

Time Studies ver 1.0 -Interactive Textile Report

Time Studies and Work Load Assignment in Spinning and Weaving Mills (c) 1992-2007 by Itru Group Ltd-Textile Mill Training Service

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Chapter headings 2 1 Introduction Print Picture Close Zoom Search

Chaptername	Subchapterno	Subchapter
Introduction	1	Introduction
Machine Interference	2	Ancillary work
Time Studies		
Time studies in weaving		
Comparison between theoretically determined weaver efficiency values		

Text Pictures

Machine Interference

If a each loom runs exactly r minutes and requires exactly t minutes attention therefore each weaver could look after N machines N could be given by:

$$N = \frac{r}{r+t} \quad (1)$$

However, in a real world stoppages of loom are random and the weaver can not attend all the stopped machines at the same time. Some machines wait for an attention this is called as Machine Interference as shown in Figure 1.

Machine no 1 stops at A, attention lasts until C, meanwhile machine no 2 has stopped at T and waits for an attention until C, for attention after D all the machines are running until E. Both operative and machine utilization are lost due to machine interference.

Mach No	running	attention
1	_____A-----C_____	
2		_____B-----D_____
3	_____E-----	

1- Number of Spindles per Spinner ?

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A	B	C	D	E	F	G	H	
1		No of spindles allocated per spinners						
3		Spinner Name	Ayse			Fatma		
4		Yarn count in tex	19,68			19,68		
5		Spindle speed rpm	14000			18000		
6		Turns per meter	970			970		
7		Roving bobbin weight grams	1800			1800		
8		Roving count in tex	492			492		
9		Ends breaks /1000 spindle hour	30			30		
10								
11		Production gram/sp-hr	17,04			21,91		
12								
13			frequency	Unit time(min)	Standard Op-time(min) per 1000 sp-hr	frequency	Unit time(r	
14		Creeling of roving bobbins	9	0,3	2,84	22	0,3	
15		Piecing	15	0,2	3,00	14	0,2	
16		Other		0,2	0,00		0,2	
17		Patrolling			10,00			
18		Total			15,84			
19								
20		15% Allowance			18,22			
21								
22		Standards spindles per spinner			3294			
23								
24								
25								
26								
27								
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35								

1-3 Winding, Winder and Process Control

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A	B	C	D	E	F	G	H	I	J	K
1										
2										
3										
4	WINDING PERFORMANCE ANALYSES									
5	Machine Number	4								
6	Net Package weigh	2500								
7	Net Bobbin(cops)	105								
8										
9										
10	Winding Speed,	900	900	900	900	900				
11	Operative Number									
12	Time of Test									
13	Test Date									
14	Sections	1	2	3	4	5	Total			
15	Heads/Section	10	10	10	10	10				
16										
17	Yarn Count Ne	20	20	20	20	20				
18	Yarn Count NM	33.86	33.86	33.86	33.86	33.86				
19	Yarn Count Tex	29.53	29.53	29.53	29.53	29.53				
20	Material	Poly/Viscose	Poly/Viscose	Poly/Viscose	Poly/Viscose	Poly/Viscose				
21	Yarn Clearing	180-1,5	180-1,5	180-1,5	180-1,5	180-1,5				
22	Tension Setting									
23	Material Index	7,5	7,5	7,5	7,5	7,5				
24	*	*	*	*	*	*	*			
25										
26	Yarn Cut by Clearer	229	100	103	113	105	650			
27	Bobbin Changes	95	135	170	157	132	689			
28	Splices	327	244	280	275	257	1383			
29	Yarn Breaks	3	9	7	5	20	44			
30	Splice/Bobbin	3.44	1.81	1.65	1.75	1.95	2.01			

1-4 Roving Performance Control

1-5 Winding Std Work Assignment

1-6 Analyses of Out of Production Hours Spinning Mills

2-1 WEAVER EFFICIENCY ANALYSES

Input values		
Weaver	Fatma	
Number of looms tested		15
Number of looms not running		2
Testing time:100 mins		100
Attention time to stopped looms(t)		15,8
Waiting time for attention(w)		17,1
Total warp stops		9
Total weft stops		49
Other stops		2
PPM		210
Machine hours		25
Std time for mending warp stops		0,8
Std time for mending weft stops		0,4
Std time for other stops		0,4
Patrolling ,inspection etc		0,76
Out of production hours		3,33
Output		
Prdn calculated %		97,62
Actual efficiency %		84,47
Time lost due to stoppages		32,9
Time lost due to out of production hours in mins		200
Actual machine hour running		21,12
Warp stops per loom hour		0,43
Weft stops per loom hour		2,32
Other stops per loom hour		0,09
Total stops per loom hour		2,84
OPH %		13,33
Total machine running time in mins		1267,1
Total picks inserted		266091
Machine running hours without OPH		21,67
Machine running hours without OPH plus stoppages		21,12
Production efficiency %		97,47
Total stops		60
Mean stop of duration in mins		0,57
Total stops per loom hour		2,84

Operative Total time in mins per loom hour	2,07
Operative work load percentage per loom	3,45
Total operative work load %	44,8
Optimum number of looms allocated per weaver at 70 % work load	20
Minimum number of looms allocated per weaver at 50 % work load	15

Warp Check	Check Warp and Weft
Weaver	Check Weaver
Looms	Check Looms

Number of Looms Allocation + Increase - - + Looms
Decrease

2-2-Long term weaver report summary

Weaver	Ayse	
Date		20.02.2001
Total number of looms per weaver [N]		21
Total loom hours per machine [Mach-Hr/N]		32
Total loom hours worked per weaver [Mach-Hr]		672
Out of production hours in total loom hours [OPH]		44,7
Thousand of picks inserted per weaver in total loom hours[Npicks]		11434
Average machine speed in weaver section [PPM]		327
Warp stops per hundred thousand picks		5,31
Weft stops per hundred thousand picks		3,3
Other stops per hundred thousand picks		0,91
ACT% =(Npicks inserted)/(ppm.N.Mach-Hr)		86,72
PRD% =(Npicks inserted)/(ppm.N.(Mach-Hr)-OPH)		92,9
OPH%= OPH/Mach-Hr (3)		6,65
Total picks inserted		11434000
Total actual machine running hour		582,77
Machine hour for 100,000 picks		5,1
Picks per machine hour		19620
Warp stops per machine hour		1,04
Weft stops per machine hour		0,65
Other stops per machine hour		0,18
Total stops per loom hour		1,87
Production lost due to short stops		6,63
		21504
Total number of stops		1088,52

Total number of warp stops	607,15
Total number of weft stops	377,32
Total number of other stops	104,05
Production lost for short stops machine hour	44,53
Mean stop of duration in mins	2,45
Standard attending time for warp stops	0,83
Standard attending time for weft stops	0,26
Standard attending time for other stops	0,07
Total attending time for short stops per loom hour	1,16
Patrolling	0,7
Total stops per loom hour	1,86
Work load per loom	3,11
Total work load %	65,24
Min number of looms	17,13
Max number of looms	25,7
Weaver performance %	81,72
Analyses	Increase number of looms
	Check machine for maintenance

2-3 Work Load and Prdn efficiency and no of looms analyses tests

2-4 Number of looms and Operative and Machine Utilization

2-5 Effect of Machine Interference upon Efficiency

2-6 Effect of Stop Loom per hour upon PRDN % and number of loom allocated to weaver

2-7 Weaving Shed Control Montly Analyses

We are sure that an increase in efficiency and production levels will be achieved in any spinning & weaving mills if the instructions given in the report are applied in correct manner and given standard procedures are followed with strict adherence.

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