

Proposal for  
***“Forbes Marshall Cascade based Paper Drying System”***  
At  
**Hanumant Paper Mills, Muzaffarnagar**

More Paper, Less Steam.

**BEST  
PERFORMANCE**



REF- NEZ/PAP/DEL/HPM/SNC/REV00

Dated 31-Jan-2021

To,  
Hanumant Paper Mills,  
Muzaffarnagar,  
Uttar Pradesh

Kind Attention : Mr. Dharmendra Tyagi Ji / Mr. Naveen Tyagi Ji / Mr. Akshay Tyagi Ji  
(Directors)

Subject : Proposal for “FM Cascade based Paper Drying System”

Dear Sirs,

We thank you very much for the interest shown in Forbes Marshall for the Design & Supply of “FM Cascade based Paper Drying System” for your paper machine. Following are Forbes Marshall deliverables in terms of “Best Steam Economy” and “Maximum Process Efficiency” -

Description	FM Proposed Design	Annual Savings/Benefits
Specific Steam Consumption per ton paper	<b>1.73 T/T</b>	15-25% lesser Steam consumption than traditional systems
Condensate Recovery	<b>85-95%</b>	15-20% improved condensate recovery than traditional systems
Steam Distribution Efficiency (pressure drop)	<b>Max 0.2 barg / 100 m run</b>	Maximum Paper Drying Efficiency
Condensate Evacuation from Drying Cylinders	<b>100%</b>	Maximum Paper Drying Efficiency

Forbes Marshall has expertise in the field of Steam Engineering and has been working on Steam Energy Conservation since last more than 70 years

Please find here our proposal and feel free to revert in case of any further clarification or doubt.

Thanks and Regards

Vishal Singh  
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9555009636

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## 1. PREMISE

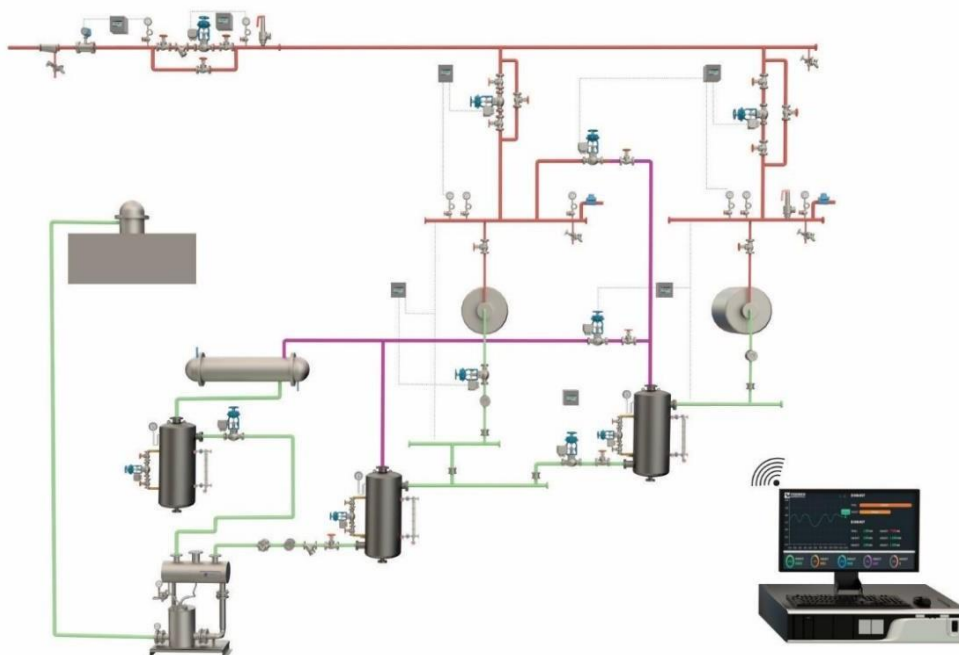
**Hanumant Kraft Paper** is coming up with a New Paper project to produce good quality Kraft Paper in the range of **150-160 TPD**.

