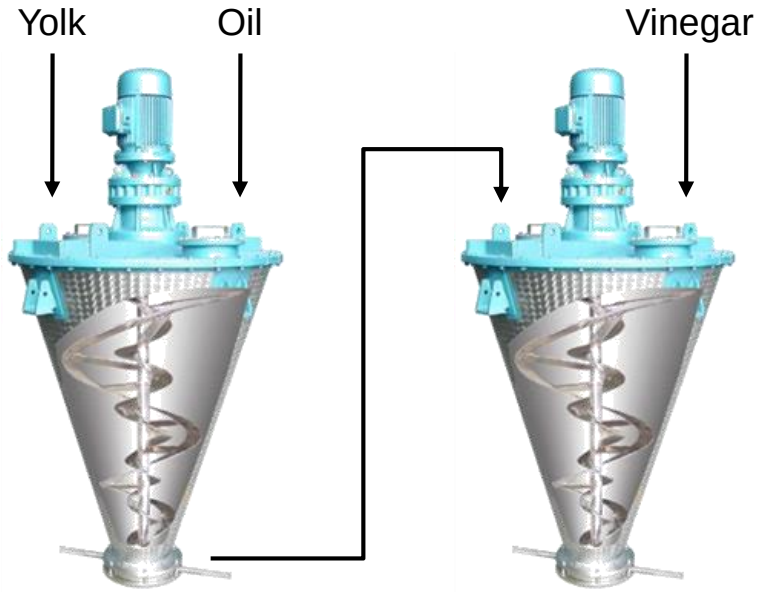
Food Industry – Mayonnaise Manufacturing

GEN TRIZ Case Study

Israel, February 2019

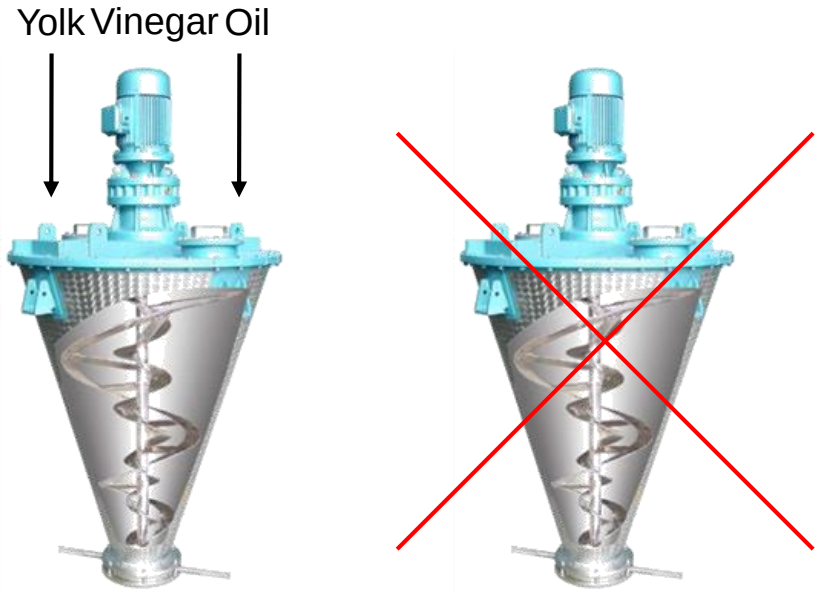
Case Study: Mayonnaise Manufacturing

- **Initial situation:**
  Technological line of mayonnaise manufacturing among other equipment contains two identical mixers. First mixer mixes yolk and vegetable oil, and second mixer mixes them with a vinegar. Oil protects yolk against vinegar.
- **Project goal:**
  It is necessary to reduce a footprint of operational equipment without deterioration of product quality and process productivity.



Case Study: Mayonnaise Manufacturing

- **Trimming:**
  Second mixer could be removed, if first mixer could simultaneously mix yolk, oil and vinegar. But in this case for the short period of time vinegar will have direct contact with yolk and thus damage it.
- **Trimming problem:**
  How to temporarily protect yolk against vinegar?



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- **Trimming problem:**
  How to temporarily protect yolk against vinegar?
- **Engineering contradiction:**
  - If vinegar is inactive, it does not damage yolk, but it does not provide a good taste
- **Applicable Inventive Principles:**
  - **Skipping**
    - Conduct a process, or certain stages of it (e.g. destructible, harmful or hazardous operations) at high speed
  - **Parameter changes**
    - Change an object's physical state (e.g., to a gas, liquid, or solid.)
    - Change the concentration or consistency
    - Change the degree of flexibility
    - Change the temperature

- **Solution:**
  - Frieze vinegar and mix oil and yolk with the frozen vinegar powder
  - Mix oil and yolk with very cold vinegar that will not destroy yolk before it is completely protected by vegetable oil

- **Business impact**
  - Two pieces of equipment were substituted with one
  - Productivity increase - 2 times.
  - Footprint reduction - more than 2 times.
  - Capital cost reduction - 25%.