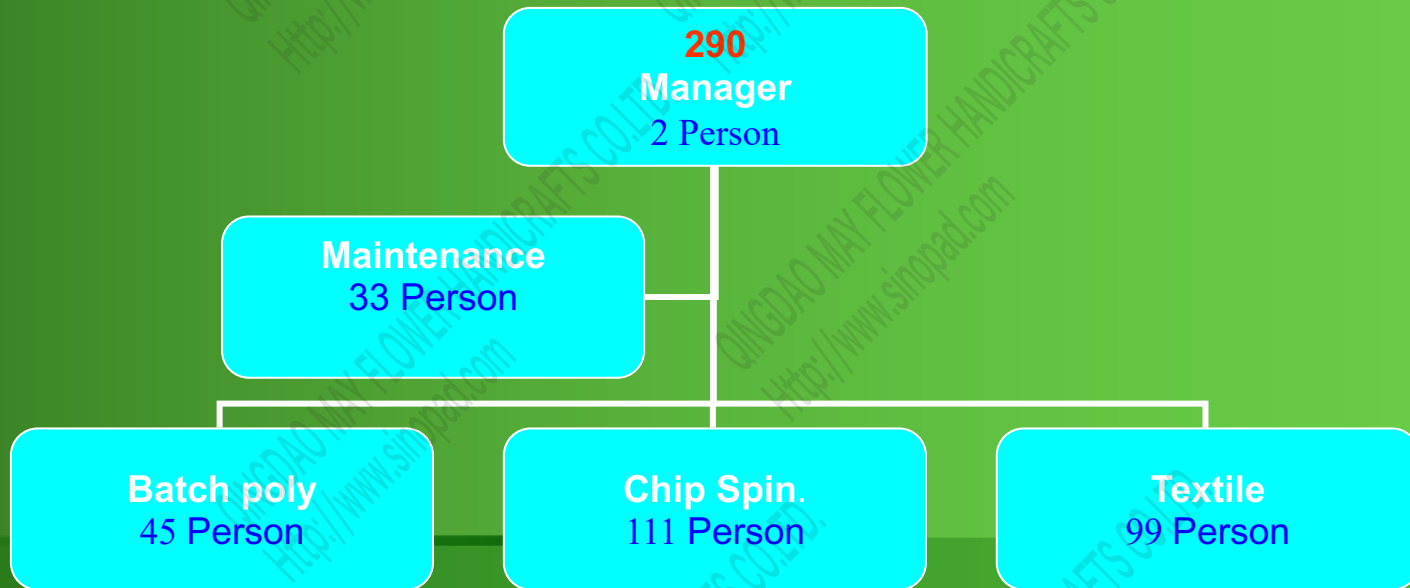


# **Recycling Polyester Introduction**

# Organization



# Recycle yarn

[ Recycle ]

