Our services

- Engineering
- Production
- Mounting
- Set-up

- Synthetic resin plants
- Urea resin plants
- Melamine resin plants
- Phenol resin plants
- Polymerization plants
- Polyurethan plants
- Alkyd- and polyester resin plants

- Plants for printing ink binders

- Laboratory plants

- Process control systems

- Mobile containers
- Storage tanks
- Heating-cooling units
- Containers
- Blending tanks

HAGEMANN
Anlagenbau

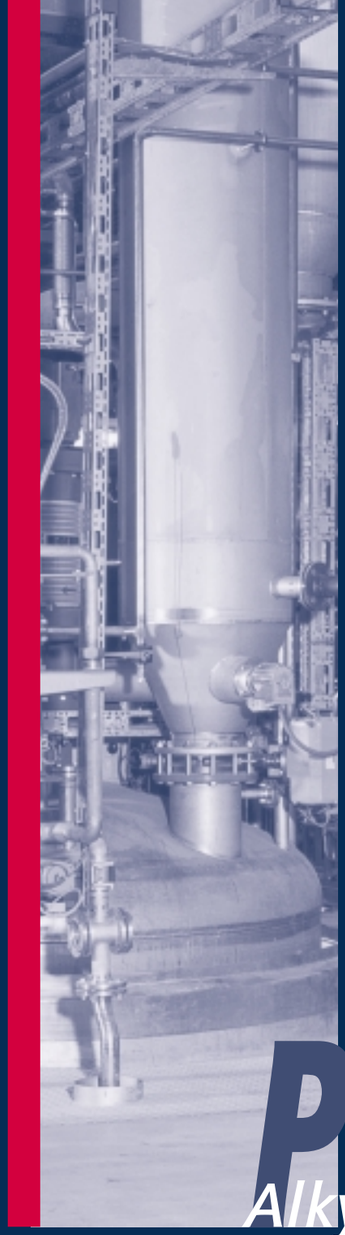
Gebrüder Hagemann GmbH & Co. KG
Anlagen- und Behälterbau

