

## Phenol Recovery Skid Plant – Solution for phenol removal from water

Does your aqueous stream contain phenol or other phenolic compounds like cresol, resorcinol? Do you need to follow tight wastewater regulations and need a guaranteed purity of your effluents? Do you want to recover the phenol to enhance your process economics? In all these cases, Sulzer has the turnkey solution: a recovery plant integrated in a skid module.

Phenol is used in many industrial applications, e.g. the manufacturing of phenolic resins and Bisphenol A. It is also present in wastewater from e.g. shale gas production. Phenol and its related components are highly toxic to water organisms, the concentration in water is strictly regulated even upstream wastewater treatment plants. Recovering this phenolic content might improve the economics of a plant as its concentration is often high.



In all these cases the removal of the phenolic components from the water stream is required. Sulzer offers an integrated hybrid solution for this problem with a skid mounted phenol recovery system. The system features a liquid-liquid extraction step in which the phenol is transferred from the aqueous stream into an organic solvent, because a direct separation of water and phenol by means of distillation is not economical. Subsequent to the extraction step, a wastewater stripper removes residual solvent from the water stream and a solvent recovery column separates the solvent from the phenol. The solvent is directly recycled back into the extraction step. The purified water and the recovered phenol can be reused in the main production process to reduce the overall discharge of the plant.

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## Kuhni™ extraction column

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The agitated liquid-liquid extraction column type Kuhni™ ECR provides a high separation performance and large flexibility. This column has a proven robust and reliable design in more than 500 reference installations worldwide. It can handle feeds with varying compositions, dissolved salts and even suspended solids.

### Integrated solvent recovery

The used solvent is recovered within the module battery limits with virtually no loss of solvent. Based on Sulzer's longstanding experience in distillation technology the water stripper and the phenol rectification column are provided with an optimized design and specifically adapted extraction column with the aim to reduce the overall energy consumption and minimize the plant footprint.

### Guaranteed and proven performance

Pilot trials in our in house test center or on a rental extraction column are the basis for a reliable process design. Sulzer can give a process guarantee on the plant capacity and water or phenol purity based on these trials.

### Integrated skid mounted plant from one hand

All features will be integrated in a skid mounted plant assembled by Sulzer. The plant comprises all the main equipment, all piping, instrumentation etc. fully installed into a steel frame ready for road transport. The plant comes with CE marking and a mechanical guarantee. Sulzer will provide assistance for erection and installation on site as well as commissioning. This approach minimizes the onsite work - thus shortening the delivery time - and clearly pools the responsibility for a successful installation and start up in the hand of Sulzer.

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**How can we help you?**  
**Contact us today to find your best solution.**

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Kuhni™ column internals

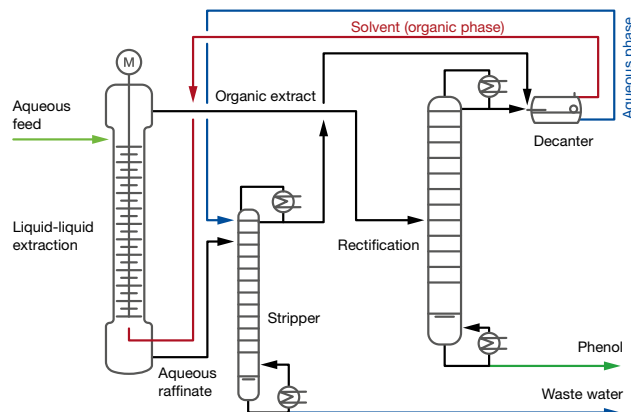


Sulzer pilot column



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Process flow diagram of phenol recovery process



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Integrated phenol recovery plant in a skid module



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Skid mounted module: from 3-D layout to final plant