To ensure “Maximum Steam Economy” and “Maximum Process Efficiency”, Forbes Marshall recommends to install FM Cascade based Paper Drying System on Paper Machine Drying Section.

## 2. OVERVIEW - FM PAPER DRYING SYSTEM

Forbes Marshall Cascade based Paper Drying System enables to achieve “Best Steam Economy” and “Maximum Process Efficiency” by ensuring (1) Optimum Steam Consumption (2) and 100% condensate evacuation from drying cylinders.

In this design, entire paper machine drying section is divided into certain thermal groups. Required amount of steam in these thermal groups is provided with the help of PID based Pressure Control loops. From there, steam to individual drying cylinders is injected with the help of Forbes Marshall High Efficiency Rotary Joints. After the condensate is generated inside drying cylinders, it gets efficiently evacuated through ELDP design syphons and DP control loops. Condensate evacuated along with Blowthrough steam gets separated in separator vessels. From there Blowthrough Steam is recovered back in paper machine and condensate is recovered to Boiler. Here an efficiently designed system and efficiently functioning steam devices together ensure best performance.



### 3. IMPORTANT COMPONENTS – FM PAPER DRYING SYSTEM

#### 3.1 Engineering Design



An efficient design plays an important role in ensuring that “Best Steam Economy” and “Maximum Process Efficiency” are achieved in all operating conditions.

An efficient engineering design takes care of variation in process variables and helps to ensure that process efficiency and economy of the system are not compromised at any given point of time.

Apart from ensuring “Best Steam Economy” and “Maximum Process Efficiency”, a properly designed Steam System also helps in –

1. Minimizing initial piping & insulation cost
2. Optimizing permanent radiation losses from steam pipes
3. building a reliable and safe steam system

Forbes Marshall has extensive expertise in the field of Steam Engineering and has delivered more than 400 + efficiently designed Paper Drying Systems for Paper Industry.

<b>Innovation Experience</b> <b>70</b> years	<b>Steam and Condensate Systems</b> <b>400+</b>	<b>Rotary Joints and Syphons</b> <b>2000+</b>
<b>Boiler Monitoring Systems</b> <b>50+</b>	<b>Condensate Recovery Systems</b> <b>100+</b>	<b>Hoods and Allied Systems</b> <b>20+</b>

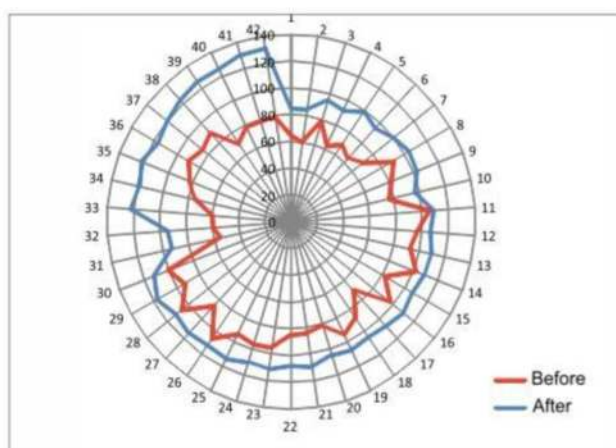
### 3.2 Forbes Marshall High Efficiency Rotary Joints & Syphons



The main advantage of Forbes Marshall high efficiency Rotary Joint and Syphon is its ability to evacuate condensate using extra low differential pressure. It is constructed such that least differential pressure is required to evacuate condensate efficiently. This arrangement helps to avoid pressure drop and hence saves thermal energy.

