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COMBINED QUARTERLY REPORT

JANUARY, FEBRUARY, MARCH, 1968

Development Engineering and Process Research Groups,  
together with Manufacturing, Quality Control and Packaging.

FH/LJ.

14th March, 1968.

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A.W.C.           The statistical analysis of the T.R.C. collaborative tests has continued.

PROJECT 1000 RESEARCH INVESTIGATIONS WITH SHORT-TERM OBJECTIVES

1200           Smoke Studies.

A.W.C.           (3) Cigarettes from Belgium were tested and a File Note written.

1600           Evaluation of Commercial Cigarettes

A.W.C.           (2) Cigarettes from Venezuela were tested and a File Note written.

PROJECT 2000 ANALYTICAL RESEARCH STUDIES

2100           Tobacco

FH/AWG           (9) Work comparing the various methods of defining atmospheric moisture content has been completed.

PROJECT 3000 SMOKE QUALITY

3310           The Establishment of Subjective Techniques for Assessing Smoke Quality

JDB/FR.           (1) The construction of a smoke test and response apparatus has been completed.

PROJECT 4100 THE OPTIMISATION AND CONTROL OF TOBACCO PROCESSING

4130           Cut Tobacco

RWH.           (1) Attempts to get useful moisture and weight measurements to control the evaporative load to and air dryer are proving difficult.

RWH.           (2) Work has begun on the preliminary design studies of a pneumatic cooler.

FH/RWH.           (3) Preparation of an air dryer design handbook has started.

4140           Instrumentation for Plant Control

EEW.           (2) Further work on infra-red temperature measurement is dependent on receipt of the instrument from the suppliers.

4150           Quality Measurement for Product Control

RWH.           (1) Work is continuing in an effort to establish a centrifuge test applicable to the filling value of milled lamina.

AWG.           (4) The test procedures used in R. & D.E. are being written.

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PROJECT 4200 THE OPTIMISATION AND CONTROL OF CIGARETTE MANUFACTURE

4210 The Effects of Tobacco Properties

AWC/FR. (1) A special chimney is being made for a Mk.8 M.C.M. to be used with the supplier's equipment.

4220 The Effect of the Machine

DBN. (6) The tests on the calibrated garnitures in Southampton Branch have been completed and a report written.

DBN. (9) The pneumatic device for paper tension measurement has been transferred to a machine making production cigarettes at 2,500 c.p.m. and the paper tension has been monitored. The higher speed has not significantly raised the paper tension.

AWC. (10) A report was issued on the effect of high speeds on densed end position.

FR. (11) A report has been issued on the effect of the air entry on Mk.8 SM performance.

AWC. (12) Vibration measurements are being made on a Mk.8 M.C.M. operating at 3,000 c.p.m.

DBN. (13) This project is the follow-on from 4220(9). The effects of drag rollers, brak, etc. on paper tension are being looked at and an investigation carried out on the cause of paper breaks.

AWC. (14) In order to improve the performance of woven nylon suction bands, modified bands are being tested.

4230 Efficiency Improvement

AWC. (1) A report was written and issued on the reduction of tobacco blockages within the 1964 Mk.8 M.C.M. The work was successful in reducing the loss of efficiency caused by tobacco blockages.

AWC/DBN. (2) The data on stoppages - obtained during the test of four calibrated garnitures in Southampton Branch - are being analysed.

4240 Instrumentation and Machine Control

AEY/JKM. (2) Work on the measurement of flow of ecretage return has now been reported with 4240(4).

AEY. (3) Moisture tests <sup>have been</sup> carried out using electrodes built into simplified rails. A working prototype for a M.C.M. Mk.8 is under construction.

AEY/JKM. (4) See 4240(2).

RGB. (5) A draft specification of data logging equipment for monitoring cigarette making machines has been written and is under consideration in R. & D.E.

RGB. (6) A newly designed capacitive displacement transducer has been manufactured for the prototype gravimetric weight control for Mk.8 and the weigher modified to accommodate it.