POY  
DTY  
FDY

SD.BR.FD.CD

Bottle



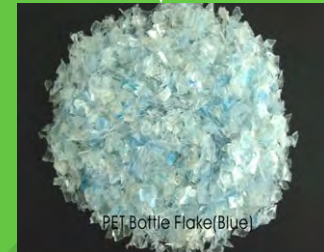
Recycle



Compound



Flakes



De-polymerization  
& Re-polymerization

Chip



POY



DTY



# PET Product

TPA

EG

Slurry

ES

AUTO

Staple Fiber

D.S.POY

CHIP

C.S.POY

FILM

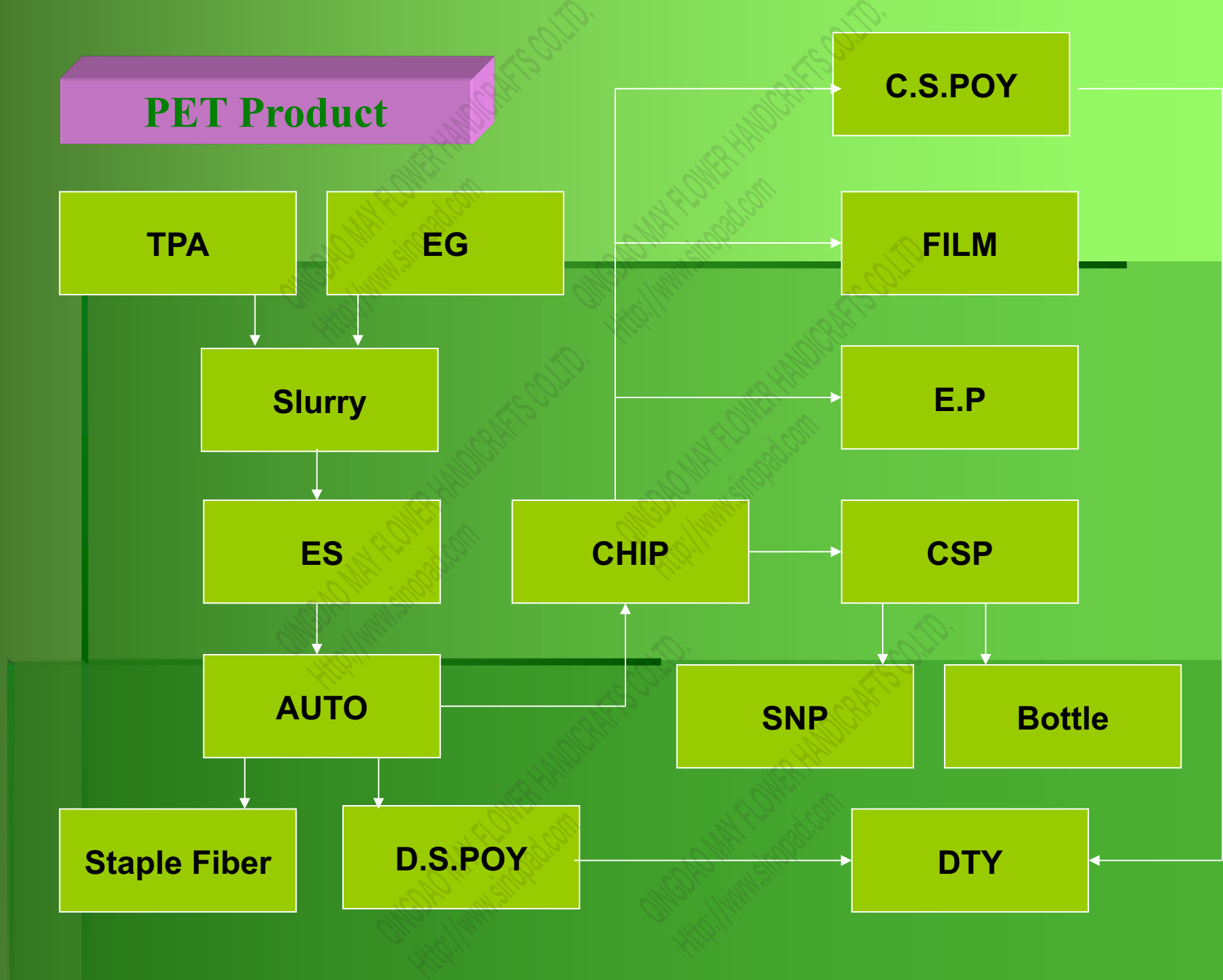
E.P

CSP

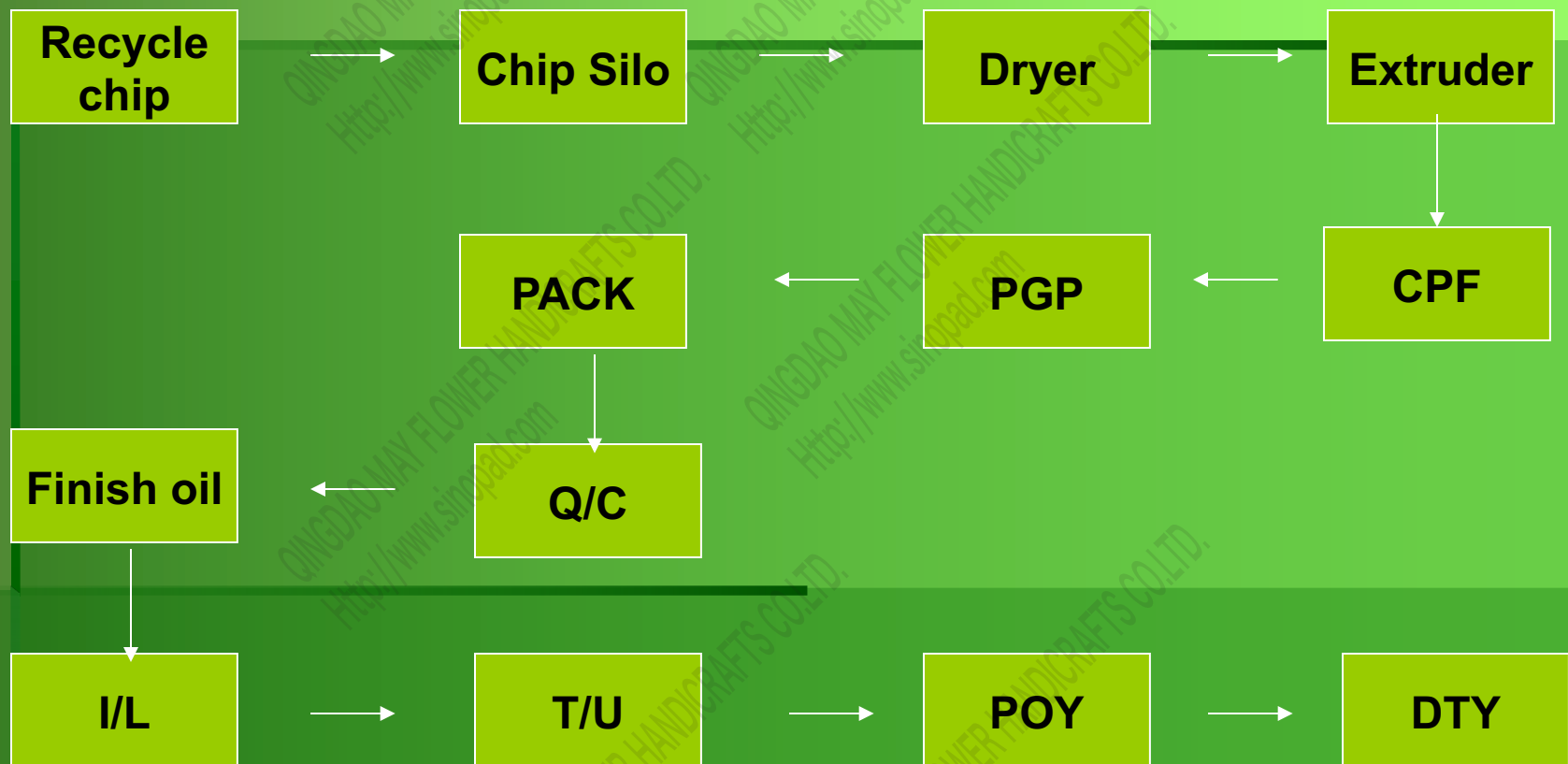
SNP

Bottle

DTY



# POY and DTY Producing Procedure



# POY Process

# Fiber Production of Procedure

- Drying system
- M.B Mixing system and Extruder system
- Spinning and Winding system
- Recycle - Quality Control Process

# Chip Introduce

## ■ Chip

Chip size                      2.0 ~ 3.0 (mm)  
M.B. %                        10~50%

