INFLUENCE OF AUTOLEVELLER DRAWFRAME WITH PROCESS SEQUENCE VARIATION ON YARN COUNT CV

PROJECT REPORT 1998-99

Submitted by

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CERTIFICATE

This is to Certify that the project entitled

"INFLUENCE OF AUTOLEVELLER DRAWFRAME WITH PROCESS SEQUENCE VARIATION ON YARN COUNT CV"

has been submitted by

Mr._____

in partial fulfilment of the requirements for the award of Degree of

BACHELOR OF TECHNOLOGY in **TEXTILE TECHNOLOGY** branch of the Bharathiar University, Coimbatore - 641 006 during the academic year 1998-99.

Guide **Head of Department**

Certified that the Candidate was Examined by us in the Project Work.

Viva-Voce Examination held on _____ **and the University Register Number is** _____

Internal Examiner **External Examiner**

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1. ABSTRACT

The influence of autoleveller drawframe on achievable yarn count cv with process sequence variation was studied in detail .For comparision purpose ,the materials were also processed in DO/2S drawframe .In autoleveller drawframe two delivery speeds namely 330mpm & 370mpm were used .In addition experiments were also carried out by introducing a breaker between comber and leveller drawframe.

In the case of the experiments concerned with DO/2S two delivery rates 180mpm and 200mpm were tried. At each stage ,material cv ,u% and varience –length curve of yarn were analysed. The results are indicated below:

- ✓ The use of autoleveller significantly reduces count cv.
- ✓ Introduction of breaker drawframe prior to leveller drawframe has no significant change.

2. INTRODUCTION

Export of textiles has assumed greater significance in the global trade in the recent past.One of the main limitation in increasing the export of yarns is the very high quality requirements particularly count cv demanded by foreign buyers.

Count cv is expected to meet uster 10 to 25% standards for the yarns to be exported.This would mean that the count cv should be maintained around 1.2 to 1.5%.Many mills are not able to meet this stringent quality requirements without having autoleveller at drawframe.

Since textile fabric uniformity is largely influenced by the yarn count variation,count cv assumes significant importance.The presence of high magnitude of yarn count cv affects the appearance of woven and knitted fabrics.To be specific, weft bars in woven fabrics increase with the increse in count cv.

It is found that due to the improvement in count cv with the use of autoleveller, the yarn strength cv and end breakages in spinning are substantially reduced.

With the system of control which was prevailing,there are limitations with respect to accuracy of change in draft that can be done as well as the frequency of monitoring the same.By having an on-line control i.e autoleveller in drawframe one could exercise perfect and timely control of sliver material.

3. LITERATURE SURVEY

3.1 AUTOLEVELLER:

Autolevellers are employed in drawframe to control short, medium and long term variation. There are two types of control loop system. They are open loop and closed loop.

Closed loop systems can only compensates for medium and long term variation because of the long time delay between detections and correction .It is employed in case of autoleveller cards.

However, open loop systems can compensate variations of short to medium wavelengths because of its much shorter time delay between detection and correction. The autoleveller under consideration in this project is an open loop autoleveller i.e the sensing and correction is done at the input stage itself unlike a feedback system which is employed in case of closed loop systems.

The details and the working principles employed and enclosed at RSB 51is discussed below

3.1.1 INGOLSTADT DRAWFRAME RSB 51:

This high speed drawframe is capable of running at 500m/min and suitable for processing fibres having staple length upto 80mm.

3.1.2 FEED SYSTEM:

The slivers can be fed either by creel system or feed table. The feed table is for slivers with low fibre cohesion as combed slivers and for recovered spinnable waste. A photo cell detector and contact rolls before the entry to the draft system ensure that in the event of sliver breakage the machine is stopped before the end of the sliver arrives in the draft system or sensing rolls.

3.1.3 DRAFTING SYSTEM:

The 3/3 draft system in combibnation with pressure bar can be adjusted, steplessly for all types of fibres upto 80mm

staple length. Break draft is adjustable from 1.07 to1.78.Tota draft ranges from 3.5 to 10.5.

3.1.4 AUTOLEVELLING SYSTEM:

The principle of levelling system is shown in the figure.3A. The feed slivers run through a pair of sensing rolls i.e by a pair of tongue and groove rollers. The movements are transformed by a signal converter into voltages. The measured voltage is fed into an electronic memory which is in conjunction with a pulse generator driven by grooved roll. The electronic memory passes the measuring voltage on to the set point stage after a time lag. This also receives the voltage from a tachogenerator, as analogy of the actual value and the result serves to adjust the variable speed motor to the speed corresponding to the required draft change.

The variable speed motor transmits this speed through a planetary gear as a speed change to the middle roller of the draft system, providing the necessary speed alteration in the main draft zone. The speed of the feed rollers, sensing rollers and break draft rollers are varied appropriately with the speed of the middle

SCHEMATIC DIAGRAM OF THE REGULATING AND CONTROL SYSTEM FOR THE LEVELLING DRAFTING SYSTEM – INGOLSTADT RSB 51.

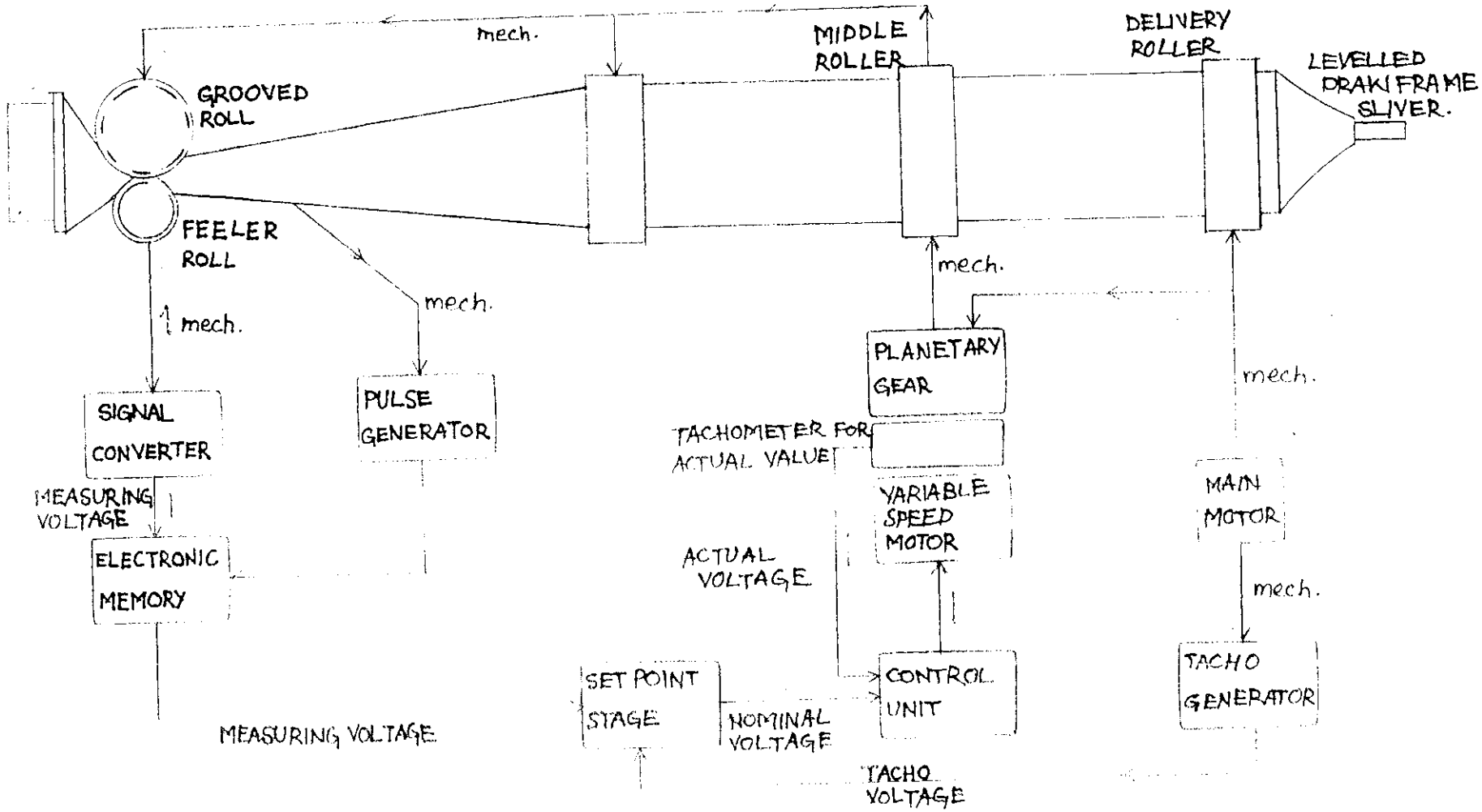


Fig 3A

roller. This system ensures constant delivery speed, unaffected by levelling and hence exactly calculated production

Studies by Eddie King[3] of Italy has shown that while using autoleveller incorporated drawframes,it is possible to produce yarns with a count cv of 1.4 to 1.6% in case of rotor spun yarns (with chute feed system to cards) both for 100% cotton as well as cotton - comber noil mixture(60/40).In case of ring spun yarn with chute feed to card, a still lower value of 1.1 to 1.5% as yarn count cv is achievable ,according to Eddie,if the drawframe is fitted with long/ medium/short -term autolevelling.

