

## PAPER MACHINE 3800 mm

Speed: 600 m/min. GSM Range: 45 to 150. Capacity: up to 150 TPD.

### A : INTRODUCTION

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- C.1 : REWINDER
- C.2 : PACKING SYSTEM

### **A. INTRODUCTION**

Manufactured by CARCANO KMW, OMMA, DE PRETTO-ESCHER WYSS, VOITH, VALMET  
COMO, SONOTEC

This machine is still erected, stopped 7 year ago. It is complete with Stock Preparation, Approach flow and the Winder.

### **B. PAPER MACHINE**

The Paper Machine described hereafter was designed for graphic paper production from 100% recycled paper. The basis weight range is from 60 gsm to 150 gsm.

Main components:

Head Box  
Wire section (Fourdrinier)

Press Section

Pre-Drying Section  
Size-Press

Post-Drying Section

Hard-Nip Calender  
QCS  
Web Inspection System

Reel-up

The drive side is on the left side when looking at the pope reel from the Head Box.

### **B.1 : STOCK PREPARATION AND APPROACH FLOW**

1 Pulper long fibre 20 m3, high density, stainless steel

1 Pulper short fibre 20 m3, high density, stainless steel

2 High density cleaner systems

2 Deflakers

2 Double disc refiners 24"

1 Blending chest

1 Filler for kaolin and calcium carbonate

1 Preparation line for starch mix

1 Preparation line for cationic starch

1 Colour line

2 Turboseparators

1 Retention agents line

1 Anti-foam line

1 Broke line

2 Polidisc

1 White water surplus treatment

The Paper Machine approach flow consists in the following equipment:

Fan Pump (dismantled and stored) manufacturer: ABS SCANPUMP, Year : 1992. Type: Z22 450/400-50. Flow rate: 1440/1560 m3/min, Head: 16.5/21 m

Fan Pump: Flow rate: 3200 m3/min, Head: 21 m.

Primary Screen (dismantled and stored), Manufacturer: Voith, Type: Select-fibre size 20. Screen basket: slotted 0.35 mm (by Andritz). Rotor: RO-TEC with 27 foils, adjustable (by Andritz)

Secondary Screen (dismantled and stored), Manufacturer: Escher-Wyss, Year: 1992, Type: Omnisorter 0S2-BR

3 Pressure screens 70 t/d

White water tanks with pumps, piping and automatic or manual valves.

### **B.2 : VACUUM SYSTEM**

The Vacuum System Consists of the following elements:

**1 liquid ring Vacuum Pump**, Manufacturer: Azmec, Type: AL 100. Service: Suction roll and wire suction boxes, motor: 160 kW

**1 liquid ring Vacuum Pump**, Manufacturer: Azmec, Type: AL 120/2000, Service: Suction pick-up roll, motor 200 kW.

**1 liquid ring Vacuum Pump**, Manufacturer: Azmec, Type: AL 100/2000, Service: Felts suction boxes, motor 160 kW

Automatic and manual valves, instrumentation, piping.

**B.3 : HEADBOX**, Manufacturer: Valmet Como, Year: 1995, Type "C"

Lip profile control: 34 slice micro adjustors, Output width: 4050 mm

Throughput: 9679 - 29038 l/min  
 Designed speed: 600 m/min  
 Designed production: 150 TPD  
 Frame: Stainless steel  
 2 Rectifier rolls (stainless steel)

#### **B.4 : FOURDRINIER**

Type: Fourdrinier - Cantilever system-frame in stainless steel and carbon steel lined with stainless steel sheet  
 Manufacturer: OMMA. Year: 1992. Upgrades: 2001 (by Valmet Como / Metso)  
 Wire length: 31135 mm  
 Wire width: 4200 mm  
 Dewatering length: 12850 mm

##### The Cantilever Wire Section includes the following equipment:

Breast roll: diam 655 mm – face 4350 mm. Rubber covered. Equipped with shaker.  
 Suction roll: manufacturer by Carcano-KWM – diam 762 mm face 4400 mm – bronze shell single suction zone – adjustable sides deck.  
 Wire turning roll: diam 655 mm – face 4350 mm – rubber covered - swivelling type.  
 1 Pneumatic Stretcher: roll diam: 350 mm – rubber covered air bellows missing.  
 2 Manual stretchers: roll diam 350 mm. Rubber covered.  
 Guide: roll diam 350 mm – rubber covered – automatic wire Guide by Ehrardt-Leimer – type Schwark.  
 Forming Board with 4 ceramic blades (IBS)  
 2 Hydrofoil Boxes with 9 ceramic blades (IBS)  
 2 Hydrofoil Boxes with 8 T-bars but only 4 plastic blades  
 2 Low Vacuum Suction Boxes with plastic blades  
 6 High Vacuum Suction Boxes with plastic boards  
 Set of frames, cantilever system and stands  
 Set of save all trays and bath  
 Set of Doctors, Low and High Pressure Showers  
 Set of reducers-cardan shafts-couplings-Motors, reducers are made by FLENDER and motors by SIEMENS  
 Set of aluminum walkways and stairs  
 Set of aluminum spacers for wire changing system  
 Tail cutter with water trimming jet  
 Control Desk

