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# **Mechanisation to Automation The Future of Cashew Processing**

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**25<sup>th</sup> Jan 2019**

**MECHANISATION VS AUTOMATION**

**WHY AUTOMATION?**

**PREREQUISITES FOR MECHANISATION/AUTOMATION**

**FUNDAMENTALS FOR MECHANISATION/AUTOMATION**

**SOME LEARNINGS & RECTIFICATION METHODS**

**PLANT DESIGN TECHNIQUES**

**GOOD MANUFACTURING PRACTICES**

# MECHANISATION VS AUTOMATION

## Mechanisation:

**Mechanisation saves the use of human muscle**

**Mechanisation displaces Physical Labour**

**Replacement of unskilled/semiskilled human power**



**e.g: Shelling machines, Peeling machines, Graders, Sizers, Sorters**

## Automation:

**Automation saves the use of human judgement**

**Automation displaces mental labour**

**Replacement of skilled/supervisory human power**



**e.g: Auto Thermal Control, Auto Moisture Control, Auto humidity Control, Auto filling or Stacking or feeding activities, Auto Positioning of RCN / Kernel, Auto rework**

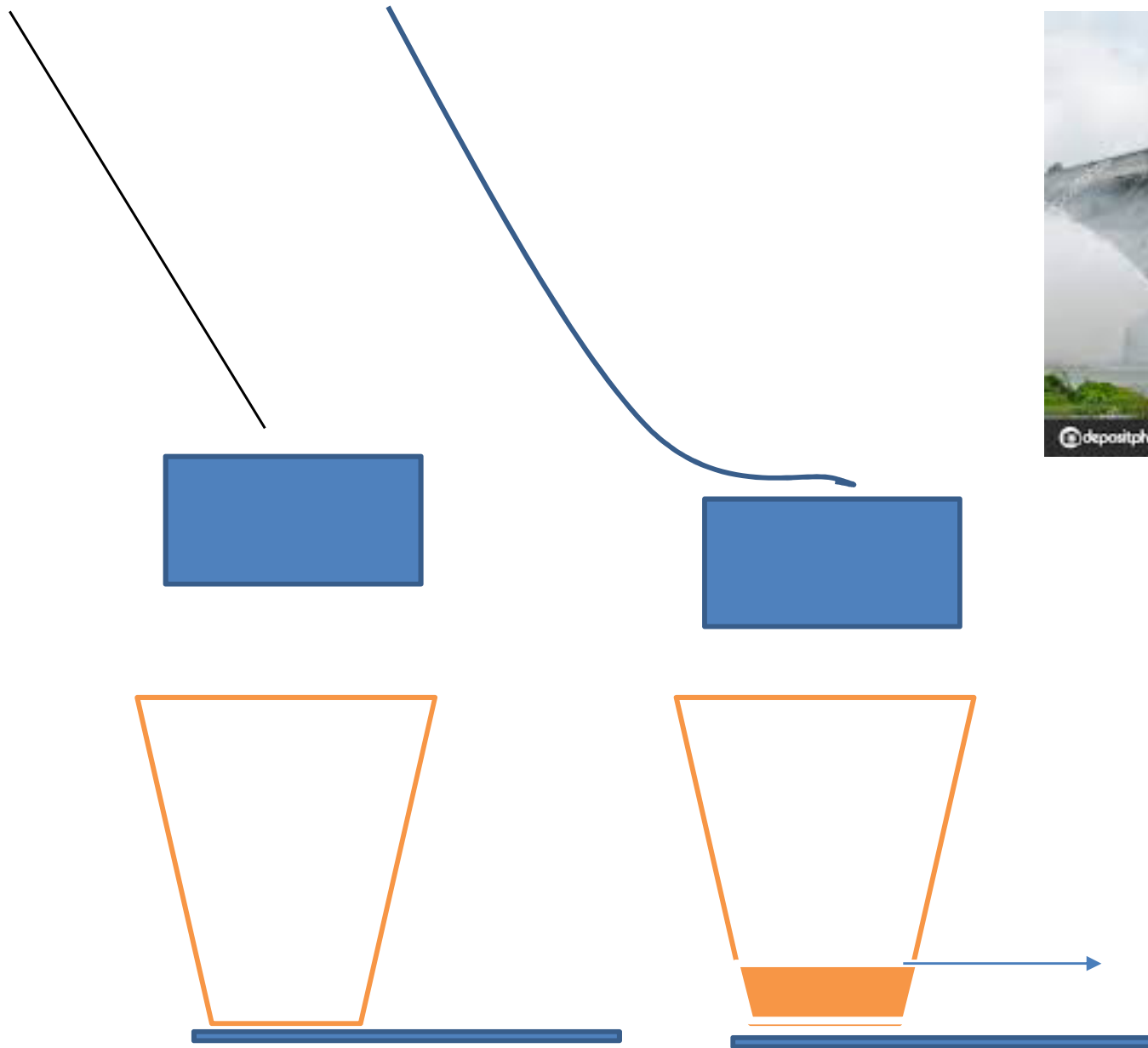
# WHY AUTOMATION?

