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BRAZIL

Technical report: First mission*

Prepared for the Government of Brazil
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of Maurice Aspinall
Expert in textile dyeing and finishing

Backstopping officer: J. P. Moli, Agro-based Industries Branch

United Nations Industrial Development Organization
Vienna

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* This document has not been edited.

1. INTRODUCTION

This report is preceded by a summary of the visits made to the various plants, with an overview of the problems facing the Brazilian textile dyeing and finishing sector.

The layout of the report is as follows:

- Summary
- Individual reports of the various companies visited, together with potential improvements and recommendations made. It was decided to use this format, in the interest of clarity, as many of the recommendations are very specific to a single recipe and/or process.

The following companies were visited:

- | | | |
|---------------------|---|--------------------|
| . Guilherme Tell | - | Rio de Janeiro, RJ |
| . Fonseca | - | Paciência, RJ |
| . Santanense | - | Itaúna, MG |
| . Cedro e Cachoeira | - | Sete Lagoas, MG |
| . Coteminas | - | Montes Claros, MG |
| . Marisol | - | Jaraguá do Sul, SC |
| . Hering | - | Blumenau, SC |
| . Hering | - | Itororó, SC |
| . Karsten* | - | Blumenau, SC |
| . Maju* | - | Blumenau, SC |
| . Artex* | - | Blumenau, SC |

- * Short visits were made to these three plants and discussions held with senior management. Data required for technical audit, however, was not available.

This first mission, of three, was extremely well received as was the seminar at SENAI-CETIQT on the 17 and 18 May 1989.

The second mission is programmed for October/November 1989, however SENAI-CETIQT would prefer that the mission be brought forward so as to commence at the beginning of September 1989.

2. SUMMARY OF THE TECHNICAL AUDITS MADE DURING THE FIRST MISSION

2.1 All companies visited are expanding their dyeing/finishing/printing activities to increase their production.

Financing for new plant and equipment is generated from within the company or group because interest rates on loans are too high to be considered attractive.

It appears that because of the ever decreasing value of the "Novo Cruzado", coupled with rampant inflation, the industry is investing heavily in new buildings and machinery as a hedge against inflation.

2.2 In terms of capacity of utilization, most of the companies visited are only utilizing

65 - 70%

of their realistically achievable capacity.

Cycle times are too long and throughput speeds are low when compared with North America and/or W. Europe, and all companies would benefit from external technical assistance, particularly in the areas of

- . Recipe Optimization and Formulation
- . Process Optimization
- . Industrial Engineering Techniques

in order to increase productivity and reduce variable costs.

2.3 In all the companies visited, approximately 90% of all shades are dyed using reactive dyes. Sulphur dyes are used, in the main, only for dyeing black. Bright red shades are dyed azoic/naphtol. There are many problems associated with this near total dependency on reactive dyes.

2.3.1 - All plants visited have problems with shade reproducibility from lot to lot on many of their standard shades.

2.3.2 - The dye cycle times in exhaust methods are very long, e.g. dark shades, on average, take 8 - 10 hours, whereas in our opinion the maximum cycle time should be no longer than 6 hours.

- 2.3.3 - Many of the plants would prefer to increase their flexibility in terms of dyeing, but they are, to a large extent, prevented from doing so because:
- 2.3.4 - Limited choice of other dyestuff classes available, for example, there is only a very limited range of liquid sulphur dyes available, similarly with fast directs - naphthols/bases and vat dyes.
- 2.3.5 - The degree of technical service offered by the dyestuff manufacturers is certainly much lower than one is accustomed to, say in W. Europe/N. America.
- 2.3.6 - It appears that the colour manufacturers are really only interested in promoting their reactive ranges and not other classes of dyes. The 6 major Western European producers of dyestuffs enjoy a privileged and, to a very large extent, protected market position in the sense that they have little or no competition from other dye manufacturers (N. American, Japanese, E. European, etc.) because of import restrictions.

If one considers the estimated world consumption of the major dye classes applicable to cellulosic fibres, viz

<u>POSITION</u>	<u>DYE CLASS</u>	<u>ESTIMATED WORLD CONSUMPTION (MT)- 1985</u>
1	Sulphurs	90,000
2	Directs	74,000
3	Reactives	50,000
4	Vats	30,000

then the situation in Brazil completely contravenes the figures for the world as a whole.

2.4 Many of the recipes analysed, other than being mainly reactive dyes, also contained large amounts of various dyeing auxilliary products, making the cost of the individual recipes very high. Such a level of overloading a recipe with diverse auxilliary products in high concentrations is certainly not a feature of W. European recipes - and costs could certainly be reduced in this area.

2.5 Energy usage is high, caused primarily by the following factors:

- Long cycle times and low throughout speeds depress the index of energy utilization;
- Large volumes of washing-off water used, particularly with medium/dark shades, most of which are dyed reactive;
- Very few plants are using cold-pad-batch bleaching systems;
- Lack of coherent production scheduling machine/machine on the shop floor.

In all plants visited, it would be possible to reduce the overall energy usage by, at least, 8%. In specific cases, even more.

All these points are dealt with extensively in the technical audit reports for the individual plants.