Wulfhorst[4], in his study has shown that only one drawing passage with auto leveller after combing would be adequate. The piecing waves are completely evened out, and on the upstream machines there are no problems. He has also shown that, while using single passage post comber leveller drawframe,even the average value of count cv calculated for yarn collected over a period of 38 weeks is less than 1.2 % for 30s combed cotton yarn.

However the usefulness of autoleveller in reducing count cv for Indian cotton which are known for the level of short fibre content were assesed by SITRA. In addition the relation between delivery speed and obtainable yarn count cv were established.The study highlights the following:

- ✓ For the type of cotton studied,it is possible to spin yarn with a count cv around 1.5% .While using autoleveiler incorporated in drawframes.
- ✓ For the type of drawframe a delivery speed of 500mpm for carded count and 350mpm of combed count appears to be ideal .Single passage post –comber leveller drawing would be sufficient for combed counts.
- ✓ Due to improvement in count cv(while using leveller drawframe)the lea strength cv improves by 1.60% in 40sK and 1.23% in 80s C(both are absolute values).The single yarn strength cv also comes down by about 4% for the above count.

Before going to the discussion of the result,let us go into the details of the levelling system employed.

3.2 EFFECT OF SPEED ON PRODUCT VARIATION:

Higher drawframe speed has an adverse effect on count cv leading to an increase of 25 to 40% in relative variance and 0.2 to 0.4 in yarn count cv. The effect of delivery speed on yarn count cv. The effect of delivery speed on yarn count cv s shown schematically in fig. 3B for different counts and table 1 gives the effect of delivery speed on yarn count and strength cv for fine counts.

TABLE 1 : Product variation in Autoleveller Drawframe

COUNT	DELIVERY SPEED mpm	YARN COUNT CV(%)	YARN STRENGTH CV (%)
100	250	1.6	4.0
	350	1.9	4.4

It may be inferred from the table that for maintaining an average count cv of 1.6,the autoleveller drawframe has to be run at a speed of 250 to 300m/min for combed counts and 400m/min for carded counts.

EFFECT OF DELIVERY SPEED ON YARN COUNT CV %

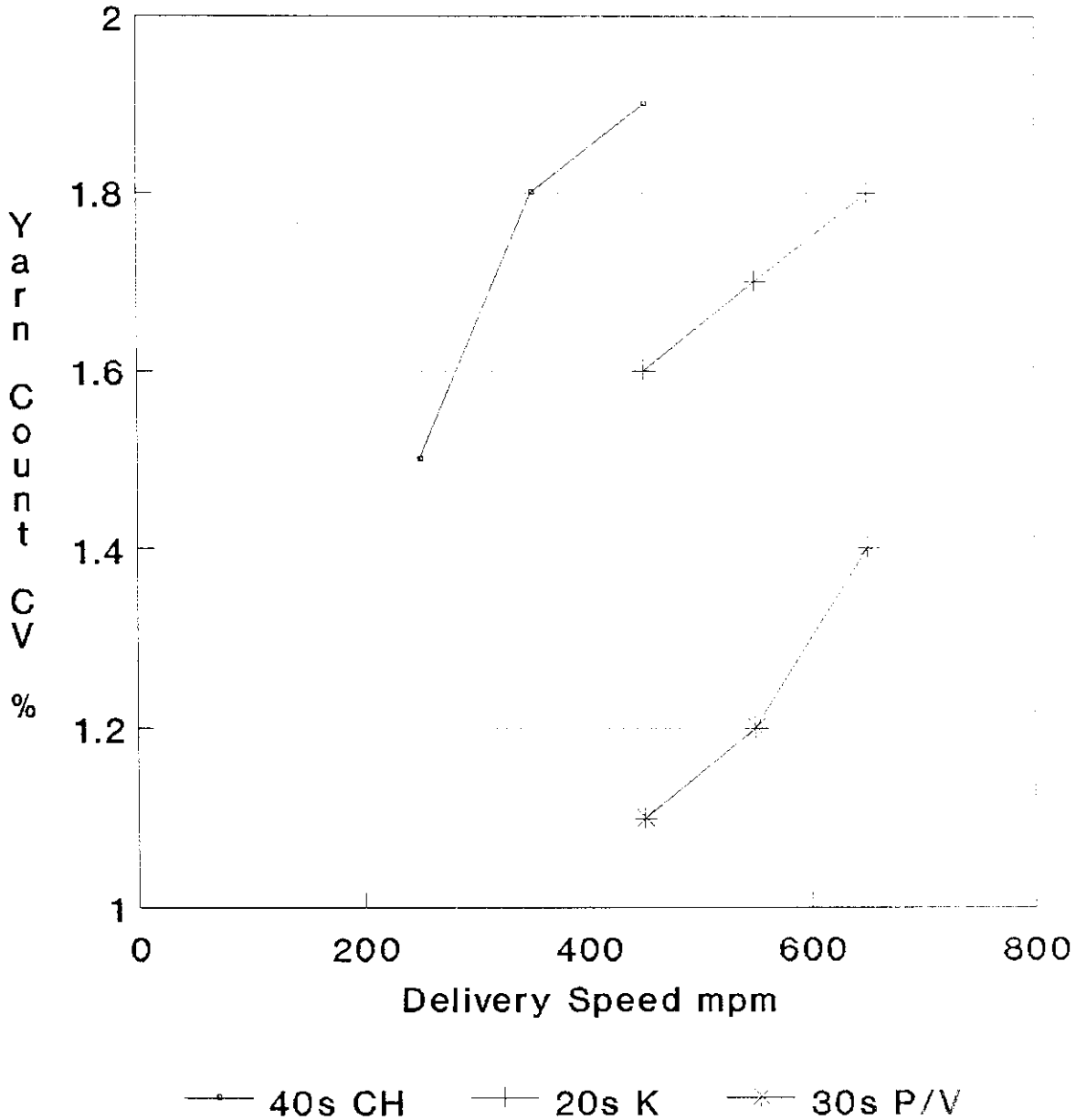


Fig. 3b

The correction length is the distance which a sliver control system needs in order to correct any abrupt deviation from the nominal sliver weight. All deviations longer than the correction length are identified and controlled by the control system. In general, correction length is influenced by the delivery speed. The variation in correction length with delivery speed for the auto leveller is given in figure 3C. The effect of variation in correction length (with delivery speed) on yarn count variation, count cv was assessed for 40s carded at three different delivery speeds and the corresponding values are given in table 2.It can be seen that within the range of speeds covered in the leveller drawframe the yarn count cv does not change significantly.