#### **B.5 : PRESS SECTION**

The Press Section consists in a Pick-Up Press (UNIPRESS) and a 2nd Press.  
 Dryness at the press section outlet: from 45% to 48%

PICK- UP Press (UNIPRESS). Type: Suction pick-up press, Manufacturer: Carcano KWM – upgraded by Metso in 2001  
 Pick-up roll: Carcano KWM – diam 812 mm – rubber covered driven – adjustable sides deck  
 Counter roll: Metso diam 845 mm (rubber covered in Microrex) spare roll in granite diam 875 mm.  
 Nip pressure: 50 N/mm  
 Stands in stainless steel  
 Tail shooter (Metso)

2nd Press. Type: Nipco press. Manufacturer: Escher-Wyss  
 Bottom roll: Nipco roll diam 545 mm – equipped with an adjustable pressure zones system  
 Top roll: diam 955 mm – rubber covered  
 Nip pressure: 120 N/mm

Stands in carbon steel  
 One set of Doctors, Low and High pressure showers  
 One set of reduces, Cardan shaft, couplings, Motors (reducers are made by Flender and AC

motors by Siemens)

One hydraulic unit for both presses  
Control desk

Blow box in the 2nd press inlet

2 Felt circuits (Pick-Up and 2nd Press) including for each: set of Felt rolls (diam 320/350 mm) mostly rubber covered

Set of automatic Stretchers With Compensator

Set of Felt guide

Set of felt vacuum conditioning boxes

Set of covers, stairs, plate-forms and walkways

Turning rolls and the first press with vat in concrete lined with stainless sheets, the agitators were manufactured by OMMA and complete of drive arrangement by motor and reducer

## **B.6: PRE-DRYING SECTION**

The Pre Drying Section consists of the following elements :

Dryers: 17 in grey cast iron manufactured by Valmet Como in 1995

**Working pressure: 4,9 bar**

Diameter: 1500 mm

Face width: 3950 mm (tender side is grooved for ropes)

Frames: manufactured by Voith

The Pre drying Section is divided into three batteries:

### **1st Battery**

5 Dryers. Type: unifelted (SLALOM). Working pressure: 4,9 bar. Diameter: 1500 mm. Face width: 3950 mm.

Set of felts rolls. Set of Oscillating Doctors (3). Pocket Ventilation

1 automatic Felt stretcher with compensator

1 automatic felt guide manufactured by Ehrardt-Leimer. Type Schwark

### **2nd Battery**

6 Dryers. Type: Top and bottom felted. Working pressure: 4,9 bar. Diameter: 1500 mm. Face width: 3950 mm.

Set of felts rolls. Set of Doctors (6). Pocket ventilation

Automatic felt stretchers with compensator

Automatic felt guide manufactured by Ehrardt-Leimer, type Schwark

### **3rd Battery :**

6 Dryers. Type: Top and bottom felted. Working pressure: 4,9 bar. Diameter: 1500 mm. Face width: 3950 mm.

Set of felts rolls. Set of Doctors (n°6). Pocket ventilation

Automatic felt stretchers with compensator

Automatic felt guide manufactured by Ehrardt-Leimer, type Schwark

### **Miscellaneous :**

Included with the Pre- Drying Section: closed thermo insulated Hood, approximate dimensions pre-drying: 18,5 x 7 x 4,65 m.

Exhaust Suction System, Ventilation System, pre-heating coils, heat exchangers.

The drive arrangement of the drying batteries is by sectional motors and gears (gear-wheels and pinions) on the last dryers of each battery. Reducers are made by FLENDER and AC motors by SIEMENS

The drying sections are equipped with a centralised lubrication system (by SAFEMATIC) for the dryers' bearing supports with the single adjustment of the flow and alarms for the lack of the flow.

The tail-threading is performed by ropes. The grooves for the ropes are on the dryers' shells and not on free pulleys. Rope stretchers are in the basement under the machine and are manufactured by OMMA.

Control Desk

## **B.7 : AFTER-DRYING SECTION**

The after-drying section rebuilt in 1995 is formed by 10 drying rolls with dia. 1500 mm , face width 3950 mm and an operating pressure of 4,9 bar (VALMET COMO).

The first two dryers after the size-press are TEFLON coated and have no drying wire. The rest of the dryers form a battery with two wires, top and bottom.

The Post- Drying Section consists in the following elements:

Dryers: 10 in grey cast iron manufactured by Valmet Como in 1995. Working pressure : 4,9 bar.

