RENEW Process

RENEW Wax Re-virginization Technology is a chemical process to rejuvenate used autoclave wax and works differently than traditional physical filtration processes

The re-virginization of the wax components is possible as RENEW can remove the ash producing linkages that join onto the broken hydrocarbon chain ends. Renew can then reattach carbon chain fragments to each other and restore the physical characteristics of each of the individual components of the wax. This is an oversimplified explanation of the actual reaction kinetics that take place in the process. However, the linkages that are restored by RENEW are the same as the ones that occur during the formation of the carbon chain structures that compose the resins used to make IC waxes. The linkages and formations of carbon chains are not new technology or information to the people who make hydrocarbons. In fact, these reactions follow very specific steps and rules that have been commonly known in their art for the last 50 years

- Residual ash after burnout negatively affects all shell types, regardless of alloy or market. Reducing ash levels always bene fits the foundry. RENEW wax technology helps create virgin or reclaimed wax with minimal organic and metallic contaminants. In tests, RENEW reduced ash by over 80% after 300–500 reclaiming cycles—even in older systems.

- Ash can also come from poor boiler water treatment, introducing elements like sodium, potassium, phosphorous, calcium, and manganese. RENEW effectively removes these. Phosphorous is particularly harmful, as it multiplies ash content post-burnout by forming phosphorous pentoxide.

- The process selectively removes **ash-producing linkages** and oxidized fragments that form at the termini of broken hydrocarbon chains.

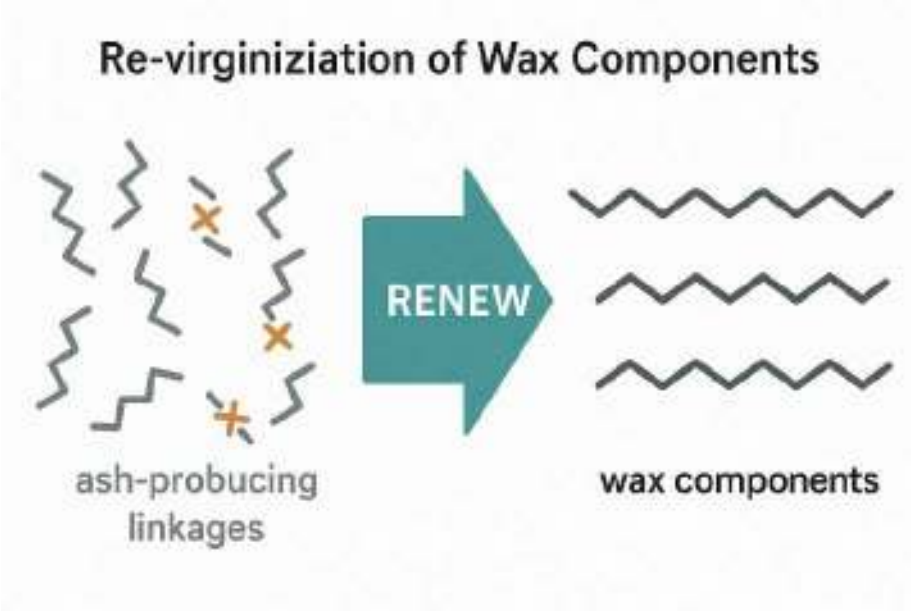
- It facilitates **controlled reattachment of carbon chain fragments,** mimicking the natural polymerization steps used during the manufacture of hydrocarbon-based resins.

- As a result, the wax's physical characteristics—such as thermal stability, flow behavior, and shrinkage control—are effectively returned to a **virgin-equivalent state.**

Beyond achieving low residual ash levels, the RENEW process has demonstrated the capability to restore and, in some cases, enhance the performance of reclaimed pattern waxes beyond that of the original virgin wax. This performance uplift is achievable under two primary conditions:

1. **Symbiotic Wax System Engineering**
   When pattern wax and sprue wax are designed to function in a complementary manner, their combined use and subsequent reclamation through RENEW can yield a more consistent and optimized formulation. In this context, the integration of components allows for improved flow, mechanical stability, and dimensional accuracy.

2. **Superior Additive Selection and Rebalancing**
   In some cases, the additives and component ratios used during reclamation may exceed the quality or efficiency of those used in the original virgin wax. By incorporating higher-grade materials or optimizing their proportions, RENEW can surpass the baseline properties of the original formulation.



At the core of this performance restoration lies RENEW's ability to **rejuvenate degraded hydrocarbons:**

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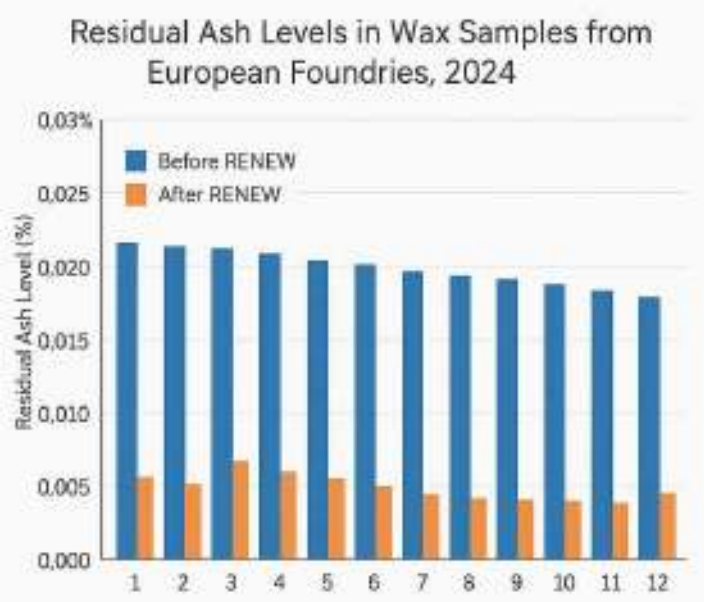
- As a result, the wax's physical characteristics—such as thermal stability, flow behavior, and shrinkage control—are effectively returned to a **virgin-equivalent state.**
- While the explanation above simplifies the underlying **reaction kinetics,** it is important to note that the **mechanisms involved in chain scission, purification, and re-polymerization** align with wellestablished principles in hydrocarbon chemistry. These reaction pathways have been widely understood and applied in petrochemical and polymer industries for over five decades.



Can RENEW Improve Reclaimed Wax Beyond Virgin Quality?

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