TABLE 2.: Yarn count variation (40s K)

MODE OF OPERATION	NON AUTOLEVELLER DRAWFRAME	AUTO LEVELLLER DRAWFRAME
FINISHER DELIVERY SPEED(mpm)	400	300 400 500
YARN COUNT CV(%)	2.44	1.14 1.17 1.4

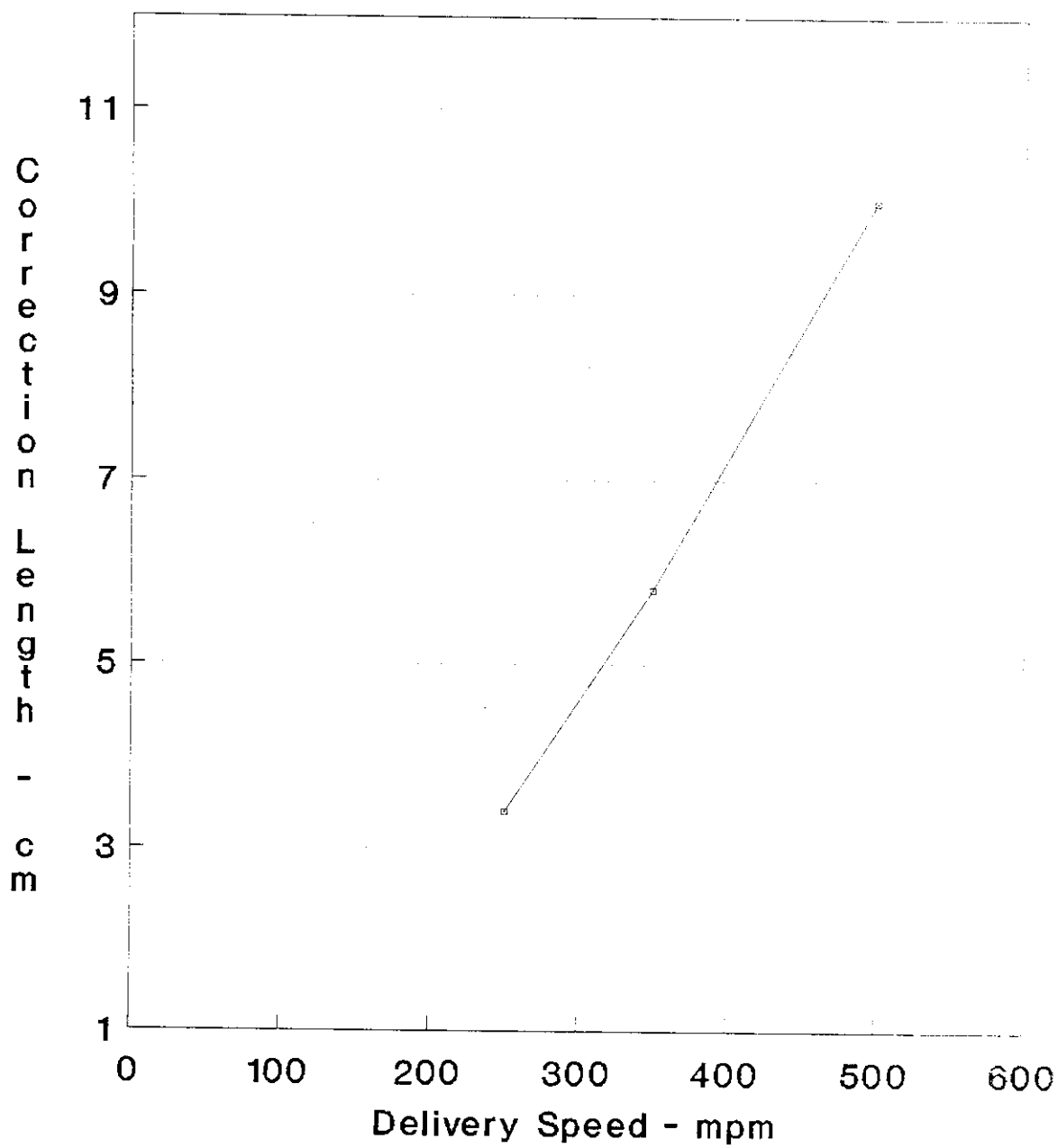

VARIATION IN CORRECTION LENGTH
WITH DELIVERY SPEED
Correction Length - cm
11
9
7
5
3
1
0
100
200
300
400
500
600
Delivery Speed - mpm

Fig. 3C

3.3 PERFORMANCE OF LEVELLER DRAWFRAME FOR CARDED COUNTS:

The count cv values obtained for 40s carded yarns with and without using autoleveller at finisher drawframes are given in Table 2. For different delivery speeds.It is observed that the count cv improves substantially when autoleveller is used at finisher drawframe.At the same delivery speed (400m/min),the use of autoleveller at finishes drawframe, improves count cv by 1.27%.

CV values were calculated for finisher slivers and rovings using roving equivalent cut lengths. The result as in Table 3. suggest that the improvement in count cv (while using Autoleveller incorporated drawframe) is due to improvement in sliver cv and roving cv. While feeding the auto levelled sliver to speed frame, the added varience due to speed frame process got reduced by 26% (the added varience due to speed frame process was about 68% in the case of sliver without levelling, whereas ,it was only 42% in case if autolevelled sliver).

TABLE 3. : CV of finisher drawframe sliver and roving for equivalent cut lengths(40s carded).(Finisher delivery speed: 400m/min)

PARAMETER	WITHOUT AUTOLEVELLER AT DRAWFRAME	WITH AUTOLEVELLER AT DRAWFRAME
CV OF FINISHER SLIVER(%)	1.65	0.92
CV OF ROVING(%)	2.14	1.10

It is observed from Table 4. that the leveller drawframe improves both within and between bobbin count variations, the extent of improvement being almost same in both the cases with the overall improvement in the relative variance(while using autoleveller drawframes) at about 75%.

TABLE 4: Within and between bobbin count variation for 40s carded (Finisher delivery speed: 400 m/min)

COUNT CV(%)	WITHOUT AUTOLEVELER AT DRAWFRAME	WITH AUTOLEVELLER AT DRAWFRAME
BETWEEN BOBBIN	1.89	0.93
WITHIN BOBBIN	1.54	0.71
TOTAL	2.44	1.17

To find out whether the autoleveller, while improving the sliver variations present at a particular range of wavelengths, varience-length curves were taken for finisher drawframe. The trends are shown in fig.3D.However,further studies are required to confirm these trends theoretically.

VARIENCE-LENGHT CURVE FOR FINISHER DRAWFRAME SLIVER (Delivery 400 mpm)