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- 4240                    Instrumentation and Machine Control (continued)  
RGB.                    (6) (continued).    Static tests show the new design to be far more promising than the transducer fitted by the weigher manufacturer. The electronic detection circuit has been modified to suit the redesigned transducer.
- JKM.                    (7) The operation of the ecreteur control system at higher speeds is to be examined.    The movement of the ecreteur knife is to be compared with the change of pressure in the pressure cell by using the equipment reported in 4240(4) and a pressure transducer and meter unit.
- 4250                    Quality Measurement and Inspection  
EBW/AEY.                (1) A third report has been written on the development of <sup>the</sup> hydrostatic firmness tester for routine measurement.    Experiments have been undertaken to evaluate a single cigarette moisture measuring unit to be used in association with this instrument.
- AWC.                    (2) The test of the Molins scintillation type weight control continues. Modifications made by Molins have not reduced the drift of mean weight.
- AWC.                    (6) A report was issued on the comparison between "Range of Two Cigarettes" and the Solartron computer as methods for measuring individual cigarette weight performance.
- 4270                    New Concepts  
FR/CNB.                (1) A report has been issued on the preliminary examination of methods of manufacturing annular cigarettes.
- FR.                     (2) Further work on <sup>the</sup> annular cigarette is being undertaken.
- AWC.                    Unprogrammed  
A File Note was written on the performance of a modified long folder fitted on the prototype Mark 8 SM.  
A File Note was written on Physical and Chemical measurements on single cigarettes.  
During a visit to Molins, the specification of the Molins automatic inspection equipment was discussed.    A note was written.
- PROJECT 4300        PACKAGING STUDIES AND PRODUCT DEVELOPMENT  
4310                    Study of the Overwrap  
NF/DEC.                (4) An initial comparison of laboratory with machine results of the effect of heat sealing on carton board lacquers has been completed.

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4310 Study of the Overwrap (continued)

DEC. (6) Work has been completed covering the effect of temperature and humidity on the retention of flavour within a cigarette pack. The results are expressed in terms of a "half-life".

DEC/NF. (8) A report has been issued recommending solvent systems which will enable an increase in tear-tape to film adhesion to be obtained.

4320 Study of Carton Materials

NF. (4) The subjective assessment of the mechanical properties of hinge lid packs have been completed and results are being analysed.

DEC. (5) The evaluation of mechanical properties of cup packs is continuing.

NF. (6) The experimental work on crease depth in hinge lid packs has been completed and the results are being analysed.

NF. (7) The joint work on specification requirements for carton board blanks in collaboration with S.C.L. is proceeding satisfactorily.

4330 Package Design

DEC. (4) Work has been completed and recommendations made covering the materials which should be used in the further development of a flexible pouch pack for tobacco.

4340 Bonding and Finishes

NF. (1) Trials have been carried out with two types of hot melt adhesive pre-applied to hinge lid blanks. Promising results have been obtained both on the experimental R. & D.E. packer and on a standard production packer. The work is continuing.

NF. (2) The device for testing the heat resistance of carton board lacquer has been assembled and is in the process of being calibrated for temperature and pressure parameters.

PROJECT 4400 FILTER MANUFACTURE

4410 Preliminary Studies

FH/DEC/HGH (3) A preliminary study of the various methods of retaining water in filters has been carried out and a number of possible alternative methods put forward.

FH/DEC. (5) The manufacture and properties of granular filters made from low density materials have been studied in some depth. A modified Molins Mk.5 cigarette machine has been found most suitable for the manufacture of these filters and various trials are at present in hand on suitable feed systems.

FH/DEC/HGH. (7) A study group has commenced the examination of the problems producing filters containing water and work is on hand to allow materials to be examined and specified.