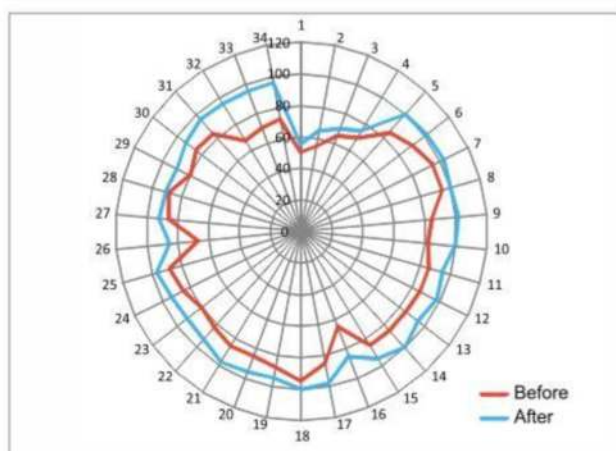
Syphon clearance can also be adjusted as per requirement.

Some examples of improvements from Forbes Marshall Rotary Joints and Syphons are given below –



In a 175 TPD kraft machine in Egypt, the dryer surface temperatures varied between 60 and 80 deg C.

After replacing existing syphons with Forbes Marshall FBS rotary joints and syphons, the temperatures improved to between 100 to 120, indicating an average 35 deg C improvement.



At a 140 TPD kraft unit in Vapi, Forbes Marshall FBS rotary joints and syphons increased the average dryer surface temperatures by 25 deg C. Now the machine is operating with a differential temperature of 27 deg C between steam and dryer surface.



### 3.3 FM High Performance Control Valves



High performance & reliable design, backed by over 60 years of experience

State-of-the-art CNC manufacturing techniques avoid misalignment between actuator & valve guiding

Precise control, Low cost of ownership, higher efficiency & extended life cycle

### 3.4 FM PLC Microcon+



Modular & expandable system

Hardware & software reliability

Choice of various redundancy configurations

Ease of configuration, ease of connectivity

### 3.5 FM Zero Leak Piston Valves



The objective of best steam economy and sustaining the same can only be achieved when there are no leakages in entire steam network.

FM glandless zero leak piston valves are ideal choice for ensuring the same.

Glandless valve - No Chance of steam leakage to atmosphere.

Seat-less valve - Burnished piston and metal reinforced graphite sealing rings ensure perfect class VI shut off. I.e. bubble tight shut off.

Superior design.

The only scrap free valve

### 3.6 FM Accessories



Required to support smooth functioning of the system.

Required for correct monitoring and cross checking of the control system parameters

Required to ensure no leak system and reliable life cycle



#### 4. BASIC DATA

Description	Value	Remarks
Paper Type	Sized Kraft	
Max Pope Reel Paper Production (TPD)	168	
Max Finish Losses (%)	--	
Max Finish Paper Production (TPD)	168	
GSM Range (grams)	100-250	
Anchor GSM (grams)	100-120	Assumed to be confirmed
Paper Deckle (m)	2.7	
Machine speed at Anchor GSM (mpm)	423	
Paper Draw at Anchor GSM (TPH)	6.80	
Unirun Dryers Section (Nos./Dia in m)	00 / 1.8	
Predryer Section (Nos./Dia in m)	22 / 1.8	
MG Section (Nos./Dia in m)	NA	
Mid Dryer Section (Nos./Dia in m)	NA	
Post SP Section (Nos./Dia in m)	14 / 1.5	
Post Coater Section (Nos./Dia in m)	NA	
Moisture % inlet to Unirun/Predryer (%)	50	Assumed to be confirmed
Moisture % inlet to MG (%)	NA	
Moisture % outlet of MG (%)	NA	
Moisture % inlet to SP (%)	10	Assumed to be confirmed
Moisture % outlet of SP (%)	30	Assumed to be confirmed
Moisture % at Pope Reel (%)	7	Assumed to be confirmed
Steam pressure available at machine header (barg)	4.0	
Steam temperature available at machine header (Deg C)	152 Deg C	