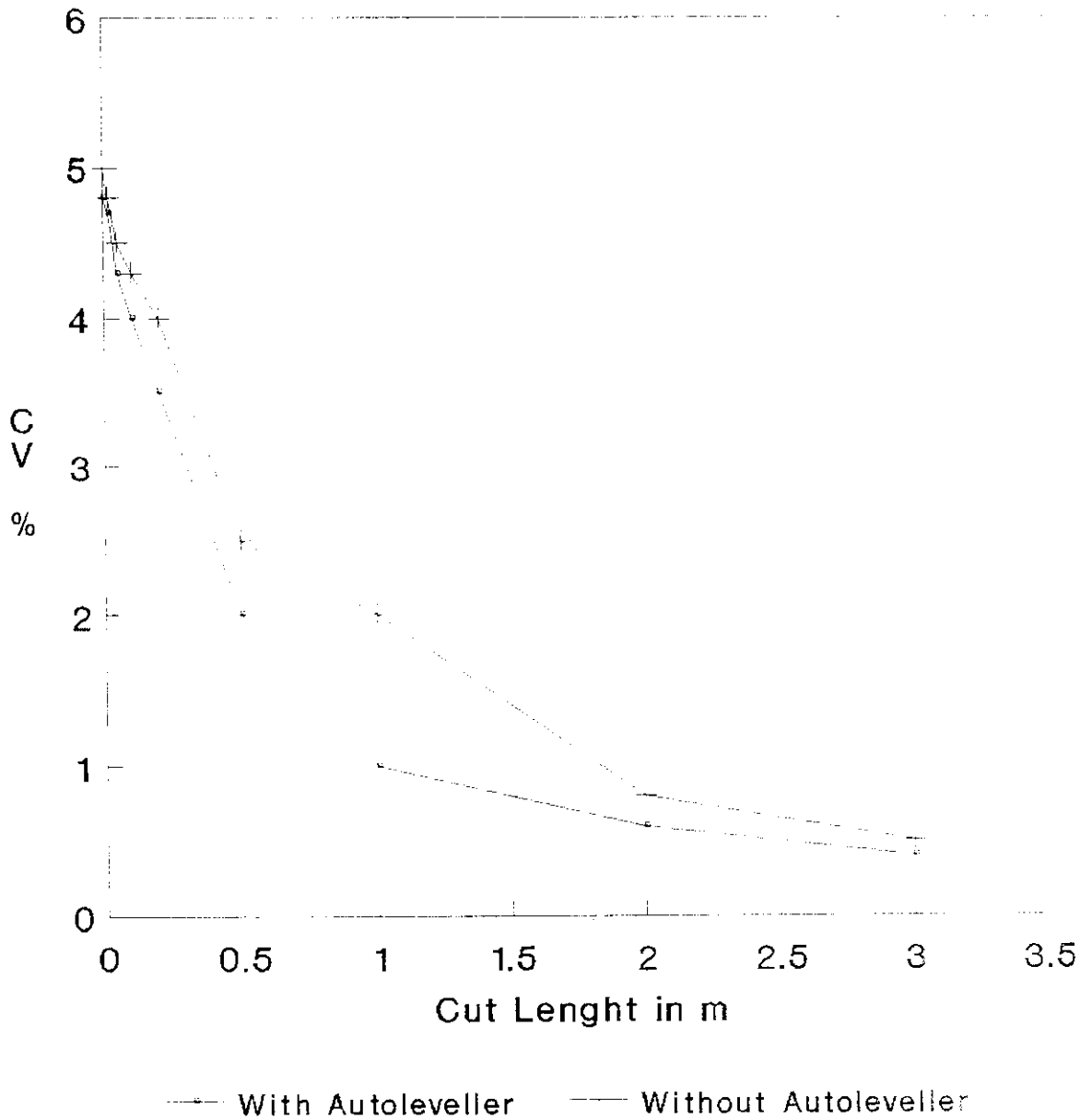


Fig. 3D

3.4 PERFORMANCE OF LEVELLER DRAWFRAME FOR COMBED COUNTS:

To see the effect of number of post-comber drawframe passages on count cv while using leveller drawframe, 40s combed hosiery was produced using single as well as double passage post-comber draw frame.

The varience length curves are drawn for 40s combed hosiery yarns spun with and without autoleveller at drawframe. The figure 3E clearly shows that leveller drawframe reduce the variations present in yarn at all the wavelengths.

In case of 80s combed yarn, a count cv of 1.32% could be obtained while using leveller drawframe (single passage post comber drawing) as against 2.03% for drawframes without auto levelier. The corresponding cv values of roving and draw frame sliver for equivalent cut lengths are given Table 5.

VARIENCE-LENGHT CURVE FOR 40s COMBED HOSIERY

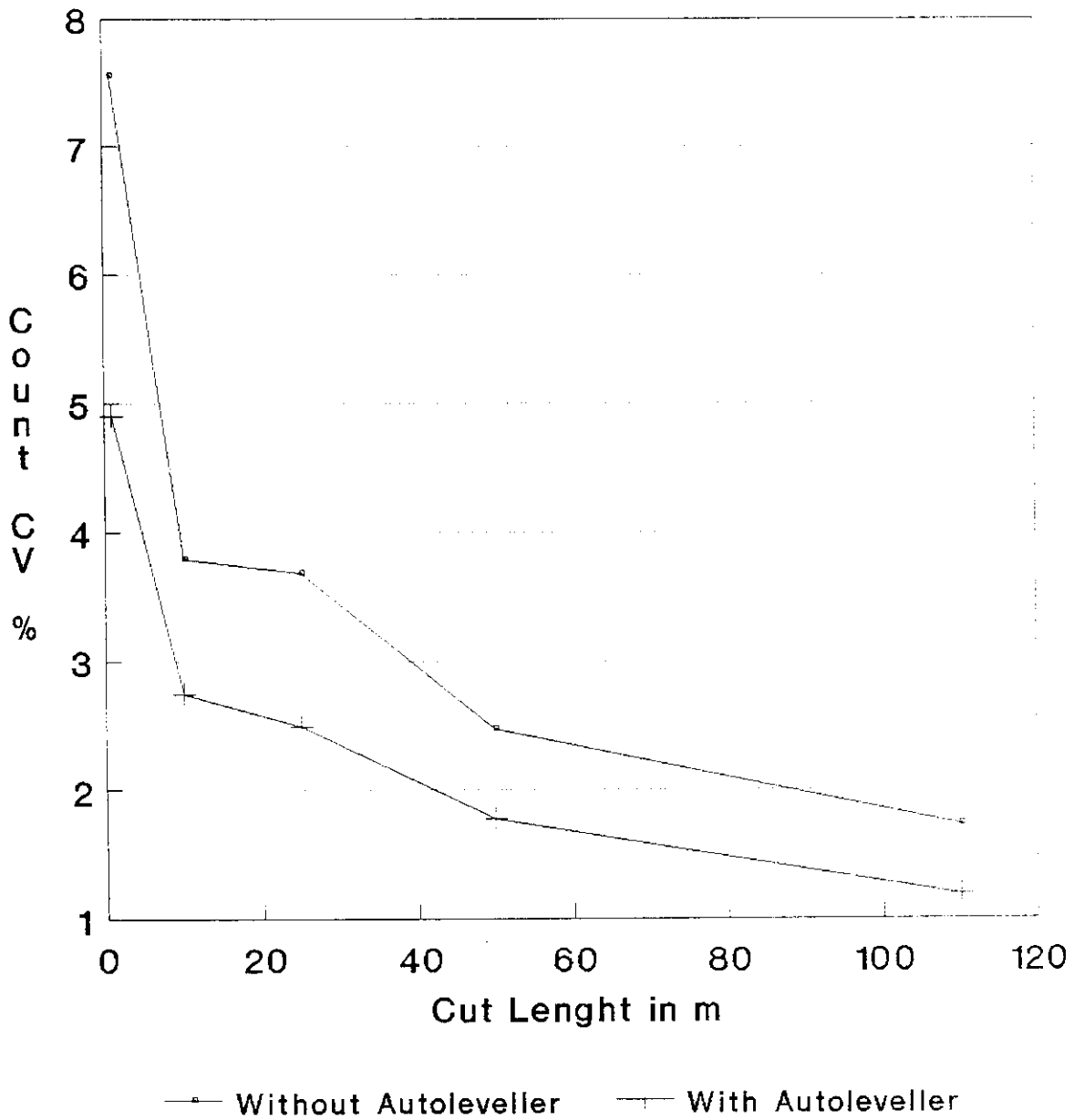


Fig. 3E

TABLE 5: Count cv values for yarn, roving and drawframe slivers(80s combed). Delivery speed :350 m/min

COUNT CV(%)	WITHOUT AUTOLEVELLER AT DRAWFRAME	WITH AUTOLEVELLER AT DRAWFRAME
YARN	2.03	1.32
ROVING	1.93	1.20
DRAWFRAME SLIVER	1.63	0.99

3.5 INFLUENCE OF AUTOLEVELLING AT DRAWFRAME ON SHORT-TERM VARIATION:

To find out the effect of autolevelling on short term variation, u% values were assessed for drawframe sliver, roving and yarn obtained with and without autoleveller at drawframe, and the result are given in the table 6.It is observed that while using leveller drawframe, the short term variation in terms of u% decreased significantly for drawframe sliver although less in case of fine counts which is understandable from the variance length curves. Autoleveller reduced the variations present even at 1cm wavelength

and that is the reason for the improvement in sliver u%. However, there is no significant improvement in short term irregularity of roving and yarn.

TABLE 6:u% values for sliver,roving and yarn(80s combed)

MATERIAL	WITHOUT AUTOLEVELLER (350mpm)	WITH AUTOLEVELLER (350mpm)
FINISHER SLIVER	2.64	2.20
ROVING	4.23	4.19
YARN	15.89	15.53

3.6 INFLUENCE OF DRAWFRAME AUTOLEVELLER ON YARN STRENGTH VARIATION:

Due to improvement in count cv (while using leveller drawframe), the strength cv also improved by 1.60% in 40s carded and 1.23% in 80s combed yarn. In both the above yarns, the single yarn strength cv is improved by above yarns, the single yarn strength cv is improved by 4% while using leveller drawframe. This agrees well with the findings of Ratnam that more than 50% variation in

strength cv is explained by the variation in count. According to him, the theoretically expected ratio of strength cv to count cv would be around 1.7 under controlled conditioned. This means that whenever count cv would change, the strengh cv would also change.