## ■ Dryer

Wet chip contains H<sub>2</sub>O        800~1200 (ppm)  
Dried chip contains H<sub>2</sub>O    20 $\leq$  (ppm)

## ■ BR&SD Recycle POY

POY TiO<sub>2</sub>%            0~0.35%  
POY IV                0.635~0.645

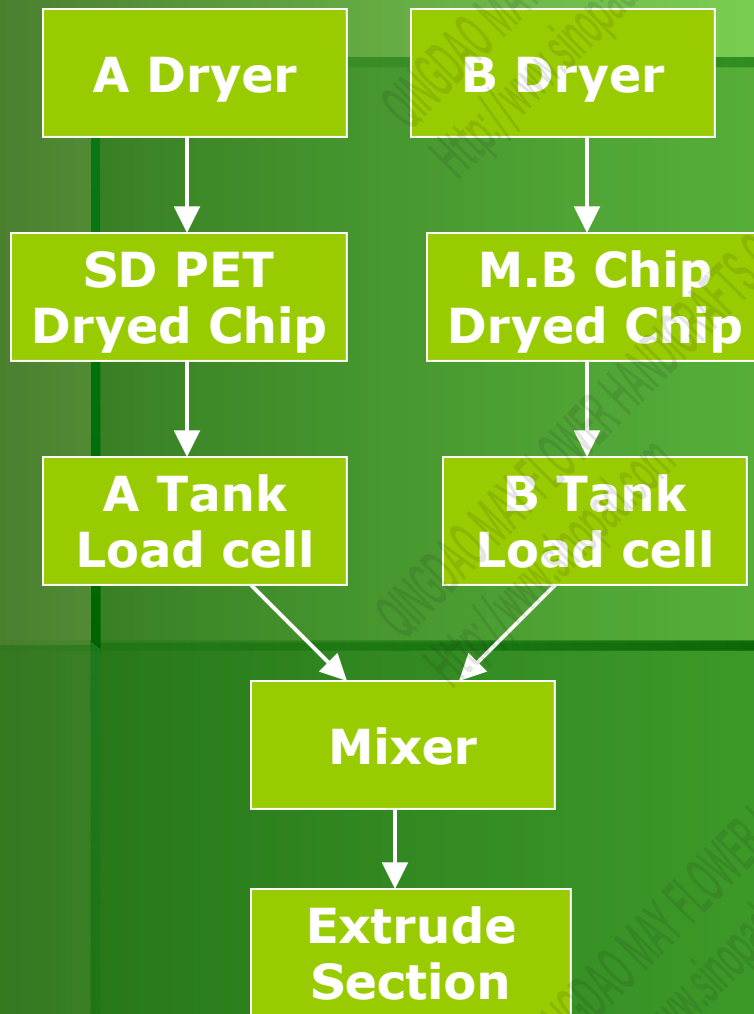
Recycle  
CHIP





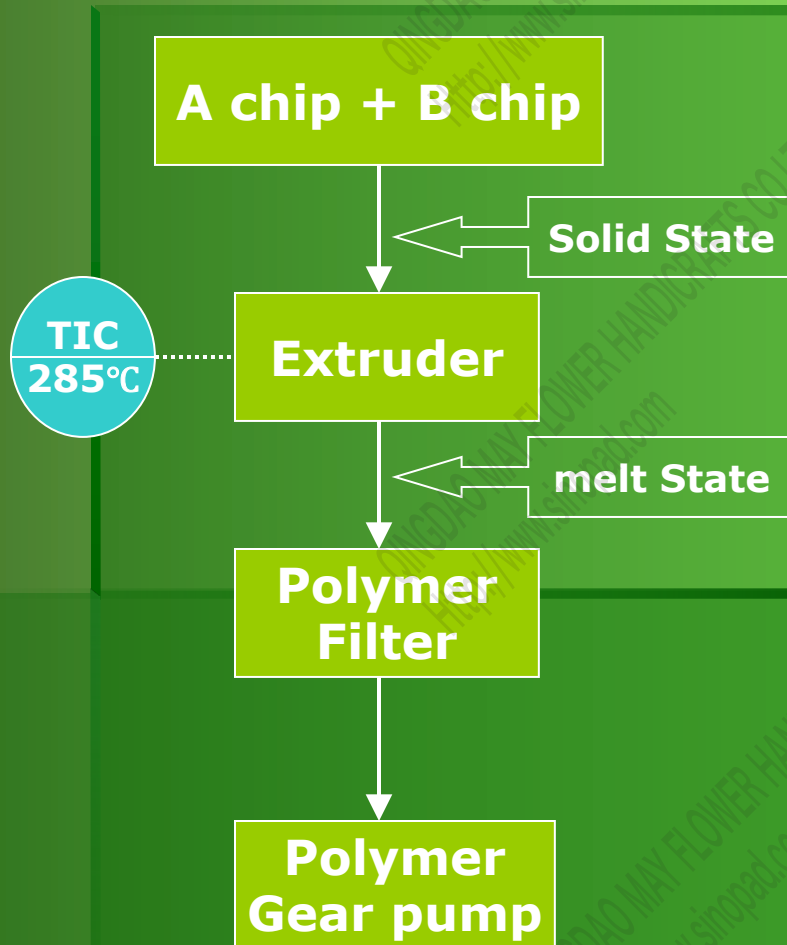
