
ISODODECANE
RECOVERY PLANT

Environment and Productivity

ISODODECANE RECOVERY PLANT

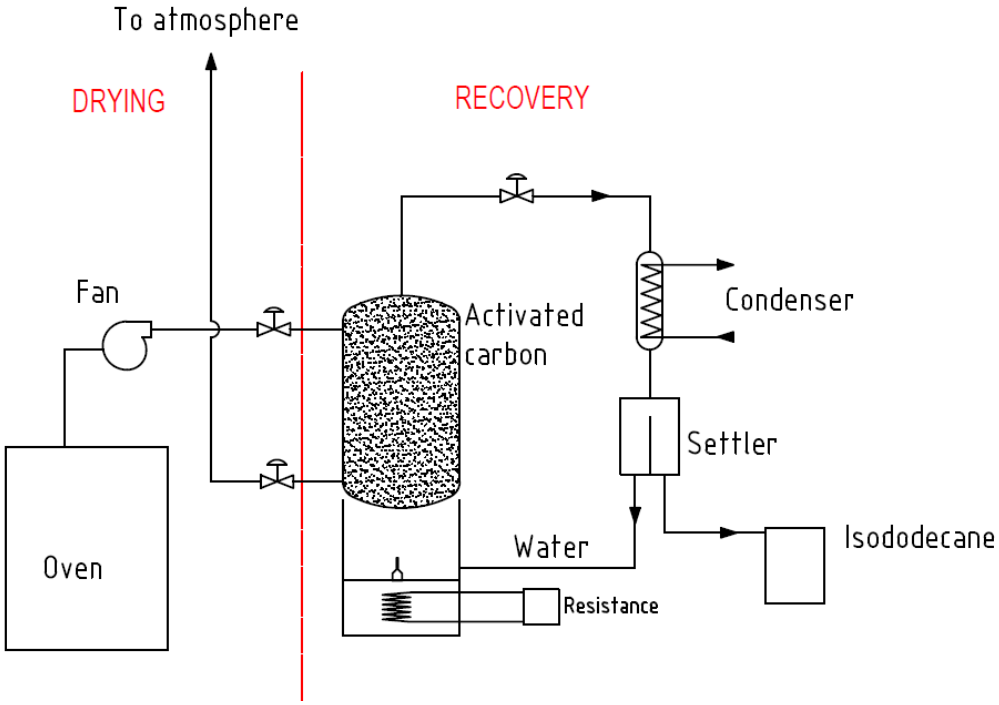
Isododecane finds a lot of applications in the cosmetic industry as solvent to prepare mixtures for its emollient properties and low toxicity. Once the mixtures are dried, they turn into the finite product (eyeshadows, face powder etc…)

During the drying process, isododecane evaporates and is released in the atmosphere. The new European regulation 2006/42/CE states that the emissions of volatile organic compounds (VOC) in the atmosphere must be below 50mg/m3 air.

In order to regulate the emissions, ULIX Innovation has designed a plant which is capable not only to treat the contaminated air, but also to **recover the solvent** giving environmental and economical benefits.

In a standard ULIX Innovation plant, air is treated using activated carbon, which is then regenerated in-situ to recover the solvent. However, this kind of plant is convenient is convenient only for air flows of at least 1500 Nm^3/h.

ULIX Innovation has designed small scale plants specifically addressed to small cosmetic companies which have just entered the market with small production volumes (5-50 L of solvent per day). The working principle is reported below.



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In a standard configuration, the slurry is fed on wafers which are then dried in an oven with hot air flow. The air, loaded with isododecane, flows through an activated carbon bed, where the solvent is adsorbed. Once full, the activated carbon is regenerated with a water vapor stream coming from a tank located below the adsorber. After that, the mixture water/isododecane is condensed and sent to

the settler, where the solvent is separated from water with purities up to 99.6%. The condenser, created by us, is placed on top of the adsorber and uses natural convection to condense the vapours without the need of expensive cooling units. The settler is also our patent.

ADVANTAGES OF ULIX INNOVATION TECNOLOGY

- Super high efficiency of pollutants removal (96 ÷ 99.5%)
- 100% GREEN plant (zero emissions)
- Compact plant that fits in narrow places
- Solvent recovered with super high purity (up to 99.6%)
- Water is totally recovered

Technical features of section "DRYING":

- Type of solvent to be dried	Pentamethylheptane (or similar solvents)
- Working temperature	45 ÷ 60°C
- Reference law	UNI EN 1539, 2006/42/CE on machineries

Technical features of section "RECOVERY":

- Air flow to be treated	from 100 to 900Nm3/h
- Isododecane volumes to be recovered	from 5 to 50 L/day
- Type of pollutant to be recovered	Pentamethylheptane (or similar solvents)
- Electrical energy consumption	≈ 5KWh for Kg of recovered solvent
- Water consumption	≈0
- Steam consumption	5Nm3 per Kg of recovered isododecane
- Economic savings	15.000€/year per 1Kg of recovered isododecane