TABLE 7: Improvement in yarn strength variations while using leveller drawframe.(80s combed)

PARAMETER	WITHOUT AUTOLEVELLER	WITH AUTOLEVELLER
COUNT CV(%)	2.03	1.32
LEA STRENGTH CV(%)	4.90	3.96
SINGLE YARN STRENGTH CV(%)	13.96	9.28

3.7 LATEST DEVELOPMENTS:

The latest version of the autoleveller drawframe from Rieter company, the RSB-D 30 is claimed to run at the speed if 1000m/min maximum, which is 10% higher than the RSB-951 and even then all the cv% values for uniformity in sliver and yarn were clearly better on the RSB-D30.Weaving efficiency was found to be 0.5% better,rising from 98.3 to 98.8%.

4. AIM AND SCOPE OF PRESENT STUDY:

The objectives of the study are as follows:

- To study the influence of autoleveller drawframe on achievable yarn lea count cv% and lea strength cv% and count cv at different lengths through V-L curve.

- To study the influence of 10% increase in speed on the results of the above.

- To study the influence of extra drawframe prior to autoleveller drawframe on the above.

The above studies are confined to 80s combed cotton count using DCH-32 cotton.

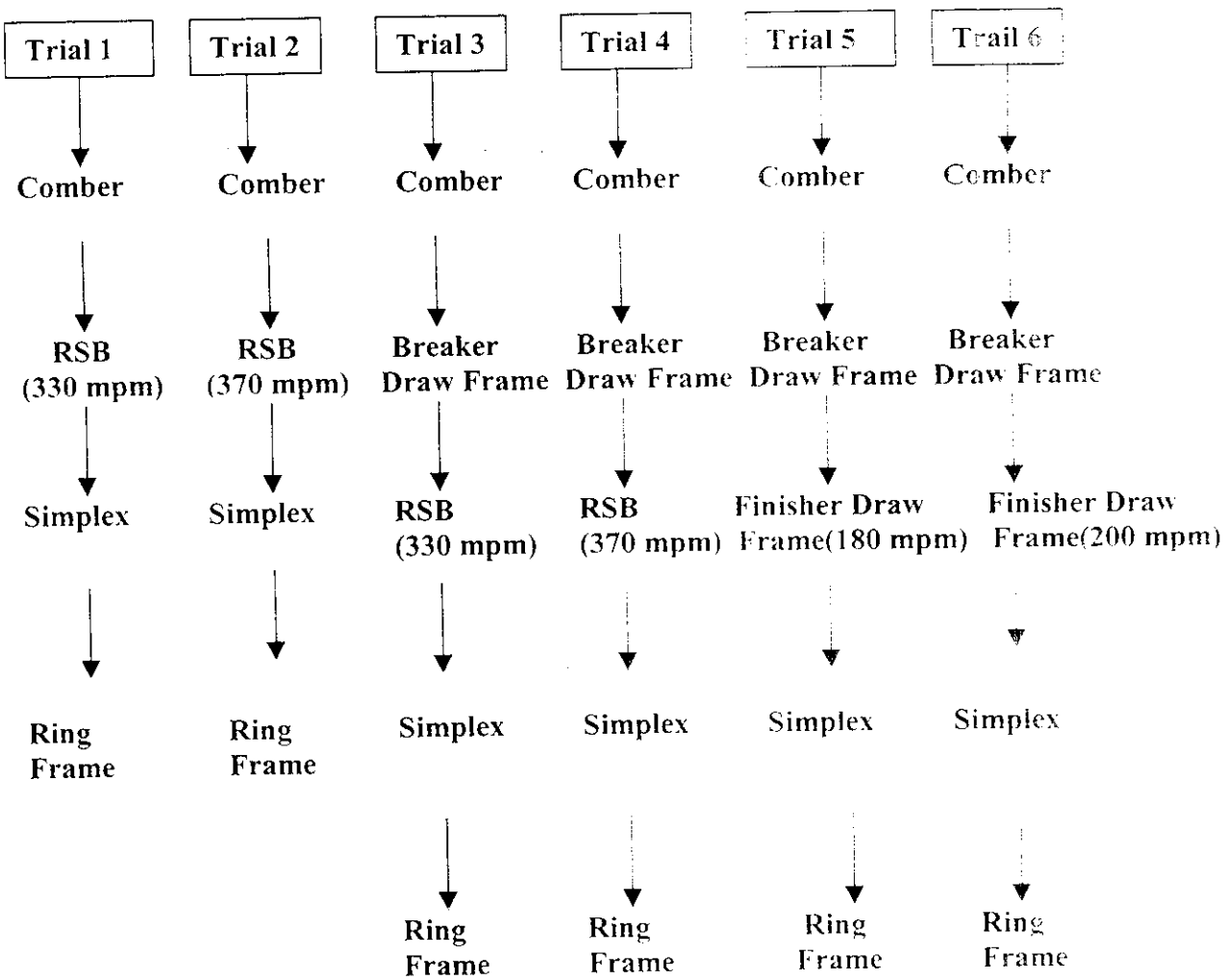
5.MATERIALS AND METHODS:

For this project 80s combed yarn was chosen,as the count is regularly running in the mill.Comber sliver was taken and divided into three parts.The first part was processed on the Ingolstadt RSB 51 leveller drawframe at two different delivery speeds of 330mpm and 370mpm.The second part was processed through a breaker drawframe and then through a leveller drawframeThe third part was processed on DO/2S drawframe at 180mpm and 200mpm.

The speeds in Ingolstat RSB 51 were changed just by shifting the belt positon in the appropriate step pulley.

The other details about the process sequence and process details are as follows:

PROCESS SEQUENCE DETAIL



5.1 PROCESS AND OTHER TECHNICAL PARAMETERS USED FOR YARN PRODUCTION:

5.1.1 FIBRE PROPERTIES OF COTTON USED:

NAME OF THE COTTON	:	DCH-32
2.5% SPAN LENGTH	:	32.30mm
50% SPAN LENGTH	:	15.50mm
UNIFORMITY RATIO	:	47.98
STRENGTH	:	24.56g/tex
MICRONAIRE	:	2.7mg/inch
TRASH	:	5.6%

5.2 PROCESS PARAMETERS:

5.2.1 BLOWROOM:

MAKE	:	HERGETH PIONEER
NO.OF BEATING POINTS	:	3
LAP HANK	:	0.00183
LAP CV%	:	.5
DELIVERY SPEED	:	7m/min

5.2.1.1 PROCESS SEQUENCE:

MIXING BALE OPENER

↓

STEP CLEANER-1

↓

PORCUPINE OPENER

↓

STEP CLEANER-2

↓

HOPPER FEEDER

↓

SCUTCHER (WITH ONE KIRSCHNER BEATER)

5.2.2 CARDING:

MAKE	:	LR C1/3
LICKER-IN SPEED	:	890rpm
CYLINDER SPEED	:	330rpm
DOFFER SPEED	:	20rpm
FLAT SPEED	:	5.5inches/min

SLIVER CV%	:	4.65
WASTER%	:	6.2
NEP LEVEL	:	10 per/500 sqcm

5.2.3 DRAWFRAME 1:

MAKE	:	INGOLSTADT
MODEL	:	RSB-51
DRAFTING SYSTEM	:	3/3 PRESSURE BAR
SETTING	:	38 – 42mm
SLIVER HANK	:	0.200
SPEED	:	330m/min,370m/min

5.2.4 DRAWFRAME 2:

MAKE	:	LR
MODEL	:	DO/2S
DRAFTING SYSTEM	:	3/5 polar
SETTING	:	38-42mm
SLIVER HANK	:	0.200
SPEED	:	180m/min,200m/min

5.2.5 SLIVER LAP:

MAKE	:	LR
MODEL	:	E2/4
DELIVERY SPEED	:	500 m/min

5.2.6 RIBBON LAP:

MAKE	:	LR
MODEL	:	E4/1
DELIVERY SPEED	:	50 m/min

5.2.7 COMBER:

MAKE	:	LR
MODEL	:	E7/4
DELIVERY SPEED	:	180 nips/min
SLIVER HANK	:	0.18
NOIL %	:	25

5.2.8 SIMPLEX:

MAKE	:	LR
MODEL	:	GS
FLYER SPEED	:	1000rpm
SLIVER HANK	:	3.1
TPI	:	2.24
BREAK DRAFT	:	1.22

5.2.9 RING FRAME:

MAKE	:	PLATTS
SPEED	:	13,500rpm
TPI	:	38
BREAK DRAFT	:	1.3
PNEUMAPHIL WASTE	:	4.8%
TRAVELLER TYPE	:	18/O
RING DIAMETER	:	38 mm

5.3 TESTS AND DETAILS:

5.3.1 TESTS CARRIED OUT FOR FINISHER SLIVER:

For calculation of the hank cv of sliver 8 readings of 6 yard each were considered for each trial .The u% was determined in the Uster Tester –3 at a speed of 8m/min for 2.5 minutes.