100257894

- 4420 Improvement of Existing Process  
PGC. (1) Work has started on the investigation of the occurrence of seam slip on circumference variation during filter manufacture.
- 4430 Machine Development  
PGC. (5) A small sample of viscose staple fibre filters, treated with P.E.I., has been made for chemical analysis with the flock filter machine and Legg cutter.
- 4450 Quality Measurement and Product Control  
FH/AWC. (1) A draft standard test procedure for tow opening equipment was prepared.  
FH/AWC. (2) A draft standard test procedure for rod forming equipment is being prepared.  
FH/AWC. (3) Item (1) is being tested. A standard test procedure will then be prepared.

PROJECT 4500 ASSESSMENT OF NEW EQUIPMENT

- 4520 Primary Plant  
AWC. (1) The experimental work in R. & D.E. on the elimination of screens in coolers was completed.  
AWC. (2) The work under (1) is being extended to a factory scale test in Liverpool.
- 4530 Cigarette Machines and Ancillaries  
AWC. (6) The evaluation of a compensated pneumatic/hydraulic weight control continues. Some trouble has been experienced with dust blockage of the connecting pipes.
- 4540 Packaging Machines  
NF. (1) Molins have not yet supplied the hinge lid machine speed-up change parts.  
FH/DEC/NF. (2) Work on the R. & D.E. modified H.L. packer has now been completed.

PROJECT 6000 APPLICATION OF NEW DEVELOPMENTS

- 6210 Air Dryers  
FH/RWH. (1) Several C.R.S. air dryer designs for Southampton Branch have been prepared to enable different schemes to be evaluated.
- 6220 Continuous Moisture Meters  
AEY. (9) The continuous moisture meter for Hong Kong has been despatched.  
AEY. (10) The metering unit for R. & D.E. has been tested and is ready for use.  
AEY. (11) The continuous moisture meter for South Africa has been despatched.  
AEY. (12) The two continuous moisture meters for Australia have been completed.  
(13) A prototype moisture measuring head unit for use on PCL at Louisville has been completed.

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- 6220 Continuous Moisture Meters (continued)
- NOTE: The production of continuous moisture meters has now been deleted from the programme and is now detailed in an addendum sheet.
- 6240 Tobacco Treatments
- RWH. (1) A process for realising filling power gains by spraying small amounts of water on C.R.S. has been developed. Entirely satisfactory application of larger quantities has yet to be achieved.
- 6300 Secondary Manufacture
- RWH. (4) A prototype ducted cigarette trolley for in situ drying of trays of cigarettes using dehumidified air has been built. Further work will be dependent on a decision as to the usefulness of the technique after obtaining preliminary test data.
- 6500 Cigar Manufacture
- JKM (3) This work has now been reported. The cigarlet assembler being modified for Tripoli - 6500(4) - will be converted so that it can be used with either heat seal anchor wrap or normal adhesive, as required.
- JKM. (4) The filter inserter has been converted for use with the electrical supply available in Tripoli. The parts necessary for the assembly of longer than standard cigarlets and for the use of heat seal anchor wrap have been designed by R. & D.E. and are being made by a sub-contractor. The assembly and testing of the equipment should be complete by mid-April, provided that samples of the mouthpieces to be used in Tripoli are received in time.
- JKM. (5) Cigarlet assembler rollers with four grooves instead of five have been designed, based on drawings received from Honduras. These will give each cigarlet a longer rolling time. Two sets are being manufactured, one for Honduras and one for testing in the R. & D.E. machine.

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BUILDING MAINTENANCE AND SERVICES

Laboratory Block

New air extract system and fume cupboards installed in Solvent Distillation Laboratory.

Teak floors stripped and refurbished in Laboratories 15 and 29.

Heat sealer constructed for packaging laboratory.

Further extensions made to nitrogen line.

Development Halls

Extension to Quality Control Laboratory completed.

Additions to Electronic Laboratory fittings completed.

Steam heated calorifier constructed for Solvent Distillation building.

Radiochemical Laboratory extract fans modified.

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