# Mixer System

- **Mixing system**



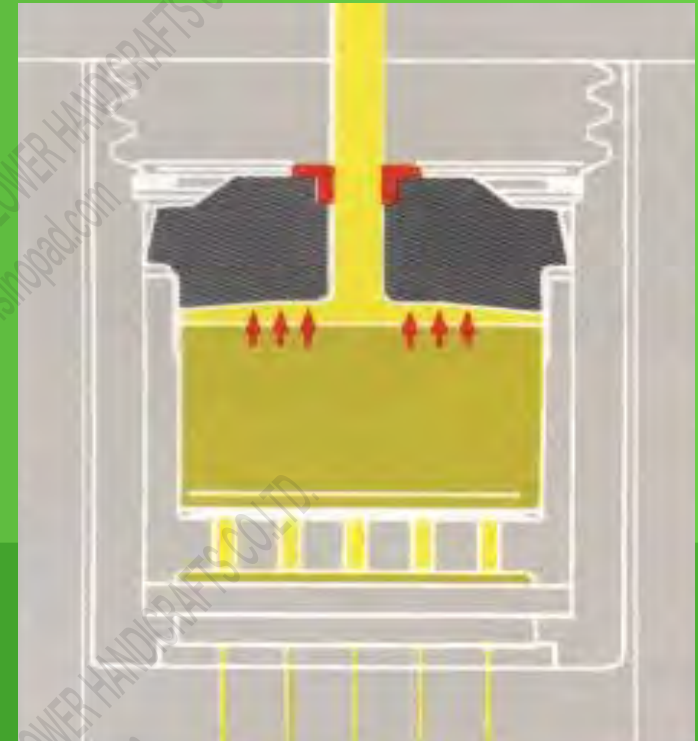
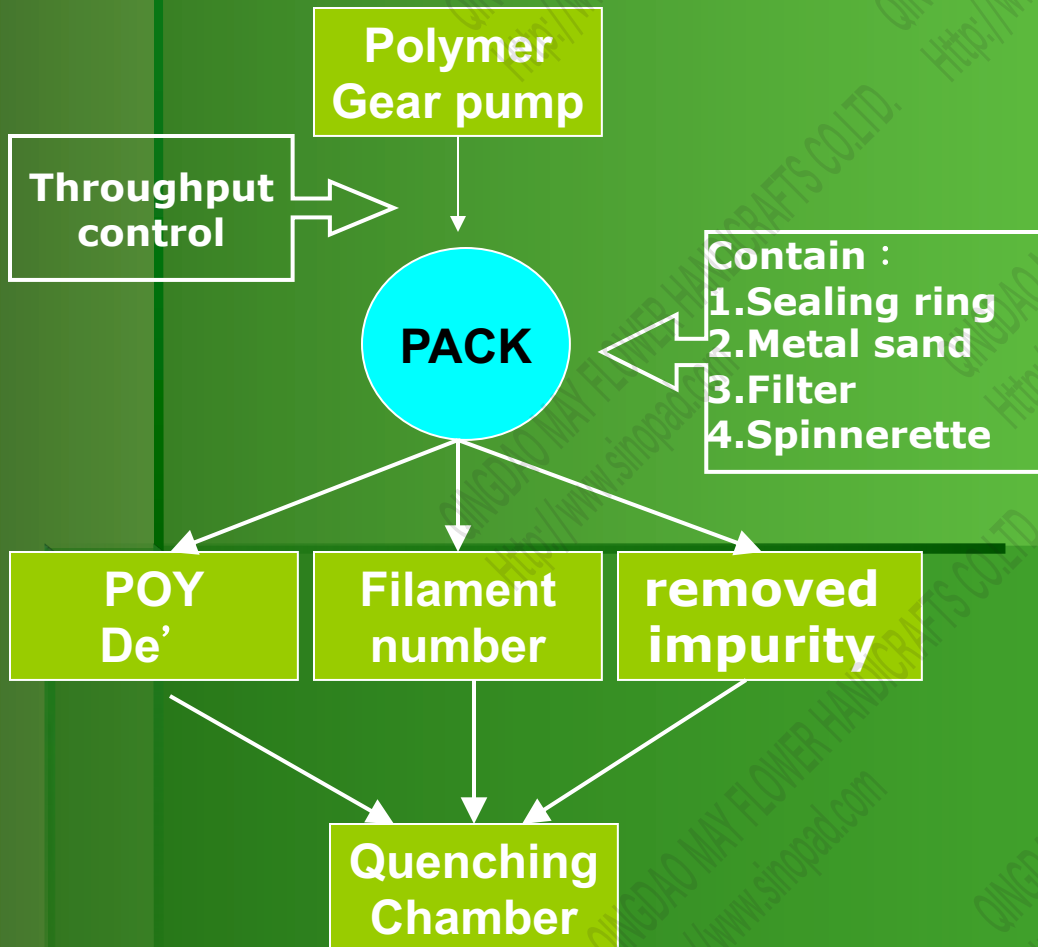
# Extrude System