5.3.2 TEST FOR ROVING:

For the determination of hank cv% of roving,20 readings were taken for each trial at 30 yard wrapping.The u% was determined in the Uster tester-3 at a speed of 50m/min for a minute.

5.3.3 TESTS CARRIED OUT FOR YARN:

For the determination of count and strength cv 18 cops were chosen for each trial and 6 leas were prepared from each cop which totals to108 readings.The within and between bobbin cv was also calculated.The u% was also taken on Uster evennness tester.

For plotting the variance –length curve,4000m of yarn was tested for each sample.

For the assesment of count cv within , between and overall 18 cops were taken and from each cop 6 readings were taken The table 8 gives the details of the above results for various process sequence adopted during our study.

6.RESULTS AND DISCUSSION:

6.1 YARN COUNT VARIATION:

Table .8 gives detail count cv for various process sequence .It may be found that the use of the autoleveller drawframe the count cv achieved is less than 1.5% in comparision to the one achieved by using the drawframe without autoleveller which is 2.35%. This shows an improvement of around 37% or in absolute term it is 0.9.

The influence of speed on the achievement of cv indicates that there is a little deterioration which is not significant for the level of increase in speed of 12%.

The within bobbin cv achieved is in the range of between 0.89 to1.18 in autoleveller passage, In comparison to 1.76 to 1.78 achieved without autoleveller drawframe .(% improvement is 41.81%).Similarly for between bobbin variation shows an improvement in results in giving 0.67 to 0.99 for autoleveller passage

in comparison to 1.20 to 1.27 achieved without autolevelier drawframe.(%improvement is 31.39%)

The above results shows that the level of improvement is higher in within bobbin i.e. 41.81 in comparision with between bobbin i.e. 31.39.As the autoleveller employed is RSB-51 being a short term autoleveller the results are in line with the expectations .If we go for an autoleveller with short and medium term control then the between bobbin cv improvement will be better.

TABLE .8 COUNT CV%:

S.NO	PASSAGE	TOTAL COUNT CV(%)	WITHIN BOBBIN CV(%)	BETWEEN BOBBIN CV(%)
1.	COMBER – RSB SPEED:330 mpm	1.37	0.890	0.988
2.	COMBER – RSB SPEED:370 mpm	1.48	1.14	0.795
3.	COMBER – BREAKER –RSB SPEED:330 mpm	1.49	0.928	0.933
4.	COMBER – BREAKER- RSB SPEED: 370mpm	1.51	1.18	0.670
5.	COMBER – BREAKER- FINISHER DO/2S SPEED:180 mpm	2.38	1.76	1.27
6.	COMBER – BREAKER –FINISHER DO/2S SPEED :200mpm	2.31	1.78	1.203

NOTE:

- No.of Readings/trial –108
- RSB-Ingolstadt RSB-51(autoleveller)
- Breaker & finisher –LR DO/2S

6.2 EFFECT OF EMPLOYING A BREAKER BETWEEN COMBER AND AUTOLEVELLER ON YARN COUNT CV%:

From the values ,it may be seen that the indroduction of a breaker drawframe between comber and autoleveller drawframe does not in any way help in further reduction of count cv significantly.

6.3 ANALYSIS OF VARIENCE – LENGTH CURVE:

We have studied in detail ,the varience-length curve using Uster tester –3 to find out the improvement avhieved in co-efficient of variation at various lengths.The results are plotted in Fig 6.a (with and without autoleveller drawframes)for 1m,5m,10m,20m, 50m and 100m length and from the graph it is seen that there is an improvement in cv% for all the above lengths.

LENGHT VARIENCE CURVE FOR YARN WITH AND WITHOUT AUTOLEVELLER

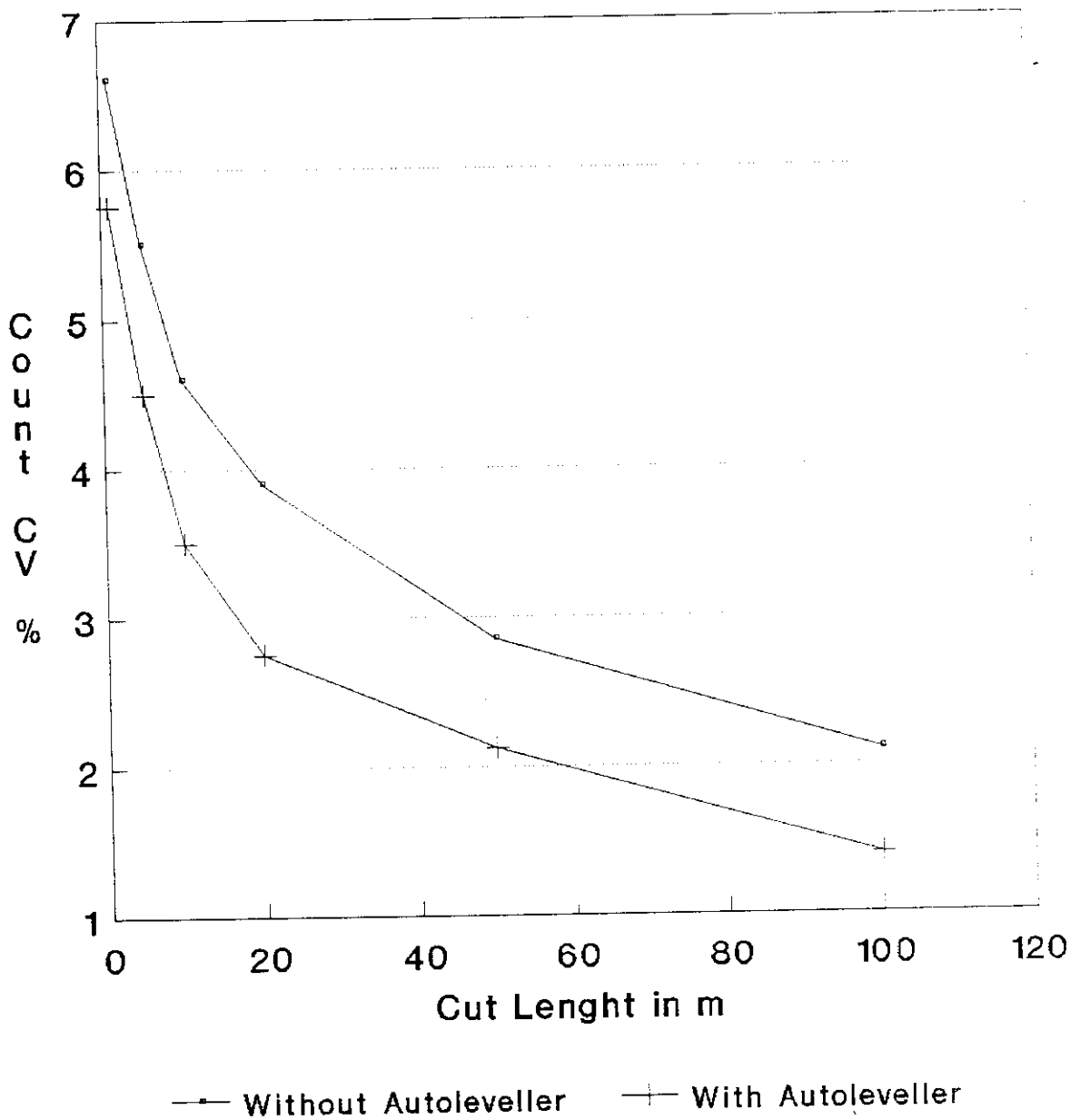


Fig. 6A

It is also seen that from the fig 6.B (with and without breaker prior to autoleveller drawframe) that the improvement in cv due to introduction of an extra drawframe prior to autoleveller drawframe is not significant.