## 5. PROPOSED EVAPORATION RATES AND SPECIFIC STEAM

Ideal Steam Consumption Calculation										
	PREDRYER		MG	Mid Dryer		S/P	POST SIZE PRESS			
Moisture (%)	50.0		10.0	10.0		10.0	30.0			7.0
Dryness (%)	50.0		90.0	90.0		90.0	70.0			93.0
Paper Draw (Kg/Hr)	6800.0		6800.0	6800.0		6800.0	6800.0			6800.0
Solids (Kg/Hr)	6324.0		6324.0	6324.0		6324.0	6324.0			6324.0
Total Mass (Kg/Hr)	12648.0		7026.7	7026.7		7026.7	9034.3			6800.0
Water (Kg/Hr)	6324.0		702.7	702.7		702.7	2710.3			476.0
Water Removal (Kg/Hr)		5621.33		0.00		0.00		2234.29		
Paper Deckle (m)		2.70		2.70		2.70		2.70		2.70
No of Dryers (Nos.)	Type 1	Type 2	Type	Type 1	Type 2		Type 1	Type 2		
Diameter of dryers (m)	22.0	0.0	0.0	0.0	0.0		14.0	0.0		
Area of Dryers (m2)	335.73	0.00	0.00	0.00	0.00		178.04	0.00		
Area Sectionwise (m2)	335.7		0.0	0.0			178.0			
ER (Kg/Hr/m2)	16.7		#DIV/0!	#DIV/0!			12.5			
Total Moisture Load	7855.62									
S/W	1.5		(Consider = 1.6 for kraft, 1.5 for w/p, 1.35 for machine having closed hood)							
Steam/hr	11783.4									
Ideal Steam consumption	1.73	T/T								
Design Production	163.2	TPD								

Note : Unirun Dryers (if installed), not in direct contact of paper do not contribute in paper drying , so those dryers will not be considered in ER calculation

## 6. PROPOSED THERMAL GROUPING

Tentative thermal grouping of the proposed system is as follows –

	No of Dryers (Nos.)	No. of Dryers	Steam Pressure (barg)	condensate to	Remarks
Group 1	04	01-04	0.5-0.8	S1	
Group 2	06	05-10	1.0-2.5	S2	
Group 3	12	11-22	2.0-3.5	S3	
Group 4	03	23-25	0.5-0.8	S1	
Group 5	04	26-29	1.0-2.5	S5	
Group 6	07	30-26	2.0-4.0	S6	

## 7. FM BILL OF MATERIAL AND PRICES

<b>A Design &amp; Supply of Steam and Condensate Control System</b>				
<b>S. No.</b>	<b>Item Description</b>	<b>Total Required Qty.</b>	<b>Existing Qty.</b>	<b>Net Required Qty.</b>
<b>1</b>	<b>Engineering of Steam &amp; Condensate System, consisting of -</b> I. P&ID - 1 Lot II. Bill of Material (For Instruments and Acc.) - 1 Lot	1	0	1
<b>2</b>	<b>Pressure Control Loop, consisting of -</b> I. PID Based Pressure Control Valve - 1 no. II. Electropneumatic Positioner - 1 no. III. Pressure Transmitter - 1 no. IV. Condensate Pots - 1 no. V. Manifolds - 1 no.	6	1	5
<b>3</b>	<b>Differential Pressure Control Loop, consisting of -</b> I. PID Based Differential Pressure Control Valve - 1 no. II. Electropneumatic Positioner - 1 no. III. Differential Pressure Transmitter - 1 no. IV. Condensate Pots - 2 no. V. Manifolds - 1 no.	6	0	6
<b>4</b>	<b>Dump Control Loop, consisting of -</b> I. PID Based Differential Pressure Control Valve - 1 no. II. Electropneumatic Positioner - 1 no.	4	0	4
<b>5</b>	<b>Level Control Loop, consisting of -</b> I. PID Based Level Control Valve - 1 no. II. Electropneumatic Positioner - 1 no. III. Level Transmitter - 1 no. IV. Condensate Pots - 2 no. V. Manifolds - 1 no.	7	0	7
<b>6</b>	<b>Back Pressure Control Loop, consisting of -</b> I. PID Based Differential Pressure Control Valve - 1 no. II. Electropneumatic Positioner - 1 no.	1	0	1
<b>7</b>	<b>Temperature Control Loop (for Vacuum System), consisting of -</b> I. PID Based Temperature Control Valve - 1 no. II. Electropneumatic Positioner - 1 no.	1	0	1
<b>8</b>	<b>Forbes Marshall Disc Check Valves, FMDCV</b>	13	0	13

