

TEST REPORT ON PROJECT PUMICE (LIFT)

Ref: ARDATH manufacture using 95JF cig paper.

From Monday 27th January, a total of 480 bobbins of 95JF cigarette paper was used for the manufacture of 28 million Ardath cigarettes at 260 density. Immediately afterwards, a further 10 million Ardath cigarettes, at the same density, were manufactured on the same machine using standard 95J cigarette paper to complete an order for 38 million cigarettes. Following this order the machine changed over to run on a different brand using standard 95J cigarette paper. The machine used was a Sigma/Max S HSU running at 7200 cigs/min.

During this order, the product was systematically sampled over 4 separate tobacco operations, in order to obtain quality performance data on the cigarettes, using both the 95JF paper and the standard 95J paper. In addition, a log was kept on the machine to record the frequency of downtime due to paper breakages on both types of cigarette paper, for equivalent manufacturing run lengths.

Samples of cigarettes (400 cigs) were sent to R & D for each of the initial 3 operations of tobacco when 95JF paper was used and were suitably identified on each 20's HLC with the operation number from which they were selected. A similar sample was also sent to R & D from the control operations, suitably identified, when 95J paper was used. A total of 3 x 200 Outers was also despatched to Woking as normal out-turn samples.

RESULTS

(a) PRODUCT PERFORMANCE

For the 3 operations measured using 95JF paper, the average cigarette firmness counts was 6002 compared to 5996 for Ardath during the month of November '85 when it was last manufactured, and 5836 for the control operation. Consequently there is no clear evidence that the product is different in firmness, than the standard product when using 95JF paper at the same density.

This is supported by the results on Ends quality and cigarette pressure drop, where they tend to suggest, if anything, an improvement in these parameters, which usually correlates well with firmness.

The grammage of the 95JF paper was within specification at an average value of 29.2 gsm compared to normal supplies of 95J at 25.1 gsm.

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(b) MACHINE PERFORMANCE

There were a total of 4 paper breaks experienced in the 480 bobbins used of 95JF compared with 18 bobbin breaks in the 390 bobbins used of 95J paper. Consequently the machine downtime attributable to paper breaks was reduced considerably by almost 6 times. (0.83% compared to 4.62%). Potentially, this represents a machine efficiency improvement of nearly 4%. Paper breakages on the Sigma are a major cause of downtime due to the length of paper run through the machine. A length of 18ft of paper has to be threaded from the reel holder, through the printer and down to the rollers at floor level and then back up to the garniture, when the paper breaks in the printer area. The distance between the final drag roller and the garniture is too short to allow the tension in the paper to be spread evenly over the length of the paper. If the drag roller is left off, the print will wander due to the tension in the paper evening out, and therefore the drag rollers must be left on. The basic design of the paper run on a Sigma is intolerant to weak papers, and when it breaks, it wraps itself around the print rollers & dies. It therefore takes several minutes in downtime to clear the machine and rethread the paper. If the tape drum tensioner is set as low as possible to reduce the paper tension, the paper wanders from side to side at entry to the garniture which in turn creates cigarette rod breakout downtime.

Any paper which has the ability to tolerate variations in tension in order to avoid it snapping will greatly improve the running performance of the machine.

CONCLUSIONS

There does not appear to be any real change in the product quality but there is a significant improvement in the machine performance characteristics when using the 95JF cigarette paper.

It is recommended that a supply of 95JF cigarette paper is obtained for one major brand (e.g. State Express FK export) for a prolonged period of manufacture, so that the product quality and machine performance characteristics can be observed and recorded over a longer period. This will then enable performance characteristics of the paper to be better evaluated in cost terms and allow full justification to be made. If successful, consideration for stronger paper can then be made across all brands.

Interim justification is given in Appendix.

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PRODUCT PERFORMANCE RESULTS

OPER No.	95JF PAPER			95J PAPER	
	6012	6013	6014	6015	Nov '85
Total counts	5741	6123	6142	5836	5996
Cig Rod Wt	81.96	80.84	80.05	81.12	80.92
Circumference	24.73	24.79	24.75	24.77	24.83
Moisture	13.10	13.10	12.80	12.90	13.10
Ends Stability	0.55	0.54	0.71	0.83	0.75
Paper Porosity	73	78	77	80	78
Grammage	29.1	28.8	29.8	25.1	-
Pressure Drop	122	126	123	120	121
Individual Wt	22.8	21.6	20.0	21.6	-

MACHINE PERFORMANCE

MATERIAL	BOBBINS	NO. BREAKS	% FREQUENCY
95JF	480	4	0.83
95J	390	18	4.62

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APPENDIX 1

INTERIM JUSTIFICATION FOR 95JF PAPER

Information - Using best operator

- * (a) Time to re-thread paper if break below bed 1.00 min
- * (b) Time " " " " " in printer 5.00 min

The ratio of breaks below the bed to the print rollers is 2:1

Therefore average downtime = $\frac{(2 \times 1) + (5)}{3} = 2.33$ mins

The average production loss per break is therefore 2.33×7200
16800 cigs

On the basis of 10 million cigarettes allowing 5% waste

The number of bobbins req'd

- (a) for 95JF @ 4500 metres = 149 bobbins per 10 million cigs
- (b) for 95J @ 5500 metres = 122 " " " " "

Therefore, per 10 million cigarettes, there will be 27 more bobbin changes on an HSU running at 7200 with subsequent cigarette loss of 690 609 cigs over the 25 second slower speed period, whilst the change takes place.

Therefore the overall loss in cigarettes using 95JF is $27 \times 609 = 16440$ per 10 million cigarettes.

However, there is an expectation of

- (a) 1.24 paper breaks on 95JF paper
- (b) 5.64 " " " 95J paper

over a 10 million run.

This represents 4.4 less breaks using 95JF corresponding to an increase in cigs of $4.4 \times 2.33 \times 7200 = 73,814$ cigarettes.

Overall there is a nett gain of 57,374 cigs in a 10 million cigarette run using 95JF.

- * NB The above figures have been worked out based on the best operator. In practise over all m/c's the times will probably double, providing a nett gain in cigarette production of 114,750 per 10 million.

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Taking the contribution cost per mille as £5.00 per mille then, saving per 10 million cigarettes = £287.

The extra cost per bobbin will need to increase by £1.93 before it becomes uneconomic, or £3.86 if the average expected floor time to rethread bobbins is used (see NB on previous page).

The Southampton Plant annual production forecast estimate for 1986 is as follows (extracted from PP & C data)

- (a) For brands using 95J paper = 10.4 billion cigs
- (b) For all brands = 15.8 billion cigs

Therefore the annual saving for Southampton Plant alone, attributable to the use of higher grammage paper would be as follows

- (a) For brands changing from 95J to 95JF, the savings would be £298,480 pa.
- (b) For all brands changing to higher grammage paper, the savings would be £453,460 pa.

In both cases the nett annual saving would be the figure quoted less the additional cost of cigarette paper per annum. (if appropriate).

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