower Blades with reduced angle; bending angle from 0° to 125° for a < 1.2mm thickness, from 0° to 90° for a < 2.0 mm thickness.
- Hermetically insulated power cabinet provided with an automatic device for the ventilation and the internal temperature control, through the use of an external cooling system.

Operational Characteristics

- Maximum length of incoming notched sheet: 2695mm
- Maximum width of incoming notched sheet: 1500mm
- Maximum diagonal of notched sheet: 2800mm
- Maximum bending length 2500mm
- Maximum dimension of bends above work surface: 127mm
- Maximum thickness of metal with ultimate tensile strength of 410 N/mm²: 2.00mm
- Maximum thickness of metal with ultimate tensile strength of 600 N/mm²: 1.25mm
- Minimum thickness of sheet metal: 0.50mm

ABT - Advanced Bending Technology

ABT was recently launched at EMO 2001 in Hanover. It's principle is that the machine will run with higher output but use far less power than earlier Panel Benders.
Higher output is achieved by improved response from the many axes of the machine through digital drives and motors.
Reduced Power is achieved by using an electronic pump that only delivers the appropriate power required by the bending press. This is particularly important in steel office furniture as only thin gauges are used, where as the machine itself is rated for far thicker materials.

With this development the machine can run in one of three modes:

1) High Speed Mode	-	10% faster	with	30% less power consumed
2) Standard mode	-	5% faster	with	45% less power consumed
Economy mode	-	5% slower	with	60% less power consumed

VFAST - Modem

Modem, connected to the control system, which allows the exchange of data, through telephone line, between the system installed at the customer's site and Salvagnini. Such an option is very useful when a fast exchange of information between the system and the services of Salvagnini (service, hardware, software, studies and applications) is necessary. Its presence requires a direct telephone line that connects the hardware placed in the electric cabinet to the telephone network. The modem is equipped with a module for data compression and V42bis protocol transmission.

MMACHNT - MICROMACH - Management and Control System for P4

High performance control system distributed on 3 levels.

- Elaboration unit for managing and supervising the machine (machine diagnostic, operator interface, local data elaboration). The unit is composed of a high performance 'multimedia' computer. The current hardware configuration has the following technical characteristics. Some of these components, when supplied, might have difference characteristics, in any case Salvagnini guarantees the same or even better performance of the computer than the described one.

COMPONENT	TECHNICAL DATA
Processor (CPU)	PENTIUM INTEL III (750 Mhz)
Operating System	WINDOWS NT
Screen Card	Graphics accelerator with 4 MB SGRAM
Random Memory	SDRAM 128 Mbyte
Hard Disc	UltraSCSI 9.1 Gbyte
CDROM Driver	600 Mbyte
Floppy Disk Driver	3 ½inch, 1.44 Mbyte
2 Network Cards	ETHERNET TCP/IP (BNC o RJ 45)
17" Colour Monitor	

The control unit is equipped with a Modem having data compression module and the V42bis transmission protocol, to be connected to the telephone line. This type of connection permits a fast information exchange between the machine and Salvagnini services depts. (assistance, hardware & software , studies and applications). To activate the connection the customer should only provide for a normal direct telephone line with the respective cable and a RJ45 male connector in the proximity of the control unit.

- Real time control unit, based on MOTOROLA 68030 processor and real time pSOS+ operating system completely dedicated to carry out the automation logic of the machine. This unit communicates with the interface section through a standard VME bus.

- Interface section towards peripheral devices (hydraulic motors, solenoid valves, sensors….) that includes advanced functionality of axes control.

The graphic diagnostic on monitor, in real time, allows the following to be displayed: clear indications of the status of the equipment, photo of the interested part, hypertextual help with indications on the solution of the problem, notes that can be added by the customer.

The programming can be made directly from the elaboration unit of the machine or from office stations connected in ETHERNET. They typical programming functions do not require the interruption of the current working cycle.

The language is high level, the defined macroinstructions express geometrical concepts (ANGLE, RADIUS, HEIGHT….) and are completed by conditional instructions (IF, THEN ELSEIF….), by mathematical instructions (SIN, COS, TAN….) and by instructions for defining the parametric variables.

The post-processor PDE is included. It analyses the syntax and the geometry of the programming macroinstructions, transforming them in data useful to the working cycle of the P4. Furthermore the post-processor manages the movements of the manipulator, also considering the forming of the sheet metal, it automatically calculates the gripping points and the bending force according to the quality of the material and chooses the unloading modality.

The hardware and software network connection, if needed, with other computers is not included in the supply.