From the fig 6c & 6d , it can be concluded that Higher speeds gives less cv% for short lengths upto 5 metres ,in the case of autoleveller and non-autoleveller drawframe there is no siginificant difference in cv% at higher lengths for the same.

6.4 IMPROVEMENT IN STRENGTH VARIATION WHILE USING LEVELLER DRAW FRAME:

The strength cv values are given in table 9.

It can be seen from the table that the strength cv of yarns obtained from the leveller drawframe is lower about 4.6% as compared to the non- auto leveller strength cv of 5.6% . This improvement in strength cv is attributed by 18% improvement in count cv% too. The introduction of a breaker drawframe prior to autoleveller does not significantly improve the strength cv.

LENGHT VARIENCE CURVE FOR YARN WITH AND WITHOUT BREAKER DRAWFRAME PRIOR TO AUTOLEVELLER DRAWFRAME

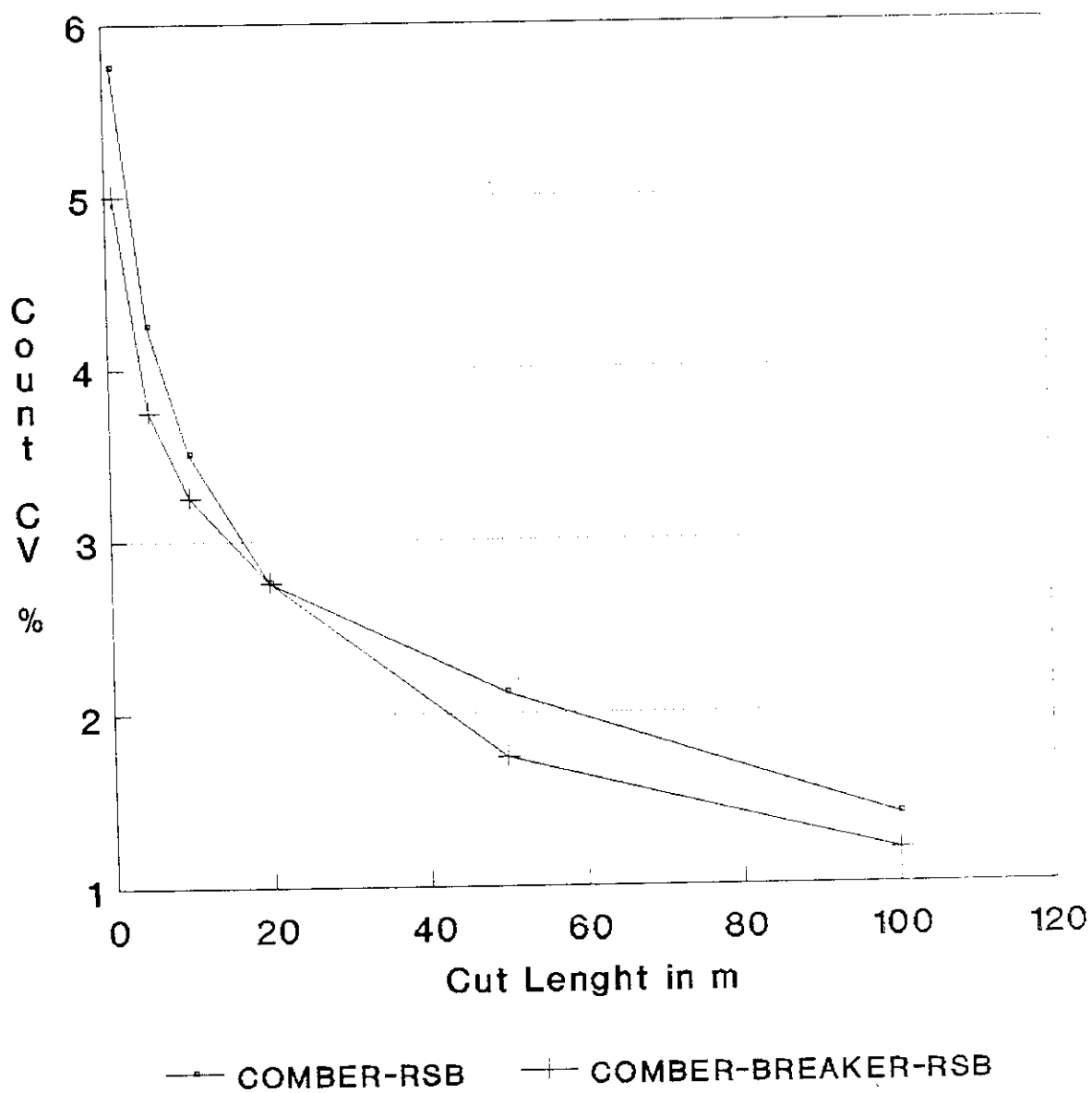


Fig. 6B

LENGHT VARIENCE CURVE FOR YARN WITH AUTOLEVELLER - 330 mpm and 370 mpm AUTOLEVELLER DRAWFRAME

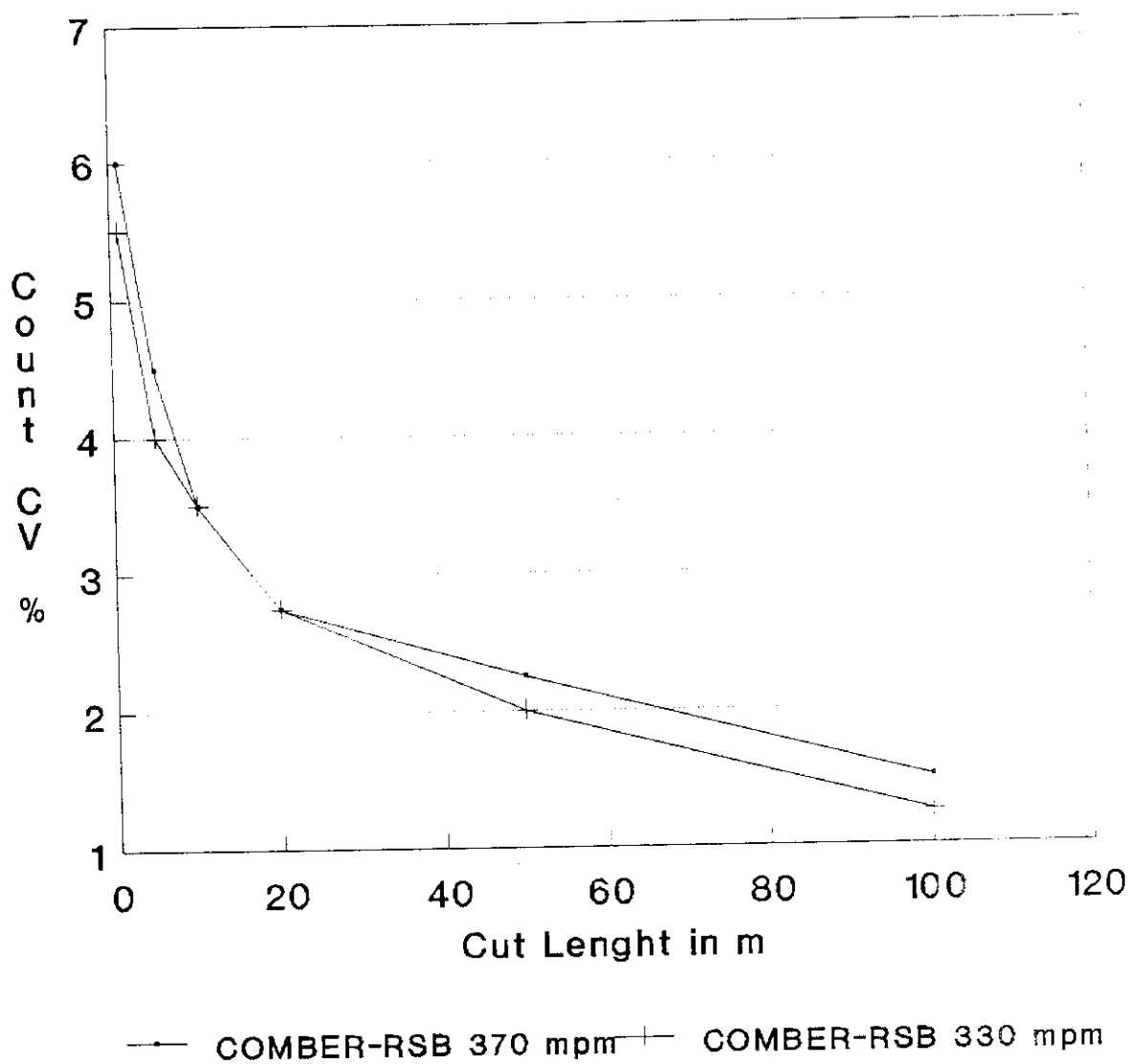


Fig. 6C

LENGTH VARIENCE CURVE FOR YARN WITHOUT AUTOLEVELLER - 180 mpm and 200 mpm NON AUTOLEVELLER DRAWFRAME

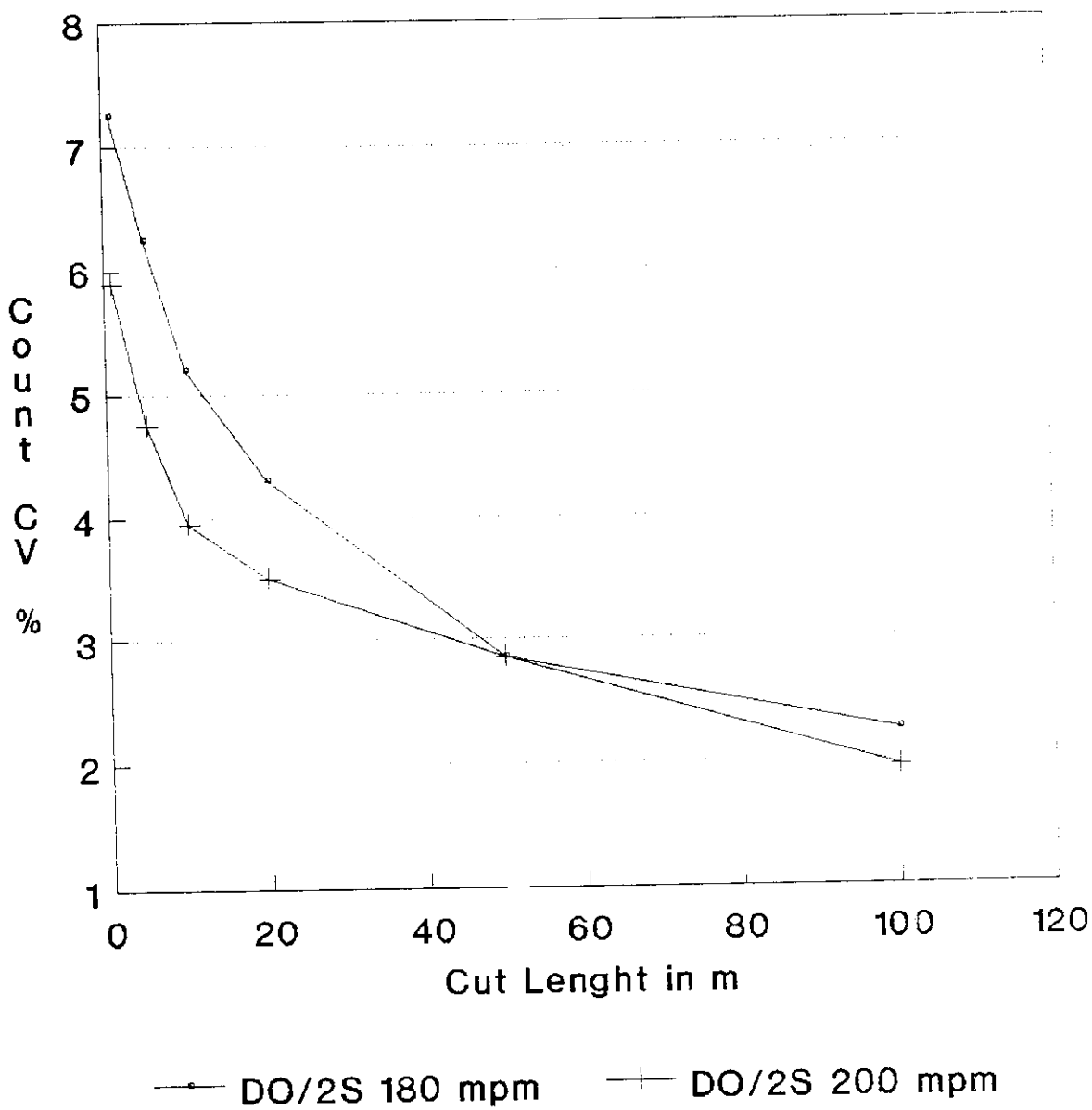


Fig. 6D

TABLE 9 :

YARN STRENGTH CV%:

S.NO	PASSAGE	YARN STRENGTH CV%
1.	COMBER – RSB SPEED:330mpm	4.99
2.	COMBER – RSB SPEED: 370mpm	4.55
3.	COMBER– BREAKER-RSB SPEED: 330mpm	4.50
4.	COMBER-BREAKER –RSB SPEED:370mpm	4.47
5.	COMBER– BREAKER-D0/2S SPEED:180mpm	5.51
6.	COMBER-BREAKER –DO/2S SPEED :200mpm	5.74

6.5 ANALYSIS OF SLIVER AND ROVING HANKCV%:

The sliver and roving hank cv values are given in table.One may note the low count cv achieved is attributed by the lower hank cv obtained using leveller draw frame.

It can be seen from the Table 10 that the hank cv in leveller draw frame is well below 0.3%.While the hank cv in non –auto leveller drawframe is above 1%, showing a significant improvement.

There is no significant improvement in the hank cv of sliver by the indroduction of a breaker prior to the autoleveller drawfrane.Howeever,there seems to be some significant improvement in u% attributed by usage of auto leveller drawframe.

