

Role Of sizing in weaving and optimization of size recipes



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Sizing Machines

Sizing machines in DFL-1

Following are the machines used in DLF-1

1. Ben-size Tech Germany, Model 1999
2. Ben-size Tech Germany, Model 2003
3. Ben-size Tech Germany, Model 2005

Ben-size Tech, Model 2005

This is one of latest machine used in Pakistan which has following features

- High speed drying performance
- High production
- Even number of cylinders
- Improve warp quality
- Cost is less and hence economical
- Sides of dryer padded to reduce heat dispersion
- It has 6 tension zones
- Uniform warp drying on both sides by passing both sides of warp sheets over the same number of cylinders. Large warp sheet looping angle on cylinder genuine wet splitting by SINCRO-DRYING system.

General specifications

- Name _____ Ben-Size Tech
- Make _____ Germany (Benninger Zell)
- Module _____ 2005
- Maximum Speed _____ 160 m/min
- Normal running speed _____ 80-90 m/min
- Steam Pressure _____ 3.5kg/cm³ or 50 p.s.i
- Total load of machine _____ 103.33 kw
- Total number of machine _____ 27
- Maximum production capacity _____ 92000m/day
- Length of machine _____ 45 meters
- Wastage of warp sheet on machine _____ 70 meters
- Maximum working width _____ 4000mm
- Minimum working width _____ 1800 mm

Specification of Machine and cooking portion:

Cooking portion:

Size Cooker:

- Capacity 1250 liters

Size storage tank:

- Capacity 1350 liters

Electronic Weighing balance:

Crane:

- Power 1 kw
- Three phase motor
- Capacity 2 tons

Sizing Machines

Creel portion:

Creel:

- The double tyre creel has maximum capacity of 2 beams
- Distance between centers of two consecutive beams on creel = 1120 mm
- Distance between the outer diameter of two consecutive beams = 120 mm
- Warper Beam flange diameter = 1000mm
- Warper beam length = 2400mm
- Arrangement for sectional warper beam

Crane:

- Capacity 3 tons

Guide Roller:

- Guide roller diameter at creel = 188 mm

Pneumatic pressure breaks:

- Model Norgen
- Diameter of piston = 32 mm
- Stroke length = 55 mm
- Pressure = 1- 6 bars
- Maximum temperature = 80 C

Sizing portion:

Nip Roller:

- Nip roller diameter = 130 mm

Drag Roller:

- Drag roller diameter = 203.8 mm
- Motor current = 33Amperes
- Motor Power = 15 kw

Oscillating rollers:

- Oscillating roller diameter = 200 mm

Size Box:

- Maximum capacity of size box = 150 mm
- Temperature of size liquor = 85 C

Immersion roller:

- Immersion roller diameter = 200 mm

Nip roller:

- Nip roller diameter = 200 mm

Motor for nip roller in six box:

- Motor power = 63 kw
- Motor Current = 15.5 Amperes

Squeezing Roller:

- Upper diameter of squeezing roller = 288 mm
- Lower diameter of squeezing roller = 260 mm

Squeezing pressure on size box:

- At full speed = 50 KN
- At slow speed = 7 KN
- At dead speed = 4 KN

Drying Section:

Mini drying cylinders:

- No. of mini drying cylinders = 4
- Diameter of mini drying cylinders = 181.5mm
- Temperature of cylinders = 60 C
- All mini cylinders are Teflon coated

Main drying cylinders:

- No. of main cylinders Diameter = 14
- Diameter of main drying cylinder = 800 mm

Type of Main drying cylinders:

There are the following drying cylinders

- One with respect to coating
- Other with respect to drive

With respect to coating:

- Teflon coated = 11
- Steel coated = 4

With respect to drive:

- Negative driven = 1^s 8 cylinders (A)
- Positive Driven = Last 6 cylinders (B,C,D)

Temperature of main cylinder:

- Cylinder (A) = 120 C
- Cylinder (B) = 115C
- Cylinder (C) = 110C
- Cylinder (D) = 105C

Motor for main drying cylinders:

- Power = 17 KW

After-Waxing device:

- Motor power = 0.18 KW
- Current = 1.1 Amp.

Leasing portion:

- Maximum number of leasing rods = 28
- No. of leasing rod stands = 28

Winding portion:

Expandable comb:

- No. of needles in the comb = 1440

Pendulum Roller:

Nip Roller:

- Nip roller steel coated hardness = 75%

Drag roller:

Presser roller:

- Pressing roller diameter = 80 mm

Sizing machine specification in (STM-Weaving Unit)

There are three sizing machines working in the mill. Their specifications are

Sizing # 01:

Manufacturer:	Benninger (Germany)
Model:	2000
Creel Capacity:	28
Size Box Width:	2400
No. of Size Boxes:	02
No. of Drying Cylinders:	14
Pre – Wet:	Yes

Sizing # 02:

Manufacturer:	Benninger (Germany)
Model:	2003
Creel Capacity:	28
Size Box Width:	2400
No. of Size Boxes:	02
No. of Drying Cylinders:	14
Pre – Wet:	NO

Sizing # 03:

Manufacturer:	Benninger (Germany)
Model:	2003
Creel Capacity:	28
Size Box Width:	2800
No. of Size Boxes:	02
No. of Drying Cylinders:	14
Pre – Wet:	NO

Temperature of Different Rollers:

The temperature of two types of rollers is very important in the production of quality fabrics. These rollers are:

Mini Drying Cylinders & Drying Cylinders

The temperature of the above two cylinders are as under:

Mini Drying Cylinders: 80 – 90 *C

- **Drying Cylinders**

These are divided into three zones and they have small variations in their temperature i.e.;

1 ST 4 Cylinders have temp:	125 – 130 *C
2 nd 4 Cylinders have temp:	115 – 125 *C
Last 2 Cylinders have temp:	105 – 110 *C

Motors in Sizing M/C & Their Capacities:

There are about 30 motors in the sizing m/c # 01 and their capacities are as follows:

Description	Quantity	Capacity
Main Drive Motor	02	22 KW
Winding roller motor	01	15 KW
Beam loading motors	02	0.55 KW
Beam adjustment motors	02	0.75 KW
Comb adjustment motor	01	0.12 KW
Vertical comb displacement motor	01	0.09 KW
Warp taping device motor	01	0.11 KW
Beam safety curtain motor	01	0.12 KW
Cylinders drive motor	01	17 KW
Size Box motors	04	6.3 KW
(For Double Size Box)	02	7.2 KW
Dip roller & Immersion roller	04	0.25 KW
(Double dip & double size box)		
Waxing device motor	01	0.18 KW
Exhaust Fan motors	03	2.2 KW
Water delivery pump motors	02	0.55 KW
(for 2 Pre wet boxes)		
Size Transfer motors	02	1.55 KW
(for 2 size boxes)		

Inverter & its Use:

It is a device or electrical component which is used to control the speed of the motor. Actually, it controls the frequency of the motor which is directly proportional to rpm and speed of the motor. They are used to synchronized the motors e.g. in sizing m/c. main drive motor and cylinder drive motor are synchronized with each other, so as soon as we change the speed of the weaver's beam, the rpm and speed of cylinders drive motor also reduces accordingly, so we get the less elongation %age or control it.

Inverter Controlled motors in Sizing M/C:

Following m/c are inverter controlled in the sizing m/c:

Main Drive Motor	02	22 KW
Winding roller motor	01	15 KW
Cylinders drive motor	01	17 KW
Size Box motors	04	6.3KW
(For Double Size Box)	02	7.2 KW