## ■ Melting



# Spinning System

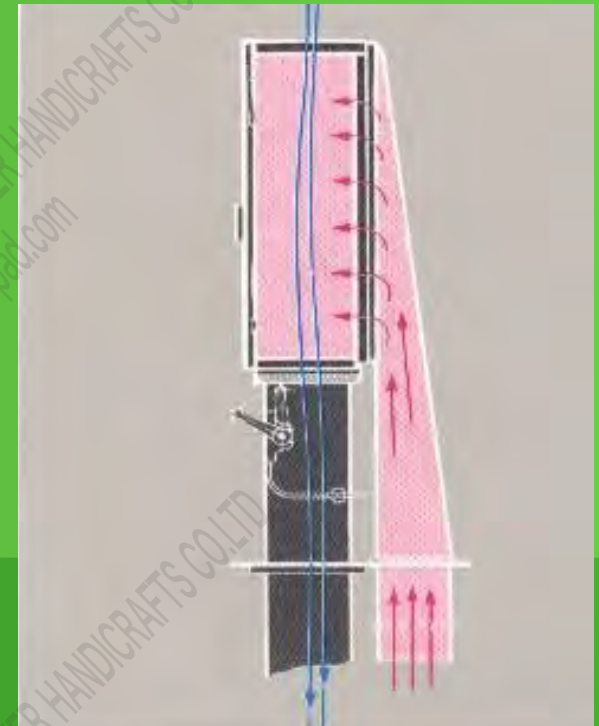
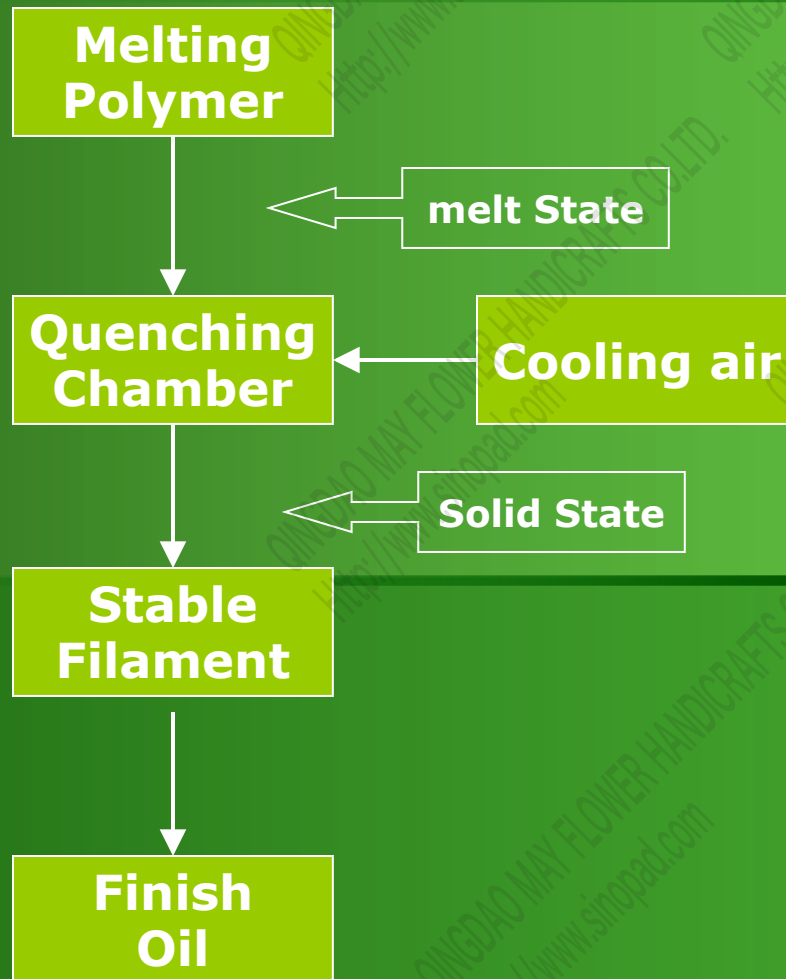
## ■ Spinning