P. B. 1565
59245 Beckum/Germany

Sudhoferweg 55
59269 Beckum/Germany

Phone: +49 (0) 2521 - 4094/95
Fax: +49 (0) 2521 - 4099

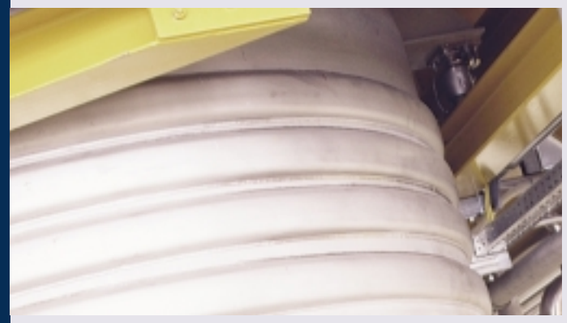
E-Mail: info@hagemann-beckum.com



Plants

Alkyd and Polyester Resin Plants

HAGEMANN
Anlagenbau



Application-dependent design

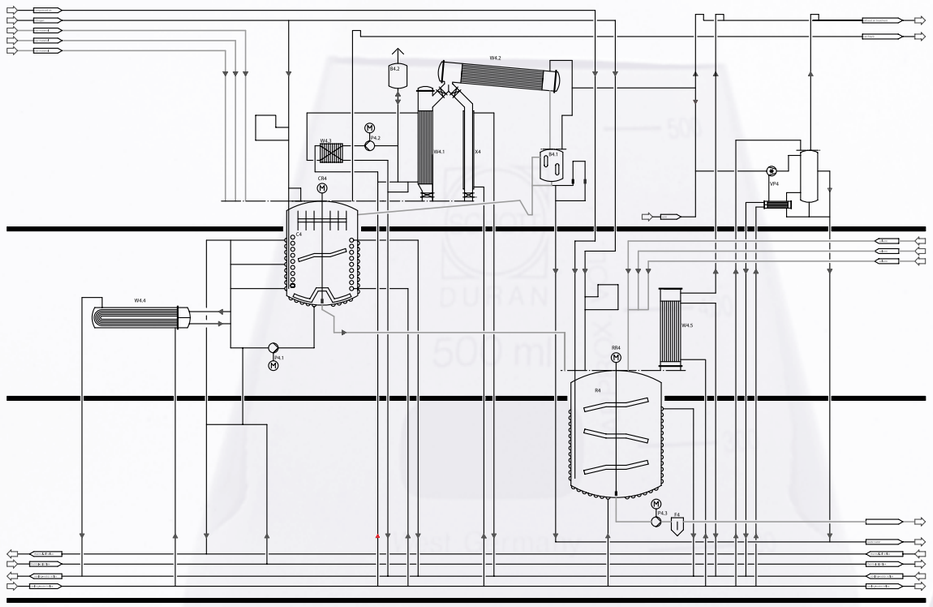
Hagemann alkyd and polyester resin plants guarantee an efficient production process that ensures consistently high product quality by tailoring the plant to the customer's individual requirements and special application needs.

Applications

- Alkyd resins are processed in many modifications to yield paint resins for high-lustrous, air- and heat-drying lacquer bases and covering lacquers with short drying times.

- Polyester resins are ingredients of clear and pigmented paraffin-free lacquers that are used to coat wood.

Polyester resins are also used as clear and pigmented paraffin-containing lacquers for grindable and polishable surfaces; they may be duct cured, e.g. by heating or under UV irradiation.



Hagemann *Technology* in More Detail

The production of alkyd and polyester resins as well as polyesterimides involves condensation processes that will be referred to here as esterization processes. No exact boundary between alkyd and polyester resins has been defined. In practice, resins produced with fatty acids or oils using phthalic acid anhydride are referred to as alkyd resins, whereas oil-free resins that are based on other aromatic or saturated carboxylic acids are called polyester resins.

Dosage

Mass flow meters are used to meter out liquid raw materials, e.g. solvents. However, dosage devices incorporating electronic balances offer more flexibility. Solid, pneumatically transported raw materials are normally filled into the reactor via a feeding tank with a weighing system. Melting and dissolution containers that are designed as weighing containers are used for raw materials with relatively low melting points and for solid raw materials that can be easily dissolved in liquids. Dicarboxylic acids (e.g. maleic acid and phthalic acid anhydride) are needed in large amounts and are therefore stored as liquids and fed to the reactor via mass flow meters.

Heating

The plants for these resins are almost exclusively heated by heat carrier oil systems that in the forerun work at temperatures up to 300°C (in exceptional cases up to 340°C).

The reactor is heated at multiple levels via outer half-coil pipes of a special design to reduce pressure loss and to increase the effective heat exchange area. The need to heat or cool independently of the primary circuit has resulted in designs with secondary circuits allowing optimum temperature control for each cycle as well as cooling of the product by an integrated oil condenser. Depending on the process, inner coils may also be used for cooling.

Hagemann plants are standardly equipped with safety cut-outs for all critical parameters, such as temperature, pressure and filling level to prevent overtemperature and overpressure events.

Operation

The reaction water is continuously drained off via a height-adjustable drain. Therefore, only 2-4% carrier (in relation to the total reactor volume) is required. This mode of operation is also possible when working under vacuum.

Reactions for polyester and polyesterimide production processes are often carried out without carriers. They run under equilibrium conditions, and it is therefore essential to remove freshly synthesized reaction water by distillation. As the temperature for this process is higher than the boiling point of the residual diols or glycols, a portion of them is vaporized and swept away. Hagemann plants guide these vapors via the dephlegmator running parallel to the ascension pipe.

Hagemann dephlegmators offer perfect phase separation in the vapor phase, so that - in relation to the amount of reaction water – the proportion of diols and glycols is only 0.5-2%. This unique Hagemann concept together with the optimum design of dephlegmator size and temperature control to ensure the maximum possible heating rate coordinated with all parts of the plant results in a minimum overall reaction time.