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RECONSTITUTED TOBACCO

Opportunities for ammoniated and non-ammoniated
Bandcast product in BATCo

1. SUMMARY

This paper considers the possible advantages and costs to BATCo of adopting the bandcast sheet process for reconstituted tobacco.

The perceived benefits of reconstituted tobacco from the bandcast process are:

- i. its use as a method of reprocessing tobacco offal in either an ammoniated or non-ammoniated form.
- ii. its potential for enhancing flavour and taste in its ammoniated form.

The conclusions emerging from the preliminary analysis in this paper are:

- i. if used solely for reprocessing offal, the bandcast process is unlikely to be financially viable below a production level of 1000 tons p.a., used to replace tobaccos which have an average cost above £2 per kg. At current rates of BATCo usage, bandcast is not a financially attractive alternative to Project DEER or the paper sheet process.
- ii. where the bandcast product is used to enhance flavour and taste, at BATCo's present levels of usage in US blended cigarettes, the product should continue to be purchased from B & W, provided import regulations and duties permit.
- iii. where importation of the bandcast product is not feasible, installation of a bandcast process for current levels of usage in a single national market is unlikely to be viable. For this reason, ammoniated DEER and the German process, EMERGE, are being evaluated as possible lower-cost alternatives. Ammoniated DEER is currently being consumer tested as an alternative to RCB (see below) in Venezuela.
- iv. The BATCo Product Development and Marketing Departments are currently evaluating the viability of using ammonia technology on Virginia, and modified Virginia blends. If this development is successful and CPCL9, the B & W bandcast product, is selected, then the level of BATCo's requirement of this product would rise significantly.
- v. In this event, three further options will require to be evaluated:
 - a) the ability of BATCo operating companies to import, and of B & W to supply, BATCo's total requirement.
 - b) the viability of installing a BATCo bandcast processing facility, if B & W have insufficient capacity. Initially, a single plant could be envisaged to supply BATCo worldwide, thus minimizing the movement of feedstock (stem and offal).

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2. BACKGROUND

There are three basic methods for reconstituting tobacco:

- i. the bandcast process
- ii. the paper sheet process
- iii. the use of extruder technology.

i. Bandcast

The bandcast process has been used in BAT in the past for reprocessing offal. The only remaining plants are in ITL Canada and Rustenberg, South Africa. They were used to produce basic (non-ammoniated) sheet. The plants are old and in urgent need of replacement.

Philip Morris have developed the bandcast process to produce an ammoniated sheet, which they have named RCB. Bigott (Venezuela) purchases this product from the Philip Morris subsidiary, Catana.

B & W have developed CPCL9 to have similar characteristics to RCB. CPCL9 is an ammoniated reconstituted sheet which is used by B & W to give a taste advantage in Lucky Strike and Kent blends. It is produced by a subcontractor, and B & W are currently purchasing the plant.

As can be seen from Appendix 1, CPCL9 is not universally used in Lucky Strike. Its use is not permitted in Germany and Finland. BATCF use EMERGE. It is not used in Hong Kong or any Latin American country. It is not used by BAT Cyprus for contract manufacture on behalf of B & W. EBR is used instead (see below).

The capital cost of installing a bandcast process with a capacity of 500 kg/hr (1400 tons p.a. on double shift), is estimated to be £5 million. A unit with a capacity of 250 kg/hr (minimum size) would cost an estimated £4 million.

These estimates include the cost of plant and buildings and assumes that services are available. If utilities including a boiler house were required these figures could rise by £0.7 million. The 500 kg/hr plant requires a building with a floor area of 1140m² and a ceiling height of 7 metres. Its steam requirement is 11,000 lb/hr and electricity requirement is 280 kw.

ii. Paper Sheet

The paper sheet product is less effectively ammoniated than the bandcast product. There are two products in use by BAT from this process, viz EBR and SRT. EBR is ammoniated, is used by B & W, and is supplied to some BATCo companies for use in Lucky Strike. SRT is not ammoniated and is produced by LTR of Le Mans to supply BATUKE, Belgium and STK, Denmark.

Philip Morris and RJR also both use reconstituted tobacco from the paper sheet process.

111. Extrusion

There are extrusion processes now available for reconstituting tobacco, principally that used by BATCF (RTS), and that used by BATCo (DEER). BATCF do not use ammoniated sheet, but have developed a technique for ammoniating stem (EMERGE). The development for ammoniating DEER, called AMTECH, is now being consumer tested in Venezuela.

It is also known that Philip Morris and RJR have lodged patents for their own extrusion process.

A 150 kg per hour DEER plant could be installed at an estimated cost of £350,000, i.e. capacity and cost levels which are suitable for small operating companies.

3. OPPORTUNITIES FOR BATCO TO INSTALL THE BANDCAST PROCESS

There are two basic options to be evaluated:

- i. The use of an unammoniated bandcast process to reuse waste materials e.g. fines, winnowings, etc., or as a replacement of SRT. If financially viable, this could be compared with Project DEER.
 - ii. The use of the ammoniated bandcast product as a means of product enhancement, on Virginia as well as US, blends, thereby increasing the requirement of ammoniated reconstituted tobacco in brands throughout the world.
- i. Used for reprocessing tobacco waste

The cost of reprocessing waste materials through the bandcast process is estimated as:

Operating costs	= £0.50/kg
Depreciation (over 15 years)	= £0.30/kg
	£0.80/kg

Consequently, if an operation can use bandcast reconstituted tobacco by replacing tobaccos which have an average cost above £2/kg, investment in the bandcast process is likely to have an acceptable ROI, providing it uses around 1,000 tons per annum of the material. At this level of utilization, it would only apply to larger operating companies, or more likely one central unit supplying a number of operating companies.