The roving hank cv results are shown in the table 11.It can be seen that the hank cv from leveller drawframe has a mean value of 0.76% ,while that of without leveller drawframe is 1.3%.This shows that considerable improvement in the hank cv of roving by using leveller drawframe.

TABLE 10:

FINISHER SLIVER HANK CV & U%:

COUNT :80S(COMBED)

STANDARD HANK:0.200

S.NO		FINISHER HANK CV%	FINISHER SLIVER U%
1.	COMBER-RSB SPEED:330mpm	0.257	2.12
2.	COMBER-RSB SPEED:370mpm	0.256	2.28
3.	COMBER – BREAKER –RSB SPEED:330mpm	0.287	2.06
4.	COMBER – BREAKER –RSB SPEED: 370mpm	0.214	2.710
5.	COMBER – BREAKER – FINISHER D0/2S SPEED:180mpm	1.106	2.65
6.	COMBER – BREAKER- FINISHER DO/2S SPEED:200mpm	1.096	2.48

NOTE:

- RSB: INGOLSTADT RSB-51(AUTO LEVELLER DRAWFRAME)
- BREAKER AND FINISHER: LR DO/2S

TABLE 11:

ROVING HANK CV & U%:

S.NO		HANK CV%	U%
1.	COMBER – RSB SPEED:330 mpm	0.863	4.45
2.	COMBER – RSB SPEED:370 mpm	0.518	4.85
3.	COMBER – BREAKER – RSB SPEED:330 mpm	1.093	5.01
4.	COMBER BREAKER – RSB SPEED:370 mpm	0.572	5.29
5.	COMBER BREAKER – FINISHER-DO/2S SPEED:180 mpm	1.356	5.15
6.	COMBER-BREAKER-FINISHER-DO/2S SPEED:200 mpm	1.297	4.54

7. CONCLUSIONS

From the study conducted the following are conclusions may be drawn:

- The use of autoleveller drawframe with short term autoleveller helps in achieving a count cv below 1.5% which is in line with the earlier studies and the strength cv is also improved consequent to count cv improvement.

- The introduction of an extra drawframe passage prior to autoleveller drawframe is in no way significantly improving the count and strength cv and the possibility of running one passage for combed counts in auto leveller drawframes is convincing.

- The autoleveller drawframe helps in reducing the count variations over a range of lengths from 1 to 100 metres and the improvement is higher at shorter lengths.

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