
RECYCLING

Cost Savings and Protection of the Environment VEGRA Recycling Concepts Ecologic Ways to Reduce Costs

Why recycle rapid washes?

We would like to contribute our share to environmental protection by endeavouring to develop environmentally friendly products. An essential point is the economical and conscious handling of resources. Therefore we prefer the **real recuperation** provided by our recycling programme for rapid washes to the thermal decomposition.

We develop new products with regard to the future, even before legal regulations become effective. At present we are presumably the only supplier with this objective.

What are the advantages for VEGRA customers?

- They **save disposal costs** and therefore **improve their business result**.
- The participation in the recycling concept is an acknowledged contribution to active environmental protection and **another step towards certification** according to the EC Öko-Audit-law

We are proud of constantly finding new partners which are willing to accompany us on our way to environmental protection in practice.

Cost advantages for VEGRA customers with the help of a calculation example:

Composition of contaminated rapid washes from newspaper printers:

- | | |
|--|--------------------|
| • Portion of rapid wash that can be regenerated | approx. 30 vol.-%. |
| • Water | approx. 60 vol.-% |
| • Dirt residues
made up from printing ink residues and paper dust | approx. 10 vol.-%. |

If we assume that the disposal costs for 1000 litres of contaminated rapid wash, according to the conditions as above, are within € 750 – 1000, this is the sum, which you could save when participating in the VEGRA recycling programme.

Ordinary recycling processes

Seven years ago VEGRA carried out tests to establish a recycling process for recuperating a reusable product from contaminated rapid washes. The following possibilities were tried out:

1. Distillation

This procedure was only successful and economical as long as A I and A II products were used. As soon as A III or high boiling products and mixtures of these two types were introduced, distillation could not be recommended any more for safety reasons.

(Please also see our information on page 4 and 5.)

2. Filtration

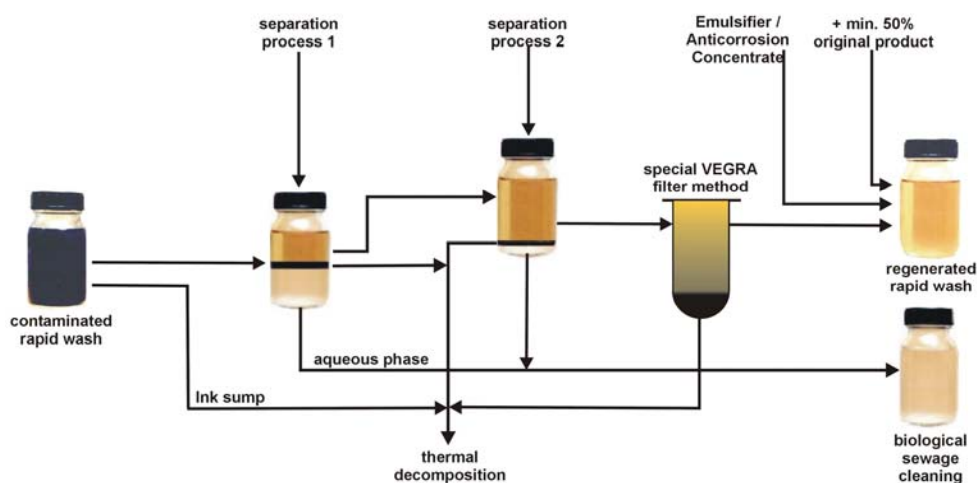
This technology also failed, at least regarding it's realization on the spot. All filter techniques – even the membrane technique which first seemed to be suitable – failed in the end.

The VEGRA Recycling Concept

VEGRA learned from the tests and failures in the past and is going the right way according to the present state of knowledge for recuperating of rapid washes, i.e. **taking back of used rapid washes and recycling them in our plant.**

The VEGRA recycling procedure is a combination of separation procedures with special subsequent filter methods. This technology is in a stadium which allows us to offer recycled rapid washes which do not differ from the original product regarding their function. Corrosion protection and water miscibility correspond with the original product. **You can rely on this tested quality according to DIN EN ISO 9001.**

Rapid Wash Recycling Concept VEGRA GmbH



How can you participate in the VEGRA recycling concept?

- VEGRA concludes a recycling contract with customers who are interested. The only obligation for the customer is to collect each type of used rapid wash separately, without mixing them with foreign substances.
- For this purpose, VEGRA provides corresponding collection containers.
- The customer receives in exchange to his returned product the same amount of fresh product from the recycling process.

Guarantee

The recycling products fulfil all requirements regarding application technique to the same extent as the approved original products. This was confirmed many times by comparing lab analyses and cleaning tests in practice and is guaranteed according to DIN EN ISO 9001.

For further information regarding the VEGRA recycling concept please contact
☎ **Tel. +49 (0) 86 38- 96 78- 92.**

Practice-oriented distillation examinations regarding the recommendation for recycling of contaminated rapid washes in the printing office

Résumé:

With an expenditure of energy between 12 and 33 kW per hour 8 or 5 l of an oil-water mixture can be obtained which contains a maximum of 16 % reusable oil substances. The rest is water and oil which are expensive to dispose of as special waste.

The promised distillation performance per hour is only reached to 25% at maximum.

The regeneration by distillation cannot be recommended, neither with regard to the technique nor regarding the expenses.

1. Specification of the distillation units used for the test:

	Type 1	Type 2
Still volume (litre)	170	570
Electric supply		
- heating capacity (kW)	9.6	30.0
- fan (kW)	0.25	0.37
- control unit hydr. (kW)	1.50	1.50
- vacuum pump (kW)	0.25	0.37
- oil circulation pump (kW)	0.37	0.55
- fan for oil cooling (kW)	0.18	0.25

Total energy supply (kW)	approx. 12	approx. 33
guaranteed distillation performance (litre/hour)	30 – 40	70 – 80
maximum low pressure (mbar)	200	100
maximum still temperature (°C)	230	230
Price in €	unknown	approx. 70,000

2. Test distillation of contaminated Rapid Wash 220 063 (flash point 65°C/All-cleaner/auto-ignition temperature ~ 200°C)

2.1 Composition of the rapid wash

Water	approx. 78 %
Mineral oil	approx. 18 %
Emulsifier + dirt	<u>approx. 4 %</u>
	100 %

2.2 Test distillation

	in unit Type 1	in unit Type 2
Water (%)	approx. 68	approx. 58
Mineral oil (%)	approx. 16	approx. 6
Residue (%)	approx. 16	approx. 36
Output per hour (litre) oil + water	approx. 8	approx. 5
Vacuum (mbar)	< 300	< 300

3. Examination of the distilled fractions

3.1 Oil phase (16 – 6 %)

Water light and clear, reusable - addition of corrosion inhibitors and emulsifiers necessary!

3.2 Water content (58 – 68 %)

The water resulting from the distillation is turbid and contains high contents of hydrocarbons which lie considerably above the allowed specific values (< 20 mg/l/kW)! An additional water treatment is necessary (expensive!)

Besides the oil content, we also found considerable contents of decomposition products of emulsifiers and corrosion inhibitors. The CSB value (chemical oxygen requirement) lies above 50,000 mg O₂/litre (max. 1000 mg O₂/litre are acceptable)!

Result: The water won by distillation has to undergo a subsequent chemical treatment or must be disposed of as special waste.

3.3 Residues 16 – 36 %

The residues have to be disposed of as special waste!

4. As the distillation units work with a maximum still temperature of 230°C and the auto-ignition temperature lies between 200 and 230°C, auto-ignition and explosion-like deflagration are to be expected in the still when emptying the distilled residues.

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