9	Forbes Marshall DCS	1	0	1
10	Pressure Gauge Assembly (for thermal groups) for individual steam header for individual condensate header	12	0	12
11	Pressure Gauge Assembly (for Separator Vessels)	7	0	7
12	Vacuum Gauge Assembly (for Separator Vessels)	1	0	1
13	Temperature Gauge Assembly (for temperature Loop)	1	0	1
14	Main Line Steam Trapping System, consisting of - Main Line Trap with Isolation and Bypass Valve - 1 no. <i>Note: Unit Qty for every thermal group header</i> <i>Note: Two Qty. for main steam header</i>	8	0	8

<b>B</b>	<b>Rotary Joints and Syphons</b>			
<b>S. No.</b>	<b>Item Description</b>	<b>Total Required Qty.</b>	<b>Existing Qty.</b>	<b>Net Required Qty.</b>
1	Stationary Rotary Joints with complete syphon set, 65 NB	14	0	14
2	Stationary Rotary Joints with complete syphon set, 80 NB	22	0	22

<b>C</b>	<b>Supply of Steam and Condensate System accessories</b>			
<b>S. No.</b>	<b>Item Description</b>	<b>Total Required Qty.</b>	<b>Existing Qty.</b>	<b>Net Required Qty.</b>
1	Glandless Zero Leak Piston Valves for Pressure Control Loops	6	0	6
2	Glandless Zero Leak Piston Valves for dump Valves	4	0	4
3	Glandless Zero Leak Piston Valves for Level Control loops	21	0	21
4	FM Strainers for centrifugal pumps	4	0	4

5	<b>Glandless Zero Leak Piston Valves</b> for recirculation lines of vessels with centrifugal pumps	4	0	4
6	<b>Gauge Glass Assembly</b> for Separator Vessels	0	0	0

<b>D</b>	<b>Meters</b>			
	<b>Item Description</b>	<b>Total Required Qty.</b>	<b>Existing Qty.</b>	<b>Net Required Qty.</b>
1	Orifice Type Steam Flow Meter	1	0	1
2	Orifice Type Condensate Flow Meter	1	0	1

<b>E</b>	<b>Isolation Valves for Transmitters</b>			
	<b>Item Description</b>	<b>Total Required Qty.</b>	<b>Existing Qty.</b>	<b>Net Required Qty.</b>
1	<b>Glandless Zero Leak Piston Valves</b> for Pressure Transmitters	12	0	12
2	<b>Glandless Zero Leak Piston Valves</b> for Differential Pressure Transmitters	24	0	24
3	<b>Glandless Zero Leak Piston Valves</b> for Level Transmitters	28	0	28

	<b>PRICES</b>	
<b>S. No.</b>	<b>Item Description</b>	<b>TOTAL PRICE (Rs.)</b>
A	Design & Supply of Steam and Condensate Control System	7396270
B	Rotory Joints and Syphons	2470000
C	Supply of Steam and Condensate System accessories	1513950
E	Meters	460000
F	Isolation Valves for Transmitters	374400
	<b>GRAND TOTAL</b>	<b>Rs. 12214620/-</b>
	<b>Final Discounted Price</b>	<b>Rs. 8000000/-</b>



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## 8. EXCLUSION

Description	Approximate Qty.
Piping, pipe fittings, pipe supports and all erection work	All
Electric & pneumatic cabling and fittings	All
Centrifugal pumps	All
Heat Exchanger	01
Vacuum Pump	01
Personal Computer for DCS	01
Dryer Inlet / Outlet Valves and accessories	All
Separator Vessels with gauge glass	08
Flexible hoses (for dryer inlet and outlet)	All
Any other item not mentioned in the scope of supply	All

**Note:**

1. Pneumatic Air to be used for operating control valves should be instrument quality air.
2. Steam should be made available at required pressure and temperature at main steam header. PRS and DSH if required for Boiler main steam, shall be considered extra.

