CASE STUDY INTERIM REPORT

Company Name: TRENAL
Company Address: Rue R. Magritte 165, Lessines B-7860, Belgium
Company Contact: Jerome Godin
Website: www.trenal.be
Title: Biodegradable printing inks from vegetable oils
Crop: Oil-seed rape (brassica napus)
Family Group: Oils
Stage: Main Scale
Date of Visit: 24th January 2002
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SUMMARY

Trenal manufacture a range of printing inks. They are the leading independent European offset ink manufacturer, specialised in cold-set newspaper inks, heat-set inks and inks for sheet-feed printers. Their turnover is over 40M Î, having grown steadily since its establishment in 1932. Currently 30,000 tonnes of ink is produced annually in a range of colours and types, for home consumption within Belgium and for export throughout the world. In 1987 they became the first European Ink manufacturers to introduce 100% vegetable-oil-based coldset inks.

Printing inks consist of three elements; varnish; oil and pigment. Conventionally, the oil is a mineral oil derivative. This means that although newspapers might be biodegradable (being paper and therefore cellulose) the inks that are used contain a large non-biodegradable element. Indeed the pigment element may contain heavy metals, although this is uncommon in modern printing inks. Trenal use only natural biodegradable pigments for their yellow-red-blue primary colours and now 70% of Belgian newspapers are using their vegetable-based inks exclusively.

Their original decision to attempt a vegetable oil based ink was triggered by the Middle-East Oil Crisis in 1973 when they saw the disastrous effects the dramatic rise in mineral oil price could have on the printing ink industry. They made a conscious decision then to develop an alternative.

Currently, Trenal are using Soya oil or rapeseed oil or indeed sunflower oil. Although they do find technical differences between these - the final choice is said to be dependent upon purchase price.

Although a small company (in industrial terms) with only 50 employees, Trenal has been able to innovate, it seems partly, because it is NOT LINKED to a multi-national mineral-oil corporations, as has become the norm in the rest of the printing-ink industry. They therefore have no vested interests in any particular raw materials.

BACKGROUND TO THE COMPANY

Trenal was first established in 1932 in Brussels as S A HAYON, only moving to its modern, purpose-built plant in Lessines in 1975. Trenal has now become a leading independent family-owned European offset-ink manufacturer, specialising in coldset newsinks (coldset black as well as colour), heatset inks and sheetfed printing inks. Group Turnover is in excess of 40M $US. Total capacity is over 30,000 tonnes of finished inks per year. The company is certified ISO 9002.

It is clear that innovation has always been important at Trenal and some of their major successes have been :

- The first European manufacturer to produce 100% vegetable-oil ink (1987)
- First successful coldset ink for keyless inking system
- Production of high-gloss, stable and versatile heatset inks
- Vegetable-oil based, laser resistant continuous stationery inks

The project began back in the mid 1970's with the Middle-East oil crises. Rising oil prices made Trenal management start to seek an alternative to mineral- oil based feedstock.

SUPPLY CHAIN

Ink comprises three elements: pigment; varnish and oil. The varnish has a large effect on quality and so Trenal produce their own. Pigments are bought in (mostly as fine powders) and selected to be 100% biodegradable.

The oils (in the case of vegetable oils) are either rapeseed or soya. This is purchased on contract from commercial crushers in Rotterdam and brought in to the site by road tanker and stored in tanks. Oil is bought 6 months ahead. Jerome explained that they can use imported soya oil or oilseed rape and that it is simply the delivered price per tonne that is the main factor.

It is estimated that Trenal has already produced and sold around 17,000 tonnes of vegetable-oil based inks to the newspaper industry.

MARKET & MARKETING ISSUES

The vegetable oil is used for manufacturing a range of cold-set inks. Tenal produce currently around 4,000 tonnes per annum. Trenal state that now 70% of Belgian newspapers use their vegetable-oil based inks. One of the accusations made about vegetable-oil inks is that they are hard to de-ink when recycling the newsprint. Trenal claim to have overcome this problem. Over 70% of their production is destined for export. Countries include France, most other EU members, North Africa and Asia.

One of their marketing threats comes from the USA in the form of soya-oil containing inks. However these inks contain only 20-30% vegetable-oil, the remainder is conventional mineral oil. Trenal attempt to expose this situation to ensure that customers understand the difference between the two.

Currently veg-oil is used only in coloured cold-set inks. Black cold-set ink pigment (carbon-black) is very cheap and the ink sales price would not stand the extra cost of the more expensive vegetable-oil. Therefore it is mostly the coloured inks that are 100% vegetable-oil based. Here the colour pigments are more expensive so there is scope for increasing the price to accommodate the more expensive base-oil.

Because of the huge increase in the volume of glossy magazines now published and similarly colour in corporate literature, this sector is growing at a fast rate. The effect on the printing ink sector has thus been to change the ratio of black-coloured inks needing to be manufactured. The demand for colour shows no sign of levelling-off and so the demand for vegetable-oils that are particularly suited to ink production would come in on a rising market.

Jerome explained that their vegetable-oil based inks are sold throughout the world on the basis of competing on price and performance with competitor inks, whether mineral oil based or containing soya oil. They do not sell only based on their environmental benefits. Although with some customers, particularly in Northern Europe, the environmental aspect is important, equally the ink is sold successfully in many parts of the world where this aspect does not enter into the equation.

FUTURE DEVELOPMENT

The printing industry is very dynamic with its technologies changing at an ever faster rate. As well as keeping ahead technologically, companies such as Trenal must also remain price - competitive if they are to survive.

One option would be to develop a partnership with local farmers to grow oil-seed rape under contract to Trenal, and for Trenal to install simple oil crushing presses at their plant. This would not produce any better oil than simply buying it from a large-multi-national vegetable-oil crusher, but it could yield economic and environmental benefits, both for Trenal and for the farmers. The savings arise from running small-scale dedicated machinery (no shut-down and change-over between different oils); improved logistics of transport (farmers deliver to seed to site and take away oil-rich extruder cake for animal feed, therefore no-cost transport for Trenal).

STRENGTHS

· There are a number of technical strengths of vegetable-oil based inks generally;

1. improved print characteristics such as less smudging
2. no carconogenic polycyclic aromatic hydrocarbons (PCA's) or VOC's
3. no unpleasant smells (often associated with mineral-oil based inks)
4. no need for mandatory safety labelling
5. less ink usage - generally reduced by 10-15%
6. generally more intense colours are produced

WEAKNESSES

· Some technical problems with 'bleed-through' of the inks particularly on latest thin recycled newsprints
· Trenal are only a small independent firm with limited R&D resources

OPPORTUNITIES

· Huge export opportunities or licencing arrangements possible
· More integration with agriculture to lower final oil price whilst paying farmers more
· possible future legislation on voc's may encourage more use

THREATS

· Printing technology is changing rapidly - new technology(e.g. inkless paper) may make current range of inks redundant
· North American soya-based inks may become more economic
· Any adverse price rises in vegetable - oil prices generally or 'political' reductions in mineral oil prices will make the Trenal range less competitive
· Increase in demand for vegetable-oil (e.g. due to biodiesel success) creating shortage of supply then for printing inks