Our interface towards the customer's LAN is usually composed of:

- Hardware: IEEE 802.3 ethernet, thinwire, BNC RJ58 connectors.
- Software protocol: TCP/IP

ALA 30/510/200 – Automatic Length Adjustment of Blankholder

Composed of:

- device for automatically setting the length of the blankholder tool in accordance with the instructions contained in the bending program.
- a series of segments for the blankholder tool, with a 194mm wide profile and front and side grooves to permit maximum bends of 45mm and 30mm respectively, to be made.

The length of the blankholder tool can be composed in 5mm steps from a minimum of 505mm to a maximum of 2500mm. With this blankholder the minimum width of the panel between bends is 200mm.
With the ALA Option, the tool changeover is performed in masked time. There is no set-up time other than program selection and gathering of punched blanks when using this option.

CLA – Tab bending Unit

Option of the P4-2512 Panel Bender composed of a numerically controlled device which is able to position one or two auxiliary blades along the bending edge in order to modify the profile of the lower blade during one phase in the bending cycle.

The maximum thickness that can be bent using this option is 2.0mm for material with an ultimate tensile strength of 410 N/mm² and 1.25mm for material with an ultimate tensile strength of 600 N/mm². The maximum length of the auxiliary blades is 1000mm, the minimum length is 50mm.

UC1000/2 – Set of CLA Tools

Set composed of 13 pairs of CLA tools for a total length of 1100mm. Their various combination allow you to compose tools starting from a length of 100mm up to a length of 1000mm in 2mm steps.

The set is composed of the following:

1 pair of 25mm CLA tools	1 pair of 26mm CLA tools	1 pair of 27mm CLA tools
1 pair of 28mm CLA tools	1 pair of 29mm CLA tools	1 pair of 30mm CLA tools
1 pair of 35mm CLA tools	1 pair of 40mm CLA tools	1 pair of 45mm CLA tools
1 pair of 50mm CLA tools	1 pair of 60mm CLA tools	1 pair of 65mm CLA tools
1 pair of 90mm CLA tools		

R81 - Water-Air Cooler

Autonomous, independent closed circuit-cooling unit for maintaining a constant temperature in the cooling circuit of the system. Refrigerating yield: 20 kW using R407c ecological gas.

JOBP4.DIARIO - Software for the Automatic Management of Batch Sequences and for Saving System Data

Software packages, installed on every Salvagnini system, which allow the automatic management of the production of the sequence of batches (JOBP4), if equipped with a sheet automatic feeding system, and the saving of the data and movements of the system components (DIARIO).

The sequence of batches is contained in a list manually prepared by the operator. It must be possible to produce the batches - that differ from one another for the program, the type and the thickness of material - with the same arrangement of the special tooling (e.g., CLA Tool); otherwise, separated lists must be prepared. The final destinations of the single parts produced are automatically assigned according to the configuration of the connections placed downstream of the system. These destinations can be modified by the operator before starting production. It is possible to interrupt the input sequence and then to re-start it from where it was interrupted, even if in the meantime other parts have been produced.

All the movements or actions performed by any active object present on the system can be counted both to facilitate the maintenance and test operations and to obtain information on the wear condition of some components. The operator must manually select the desired objects among the lists that are at disposal in the system.

STATP4 - Package of analysis and elaboration of historical data

The MICROMACH control system of the Salvagnini equipment automatically records all the significant events occurred during the machine's life; the STATP4 software package allows these data to be analyzed at any time.

With this application it is possible to select a period of time which is of interest and of any length, from a few minutes to a year, and obtain all the data relative to the indicated period in a few seconds; general resumptive information, such as the machine productivity reports and the list of panels made - with their characteristics - can be requested.

Furthermore, it is possible to obtain punctual information, which is fundamental for an immediate diagnostic, such as the detailed list of the elementary events occurred and simulate their replay at the wished speed or at a step at a time, in order to exactly identify the conditions in which a machine was at a certain moment.

PRICE

HPT 2715	Feeder-Unloader
P4-2512.ABT.LSA1.LIA.VFAST.MMACHNT	Servo-controlled Panel Bender
ALA 30/510/200	Automatic Length Adjustment of Blankholder
CLA	Tab bending Unit
UC1000/2	Set of Tab bending tooling
R81	Water-Air Cooler
JOBP4.DIARIO	Software
STATP4	Diagnostic software
Programming Training	2 Days for 4 People
Maintenance Training	3 Days at Your Works
TRANSPORT	
INSTALLATION & COMMISSIONING	

CNC Axis for Panel Clamp.
Softer grade of Worksurface brushes (for prepainted materials)
Link between existing P4.1812 and this machine (to allow file transfer).

PRICE GBP ~~£445,000~~

435,000

J.V. GRAINGER

DEL WEEK 49
3.12.01.