## 9. TERMS AND CONDITIONS

*Prices:*

Ex-works Pune, exclusive of all taxes, duties, levies as applicable

*Order On:*

M/s Forbes Marshall Pvt. Ltd.,  
Plot no. B-85,  
Phase-II, Village –Savardari,  
Tahsil-khed, Chakan Industrial Area ,Pune

*FREIGHT:*

At Actual

*P&F charge:*

Nil

*Duties/taxes:*

GST as applicable at time of dispatch

*Payment:*

**40% advance, 20% against submission of engineering drawings and balance 40% against Performa Invoice**

*Delivery:*

**14 - 16 weeks** from the date of receipt of advance along with your Clear order and required manufacturing details at FOB

*Validity:*

30 days from the date of quotation.

*Items Warranty:*

Forbes Marshall will guarantee the item supplied for manufacturing defects for 12 months from date of commissioning of the system or 18 months from the date of supply whichever is earlier.

## **10. OPERATING PARAMETER SHEET (TERMS AS PART OF PO)**

- The committed performance applies only on “Basic Data” mentioned in this proposal.
- The specific steam consumption is based on pope reel production.
- The steam consumption is as measured by FM meters only and only for dryer section.
- The steam consumption does not include steam consumed for pulper, size kitchen etc.
- Steam guarantee applies for design parameters and operating capacity between 75%-100% only.
- Production rate achievement or drying rate is achievement is not included in this guarantee and FM cannot be held accountable for production.
- FM guarantees current drying rates of machine will not decrease post system installation, unless stated otherwise specifically in the proposal.
- LP steam should be made available in dry saturated condition at dryer entry.
- Inefficient Non FM Rotary Joints & Syphons will nullify the guarantee. Before conducting performance trial, faulty rotary joints & syphons will be either repaired or replaced.
- Steam leakages in pipelines or Non FM valves will nullify the design guarantee. Before taking performance trials, all leakages must be arrested.
- The guarantee will be proved by performance trail duration of 16 hours at design operating conditions.
- Tolerance of steam guarantee numbers up to 5%.
- We hereby state that the above information is verified and confirmed by us and accept the terms of performance guarantee.