Alternatively the product from the Project DEER process could be used. Here the operating costs are very similar, estimated at 53p/kg, but with a significantly lower capital cost of £920,000 (cf £5 million for bandcast). In addition, the DEER process requires little increase in utilities, compared with the likelihood of a new boiler and possible substation) for the bandcast process, and occupies only 80m², compared with the bandcast requirement of 1149m².

From this, it would appear that, if cost is the only consideration, Project DEER would provide a better ROI than installing a bandcast process.

11. Product Enhancement

Product development and Marketing Department are investigating the use of Ammonia treatment on Virginia brands, using three ammoniation routes:

- CPCL9 - from B & W
- EMERGE - an ammonia casing applied to stem, developed and used by BATCF (who use this instead of CPCL9 in Lucky Strike)
- AMTECH - Ammoniated DEER

BATCo's decision on the introduction of the Bandcast process for its Virginia blends will be dependent on the outcome of this research.

For its current requirement levels of CPCL9, it is recommended that BATCo should continue to purchase the product from B & W.

In the event that B & W should lack sufficient capacity to supply BATCo's requirements either currently, or in future at a higher level, then two options require evaluation:

- a) the installation of the bandcast process in individual operating companies in territories where importation is impractical
- b) the establishment of BATCo's own bandcast process to supply those operating companies where importation is feasible.

a) Single Operating Company Plant

Where importation is impractical or duties are high, there may be opportunities to install a bandcast process. However, the DEER process is likely to be more economic if the ammoniated product has no taste disadvantage to CPCL9.

Although each territory will require separate evaluation, the choices confronting Bigott might typify this sort of situation.

Bigott purchase 870 tons per annum of RCB ammoniated sheet from Catana (Philip Morris in Venezuela). It is included in most of Bigott's brands (Belmont, Consul, Viceroy, Kool, JPS etc).

Philip Morris installed this plant in the 1970's and approached Bigott to share the costs. An eight year contract was signed which has subsequently been extended by a further four years. The current expiry date is 1991 and Catana are expected to seek an extension. Bigott and Catana share the costs which are audited yearly, but Catana makes 10% profit (£75,000) which contributes towards depreciation. Bigott supplies its own feedstock (tobacco offal and stem).

At a 9% inclusion rate of RCB, Bigott are at risk should the contract not be extended. They therefore have four options:

- i. to continue purchasing and accept the risk.
- ii. to install a Bandcast sheet process. A 500 kg/hr plant would be required to work 1 1/2 shifts/day. This would cost in excess of £5 mn, and the savings would be minimal. Depreciation would adversely affect Bigott's P&L.

- iii. to install AMTECH, an ammoniated DEER product with similar characteristics to RCB. Bigott have already undertaken smoke panel testing, and no discernible differences have been detected. The results of current consumer testing are expected in October 1990. If successful, Bigott will have a low cost option that could be used, or held as reserve without alerting Catana.

The capital cost is estimated at £920,000 to meet Bigott's need (with 50% spare capacity). There is also the alternative of purchasing a smaller and more basic plant at £300,000 that could be held in "reserve" should any problems occur with a new contract. This could enable half of Bigott's requirements to be produced and give Bigott the option of installing the total plant at a time to suit business circumstances.

- iv. To evaluate the installation of EMERGE. The pros and cons of the EMERGE process both financially and qualitatively should now be evaluated.

b) BATCo's own bandcast process

Currently BATCo operating companies purchase 106 tonnes/annum of CPCL9 from B & W (see Table 1) mainly for inclusion in Lucky Strike. The average cost is a little over £2/kg landed, but in Malaysia and Singapore there is a large import duty.

The stem and offal feedstock for producing CPCL9 contains approximately 45% burley tobacco. If the plant were installed in Singapore the feedstocks would need to be imported and would attract a similar import duty. It may be possible for Malaysia to produce sufficient feedstock to serve the region. In this case, the savings could rise to £390,000 per annum, but this still shows a poor return on a £5 mn investment. Consequently neither company would show an attractive ROI on installing a Bandcast process, even if it were to supply BATCo's total requirement, exporting CPCL9 to other users.

Another alternative would be for Bigott to install a plant for the BATCo's total requirement of RCB and CPCL9. There would be sufficient capacity from the 500 kg/hr plant to meet this demand, and Venezuela has the burley feedstock. Import duty would still apply in Singapore and Malaysia. The annual saving to BATCo would be around £0.25 mn, again providing an unacceptable return on a £5 mn capital investment.

The above estimated returns could be transformed by the need to use ammoniated CPCL9 for Virginia blends. It is therefore recommended that further evaluation should await the outcome of the current research in Southampton.

5. COMPETITOR USE OF RECONSTITUTED TOBACCO

Both Philip Morris and RJR use ammoniated reconstituted tobacco sheet, in their US blends, notably Marlboro, Camel and Winston. Non-ammoniated paper sheet materials are also used in place of stem in the blend. Nevertheless as can be seen from a product development analysis of Marlboro (Table 2), the blend construction varies considerably throughout the world. The use of ammoniated sheet (RCB from their Bandcast process) varies from 0% to 9% inclusion.

In contrast, while BATCo equally uses both ammoniated and non-ammoniated reconstituted tobacco, it also uses a significant amount of stem.

It is suspected that RJR may be using direct ammoniation treatment of their paper type RTS.

There is no evidence of any use by Rothmans of Ammonia treatment in Virginia products. They are understood to use the non-ammoniated paper sheet product in a range of proportions for different brands. Recent smoke analysis suggests that Philip Morris may be using ammonia on Virginia products in Australia and Germany, applied in the former by casing on stem, and in the latter on sheet imported from USA.

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