

Waste paint given new life through innovative recycling process

Russell Finex helps environmental company Newlife Paints to recycle emulsion paints with the Russell Compact Sieve®

The environmental impact of waste paint is increasingly becoming a global concern. Paint is considered a difficult waste due to its liquid properties and also may contain solvents which can lead to groundwater and surface water pollution. Over 300 million litres of decorative paint is sold in the UK every year. An estimated 50 – 60 million litres of this remains unused as householders over buy with the intention to use all the paint, however, rarely do so. This paint is then left in sheds and garages for a number of years before eventually being disposed of in landfill.

With a background as an industrial Chemist and 25 years experience working in the paint and coatings industry, Keith Harrison (founder of Newlife Paints) set up a pilot plant where he experimented with the possibility of recycling emulsion paint. After years of research, Keith developed a process that enabled waste emulsion paint to be converted back to high quality paint, and then set up Newlife Paints in 2008, based close to the South Coast of the UK in Ford, Arundel. However, setting up the company did not come without its challenges. There was difficulty in getting the Environmental Agency to agree that recycling waste emulsion paint is a low risk activity, thus limiting the tonnes per week that could be treated. However, a new regulation was eventually put into place (LRW 340). With a revision made in May 2010, the regulation enables 'treatment of up to 5 tonnes a week of non hazardous paint for re-use as full specification paint'. (<http://www.environment-agency.gov.uk/>).

A further challenge was the sourcing of waste paint. A substantial amount of paint is needed in order to ensure enough paint could be produced for commercial selling. Non-flammable emulsion paint is sourced from 4 out of 26 Household Waste Reclamation Centres in Hampshire. Although the paint is sorted before it is delivered to them, it is resorted again to ensure there are no paints that could contaminate the delicate reclaim process. This results in an average of 2% of the paint received being rejected either because it is flammable paint (solvent based) or because the paint is too old and would require too much work to recycle. Being an environmentally conscious company, Newlife Paints also send the old paint tins they receive from the Waste Centres to be recycled, as they are too damaged to be re-used.



Figure 1. Keith meticulously sorts the paint into colours, ready for processing

- Removes oversized contamination before the filling line
- Easy to strip down and clean
- No colour contamination from one batch to the next

Once a batch of paint is ready to be processed, it is placed into a large drum. Although the batch of paint will be of the same colour, the content will be of different quality as they are likely to be from various manufacturers. It will also contain lumps and other contamination such as bits of plastic, paint brush hairs and cured skins. A specially adapted shear mixer is then used to mix the paint. The paint is homogenized until all the lumps and flakes are reduced, and is then checked for viscosity, total solids, pH levels and resin content.

Newlife Paints regulates its own quality, however they shadow ISO:9001. For each batch of paint that is made, a log is kept of what is used in each batch and the quantities used. The paint is also tested before it is processed

further to ensure the colour is correct. This is conducted with a machine, which can detect the colour, but is then also qualified by eye to give the 'visual' quality check.



Figure 2. Waste paint ready to be processed



Figure 3. Waste paint once it has been shear mixed

One of the most important parts of the process is to ensure any remaining contamination is removed from the paint. A self made in-line filter was initially being used after mixing. However, the filter blocked frequently and resulted in softer polymer being extruded through the screen, and in turn contaminating the paint. Realising the need to replace this filter, Keith searched for filter suppliers and contacted Russell Finex to discuss his requirements. After a consultation with a Technical Representative, it became apparent that due to the current processing scale a vibrating sieve would in fact serve the process better and at a better value.

Russell Finex provided a successful on-site trial, sieving paint through a Russell Compact Sieve®. The sieves compact design and ease of use impressed Keith and consequently the machine was rented. "The Compact Sieve is very easy to strip down and clean" says Keith. "In addition, the sieve is clearly built to a high standard and as a result out performed other competitor vibratory sieves that we trialled".



Figure 4. Russell Compact Sieve®

After testing the machine on loan, Newlife Paints decided to buy the machine realising that it was a valuable investment. The Compact Sieve is mounted onto a stand high enough to fit a 210 litre drum underneath it. The sieve is hand fed and once the paint passes through the sieve, it is pumped into the paint tins. When an entire batch has been processed it is instantly stripped down and cleaned. "As different batches of colours are processed through the same machine, a key benefit for the Compact Sieve is that there is no colour contamination from one batch to the next and cleaning only takes a matter of minutes".

Newlife Paints have been widely recognised for their contribution to environmental protection, having received numerous awards including Recycling Product of the Year 2010, Sustainable Innovation Award 2010, Environmental Pioneer Awards – Pioneering Technology and Innovation, and National Recycling Award 2010.

The company has applied to get the process patented, which they can then freelance to other paint manufacturers. The company is also working closely with some of the largest paint manufacturers to integrate waste management into their manufacturing process and Corporate Social Responsibility (CSR) programmes.

As the company expands, Newlife Paints would like to extend their colour range of decorative and masonry paints from 23 colours to 33 colours, and would also like to start providing different types of paints, including trim paints and fence paints. Keith states "As the business expands, we will need to find a bigger factory as production increases. We look forward to working with Russell Finex as our production expands to explore new sieving and filtration possibilities".

Russell Finex has over 75 years of experience manufacturing and supplying separators, screeners and filters to enhance productivity and ensure product quality. The company serves a variety of industries in over 100 countries with applications that include adhesives, ceramics, chemicals, colors, enamels, explosives, food, inks, latex, metal powders, paint, paper coatings, pharmaceuticals, plastisols, powder coating, and waste oils.