**General Terms:**

1. **Prices:**  
All prices offered are strictly on the Price basis as indicated in the Price Schedule.
2. **Delivery :**  
Deliveries quoted are subject to prior sale and confirmation by us. Delivery period starts from the date of receipt of the necessary advance as per payment terms and only when all details of contract have been made clear and both parties are in agreement with the conditions of the contract. Its strict observance presumes the fulfilment of the contractual obligations of the buyer particularly the conditions of payment agreed upon. Delivery promises are based on the current manufacturing program. We will endeavour to keep the date given, but accept no liability for failure to do so. Delay in the delivery quoted shall not render the contract as void on the part of the buyer and no claim either direct or indirect can be made on us on account of delays. In no case shall the buyer have the rights to withhold balance payment or reject goods on account of delay in delivery. We shall have the option of delivering the goods contracted in part consignments and also earlier than quoted delivery period.  
The delivery period for boiler is based on adequate visits being paid to our works by the local boiler inspectorate office for inspections as per IBR and adequate power being made available.
3. **Advances :**  
Advances paid against an order shall not be subject to any interest. We shall have the right to adjust the demurrage against such advances because of delay in lifting the ordered equipment or because of any incidental expenses we may incur on the buyer's behalf. The advance shall be forfeited in the event of cancellation of order for whatever reasons.
4. **Validity :**  
While every effort will be made to keep our quotation valid for acceptance for a period of the specified days from the date hereof, we may be constrained to modify this offer within this period due to circumstances beyond our control.
5. **Packing & Forwarding :**  
Packing and forwarding shall be in accordance with our standard practices.
6. **Insurance :**  
Transit insurance has to be covered by the buyer. We shall convey the dispatch particulars as soon as possible after actual dispatch to enable the buyer to arrange insurance.
7. **Inspection :**  
The equipment is made under stage-by-stage inspection. If necessary and called for specifically in the order, the goods will be offered for visual inspection at our works. We will intimate the date of inspection about 10 days in advance. In case inspection is not carried out on the date so advised, we shall be free to dispatch the consignment as per terms of delivery.
8. **Dispatch :**  
The unit will be dispatched in packed condition. The work of assembly at site is nominal and can be done easily by the buyer. We shall supply the necessary drawings, diagrams and other details to facilitate the assembly work. However, if required you may avail of our services for erection assistance at extra cost.
9. **Mode Of Delivery:**  
The mode of dispatch shall be as per the delivery terms specified in the Price Schedule.
10. **Order Confirmation :**  
All orders placed on us directly or through our regional offices will be binding on us only after our head office in Pune has issued a formal order acknowledgement.
11. **Specifications etc. :**  
Specifications, dimensions, designs, descriptions, shades of paints, etc. are not binding on us in minute details and are subject to reasonable alternations without notice.
12. **General Lien :**  
We shall be entitled to general lien on goods in our possession or dispatched for all money due to us by the buyer, both under this contract or any other account and we shall also be entitled to apply any money in our hands under any contract due to us under any other contract or contracts.
13. **Warranty :**  
Our liability in respect of goods supplied is limited to our standard guarantee and warranty. In the case of boilers and burners, proper performance is dependent upon, amongst other factors, proper installations of chimney, connections, proper oil, water and electrical connections; use of adequate treated water and in general following of instructions specified in our service manuals with proper care and maintenance of the equipment. However, we undertake to make goods by repair (and failing which, by replacement) defects arising out of faulty design, materials or workmanship within six months of the date of dispatch. If we so require, the parts in respect of which a claim is made must be sent at buyer's expense to our works before liability can be entertained under this clause. Such expenses will be refunded if our liability is admitted. Bought outs components are guaranteed by us only to the extent of guarantees given to us by our suppliers. Electrical components such as heaters, motors, contractors, etc. are however not covered under this warranty. This warranty is subject to:  
I. Installation having been completed within three months of dispatch of the equipment.  
II. The supply/installation having been formally accepted as per the handing over clause.  
III. Supply of right fuel as per relevant specification available at the equipment inlet in the proper graded form and size.  
IV. The equipment or part thereof not being subject to accident, alterations, abuse or misuse.
14. **Storage :**  
If the goods cannot be delivered, charge will be made for storage, insurance and interest at the rate of 1% of the invoice value for each week or part thereof commencing 15 days from the date of Pro-forma Invoice.
15. **Force Majeure :**  
The offer is subject to "Force Majeure" by which it means causes beyond our reasonable control such as war, invasion, civil disobedience, government orders or restrictions, strikes, lockouts, riots, fire, earthquake, floods, accidents, breakdown of machinery, delay or inability to obtain labour, raw materials, wagons, shipping, space or any other causes whatsoever beyond our reasonable control affecting us or subcontractors, suppliers etc.
16. **Erection And Commissioning Assistance :**  
After receipt of the equipment at site and if it is desired to have the services of our engineer we shall depute our engineer for the services at extra cost. To and fro air and / or train fair, boarding and lodging and conveyance facilities at site will be extra at buyer's cost. These charges will be reckoned from the date of departure of our engineer from our works till the date of return to our works, commissioning service offered at the rate mentioned in quotation and terms mentioned above include:  
a) Reasonable number of visits/meetings to help prepare the user to safely unload the material, when required.  
b) Discussion of installation details in terms of physical/technical requirements.  
c) Making the user conversant with statutory requirements, if any, and discussing details of requirements in respect of power supply, feed water, fuel system etc.  
d) Ensuring that the installation has finally been made as recommended.  
e) Commissioning the unit for a short run from the point of view of mechanical working and to set various controls as necessary.  
f) Conducting demonstration for the purpose of user's education for equipment operation and maintenance.  
The above charges shall be paid by the buyer against Pro-forma Invoice.
17. **Handing Over :**  
Unless otherwise specified in the order and accepted, handing over of the equipment and / or installation would be considered as completed and a formal completion certificate shall be issued by the buyer/user, if  
a) The material has been supplied as per the terms and scope of supply with agreed deviations, if any.  
b) Erection if involved has been completed generally as per terms of order with unavoidable deviations.  
c) The equipment has been commissioned, if applicable, generally as agreed.  
d) The equipment and / or installation has been put to commercial use either with or without help of our engineer.  
The buyer / user is expected to put the equipment to commercial use only after issuing a formal completion certificate. Our responsibility in terms of warranty shall cease straightaway if the equipment is put to use without formal taking over.
18. **Cancellation :**  
All orders received and acknowledged by us shall not be subject to cancellation, either wholly or partly for any reason whatsoever. In the event of cancellation of an order, the advance shall be forfeited.
19. **Jurisdiction :**