Diameter: 1500 mm. Face width: 3950 mm (grooved for ropes), frames are manufactured by Valmet Como

The Post-drying Section is divided into two batteries:

### **4th Battery :**

2 Dryers – teflon coated (Valmet Como), Type: Unfelted. Working pressure : 4,9 bar. Diameter : 1500 mm. Face width: 3950 mm.

Set of felts rolls. Set of Doctors

### **5th Battery :**

8 Dryers. Type : Top and bottom felted. Working pressure: 4,9 bar. Diameter : 1500 mm. Face width: 3950 mm.

Set of felts rolls. Set of Doctors (8). Pocket Ventilation

Automatic Felt stretchers with compensator

Automatic felt guide manufactured by Ehrardt-Leimer. Type SCHWARK

### **Miscellaneous :**

Closed thermo insulated Hood,system (by SAFEMATIC) for the dryers bearing supports with the single adjustment of the flow and alarms for the lack of the flow.

## **B.8 : SIZE-PRESS**

Manufacturer: Voith (Rolls) – Sonotec (Frames). Type : Pond

Rolls: diam 595 mm – face width 3845 mm – rubber covered both rolls are driven

Stands: in carbon steel with pneumatic loading system. Nip pressure: 40 kg/cm

Inlet sizing agent piping. Reducers, cardan shaft, coupling and motors.

(reducers made by FLENDER and motors by SIEMENS)

Starch Kitchen (in the basement) with circular vibrating screen. Control Desk

**B.9 : STEAM AND CONDENSATE SYSTEM** Manufactured by LANGBEIN & ENGELBRACHT and includes:

10 Pumps for condensate separators. Exchangers. Electronic adjustment control.

Valves and instruments

The control panel of the steam system is located in the control room.

## **B.10 : CALENDER**

Manufacturer: Escher-Wyss / Nipco. Type: Hard-nip.

Top roll: Equitherm roll diam 660 mm – face width 3950 mm. Bottom roll: Nipco roll diam 500 mm – face width 3950 mm. Nip pressure: 95 N/min

Hydraulic Unit is in the basement under the machine. Thermal Unit for the Thermo-roll (EQUITHERM) conditioning.

Reducers,cardan shaft,coupling and motors (reducers made by FLENDER and motors by SIEMENS). NOTE: the top roll driving motor is missing

Stands, oscillating doctors and piping

## **B.11: QCS Bridge Scanner**

Manufacturer: ABB. Year : 2002. Type: Smart platform 700 with radio isotopes at low intensity (complying with safety rules). Control: basis weight, dryness  
DCS system for controlling the whole machine and stock prep systems ABB / Metso.

### **Fault detection system**

Manufacturer: ABB. Year : 2002. Type: ULMA NT  
4 High definition cameras (air cooled)

## **B.12: POPE REELER**

Manufacturer: Valmet Como. Year: 1995. Type: Automatic with spools landing  
Drum: diam 1100 mm – face width 3900 mm. 6 Spools: diam 400 mm – face width 4000 mm – dual toothed joints  
Jumbo rolls: max diam 2600 mm  
Control Desk  
Dedicated Hydraulic Unit in the basement. Dedicated PLC  
Reducers, cardan shaft, coupling and motors  
(reducers made by FLENDER and motors by SIEMENS)

Stands and frame in carbon steel. Walkways, stairs and covers.  
Set of pulley, rope stretchers and accessories for the tail threading from the drying section through the calendar and the QCS.

BROKE Pulper in the area between the end of the drying section and the reeler complete with a vat in stainless steel manufactured by SONOTEC, rotor by ESCHER-WYSS, the driving system (reducer by FLENDER and DC motor by SIEMENS) and the discharging pump.

## **C-REWINDER AND ROLLS PACKAGING SYSTEM**

VOITH, VALMET COMO, SONOTEC

### **C.1 : REWINDER**

Manufacturer: Jagenberg. Model: Varistep TR 43. Year : 1992  
Effective Trimmed Width: 3800 mm. Primary reel diameter 2400 mm. Secondary reel diameter 1525 mm.  
Max speed : 2000 m/min  
10 Knives (manual positioning)

Including :

Unwinding station with regenerative brake having 135 KW DC  
Winding drums having 120 KW DC motors  
Reels ejector  
Lowering cradle  
Draw adjustment by weighing cells  
Devices for complete control by PLC  
Special Fans for electrical discharge  
Trimming suction system with fan-tearing unit is by IM-CO, with compacting unit and separator located in the raw material shed (now dismantled and stored). By a pipe deviation it was possible to send the trimmings to the broke pulper. This system has been bought new in 1992.

### **C.2 : Rolls Packing Line**

Manufacturer: Sicma – Fis impianti. Year : 1993

The system controls the rolls discharge from the rewriter by flapper and has a rotating platform for winding with plastic film. It also includes two conveyor belts (metallic) at the inlet and at the outlet for the rolls handling and an ejector at the end of the second belt pushing the packed rolls in the picking up area.