- Minimises the workforce** < 1 worker per bag
- Minimises the processing time** 3-5 days
- Consistency in Processing Quality**
- Less human intervention & Microbes issues**
- Minimises infestation risk**
- No Jute bag Concept in process lines**
- Attempt towards Crates Free Plants / Silo based plants**
- Attempt towards above the ground process**
- Minimises interest on working capital**
- Easy maintenance of GMP**
- Move towards Continuous Process from Batch Process**

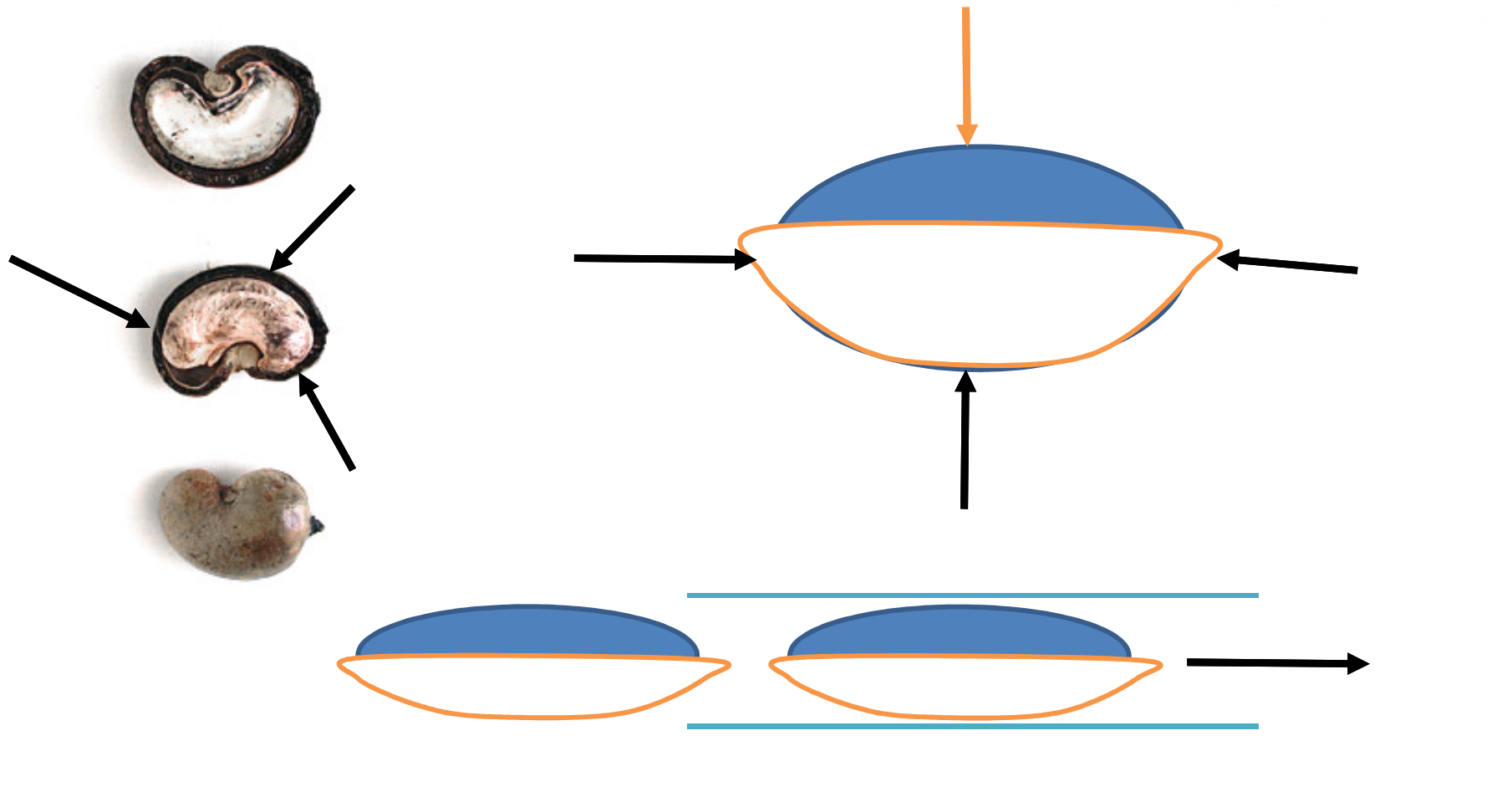
# PREREQUISITES FOR AUTOMATION

- **Size & Scale of the Plant.(Medium to large)**
- **Plant Location & Skill availability**
- **Effective spares management**
- **Effective After Sales Service**
- **Strong Technical & maintenance skill requirement**
- **Multiple parameters for multiple origins**
- **Medium to High Investment**
- **Aim to maintain Processing Cost lowest**
- **Linear and visual flow**
- **Manual Mode & Interface at every level**
- **Low Oil Contamination**

# KERNEL HANDLING TECHNIQUE



# KERNEL POSITIONING AT AUTO SCOOP / SORTERS



# e.g: SEMI AUTOMATION CONCEPT



RCN Cleaning-Holding-Cooking- Transfer Synchronisation



# e.g: SEMI AUTOMATION CONCEPT



Post Cooking- RCN Auto Drying & Sizing Synchronisation

***Most of the Processors use to get excited with mechanisation output for first 6-8 months and started complaining there after on the performance of the equipment!!!***      ***What is the reason?***

***“Skill Management to handle mechanical installation is quite different than manual processing!!!”***

- >Strong Technical Teams/ Management efforts required!***
- >We can't handle 450 HP mechanical Plants in the same way like 25 HP manual Plants!***
- >Preventive/Predictive/Creative Maintenances are critical!***

- Spend more time for Plant Design*
- Design the process line first & work on civil structural later*
- Go for turnkey solutions instead bits & pieces*
- Involve in key line/CAD drawings, visualise on 3D*
- Prefer rugged machinery than delicate equipment*
- Make sure use SS at all contact points*
- Ensure strong structural to align technology changes*
- Avoid Epoxy flooring for trolley movement*
- HACCP based designs & maximum linear flow concepts*
- Cross ventilation / low sweat*