All contracts between the buyer and ourselves are deemed to be entered into at Pune and are therefore, subject to the jurisdiction of courts at Pune.

20. **General :**

Any condition or other matters relating to this quotation not expressly stipulated will be a matter of mutual discussion and agreement at the time of accepting the order. If this quotation is accepted and an order is placed, all the above conditions of sale stand automatically accepted by the buyer.

In order to offer our clients the advantage of the latest technical development and progress, we reserve the right to amend details of design without notice.

Please note that this document is only an invitation for you to make an offer by submitting a Purchase Order. A binding contract shall deem to have been arrived at only upon a Sales Order Acceptance cum Proforma being issued by us confirming our acceptance of the Purchase Order. The sale by us shall be governed by our standard terms and conditions which are available on the following link, which terms and conditions shall be deemed to have been incorporated herein by reference: <https://www.forbesmarshall.com/terms-of-sale.aspx>. We request you to kindly carefully read the terms and conditions, including but not limited to the terms in relation to warranties and limitation of liability. Note: We reserve the right to amend the standard terms and conditions, from time to time.

B - Para on Limitation of Liability - this is included in our standard terms & condition document which goes with every OA:

**LIMITATION OF LIABILITY**

Notwithstanding anything to the contrary stated herein or in any other agreement, communication or documentation exchanged between the Parties:

1. The Seller's aggregate liability to the Buyer, in respect of sale of any Goods (as sold pursuant to issuance of an OA) for all losses, claims, damages arising out of, or in connection such sale of Goods or otherwise under these Terms and Conditions, its performance or breach (including claims for any indemnity) of these Terms and Conditions, whether such liability arises in contract, tort (including negligence), breach of statutory duty or otherwise, shall be limited to 100% (hundred percent) of the Price paid for the Goods supplied pursuant to such OA, and that such liability shall cease entirely upon the expiry of the Warranty Period; and

2. Neither Party shall be liable for any loss of production, loss of profit, loss of use, loss of contracts or otherwise or for any other consequential, incidental, special, indirect, or punitive damages, costs, charges, losses ("Indirect Damages") even if advised in advance of the possibility of such Indirect Damages.

## 11. ABOUT FORBES MARSHALL



Forbes Marshall is a leader in process efficiency and energy conservation for process industry. Our long and deep customer relationships have enabled develop products and services that help save energy, improve process quality and throughput, and run a clean and safe factory.

With experience of over seven decades, we have brought to the industry several unique and innovative products and services that solve real problems. Our R&D efforts have resulted in several award winning products that are appreciated by customers.

In Paper Industries, we have worked closely to improve the overall efficiency and economy of complete Steam Systems. Seven decades of innovation experience has helped to develop many customized solutions and delivered benefits.