**PACK Structure**

# Cooling System

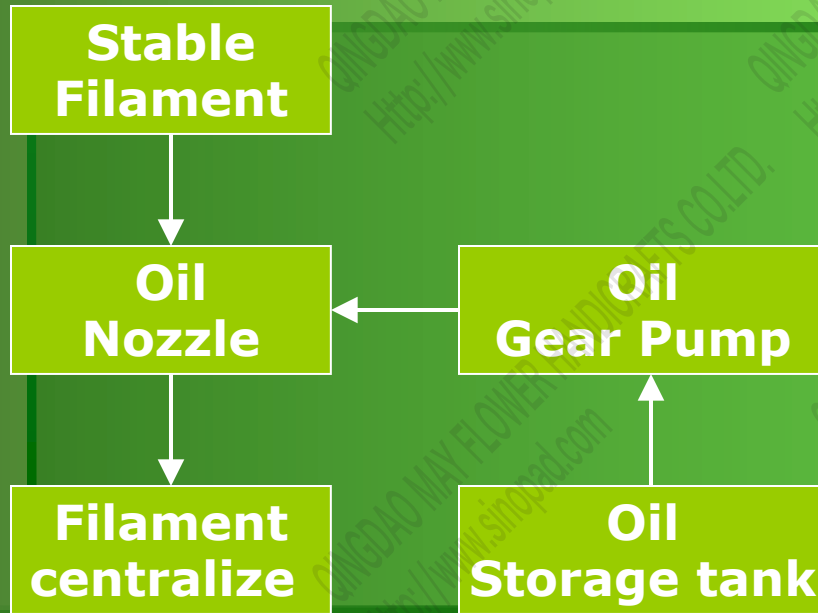
## ■ Quenching



Q/C Structure

# Finish Oiling

## ■ Finish Oiling



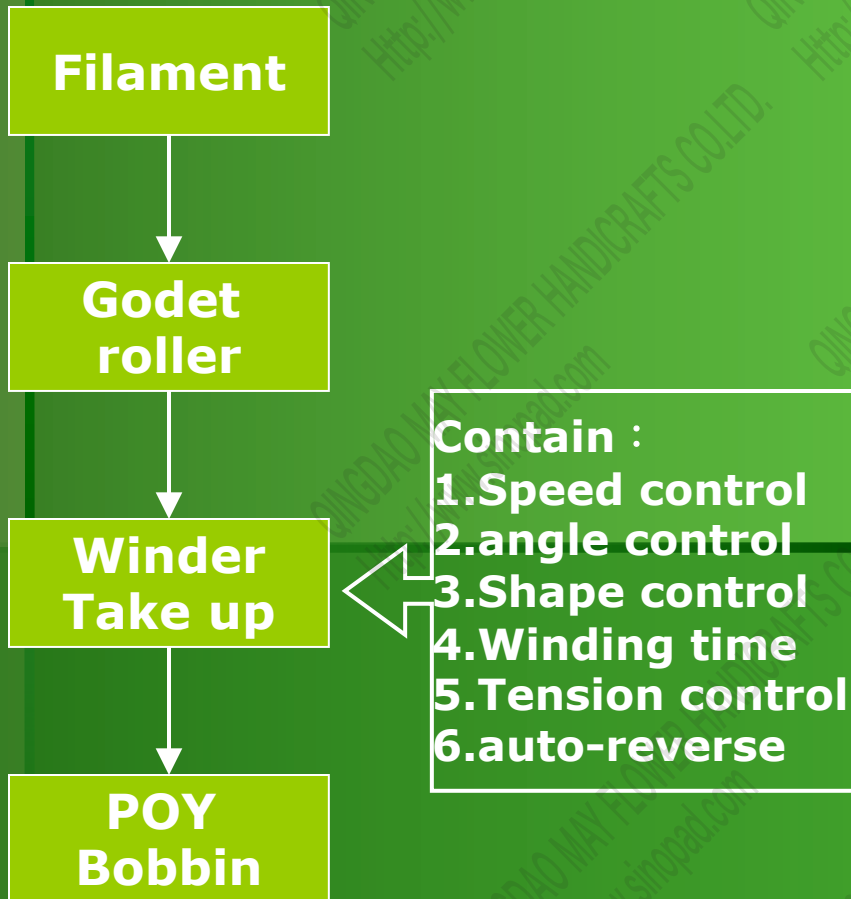
The oil benefit to filament :

1. Protect of the fibers surface
2. anti-static
3. Good for Draw Texturing



# Take Up System

## ■ Winding



# Quality control system

## ■ Inspection Station

Bobbin appearance check

- Color (people check)
- broken yarn
- cross yarn
- saddle and budge check
- De' and filament No. check
- paper tube check
- contamination check

## ■ Laboratory Analysis

- strength measurement
- elongation measurement
- tension measurement
- uster measurement
- oil pick up
- F/F, F/C, F/M friction properties
- IV (viscosity)
- color (instrument check)



# Quality Control

| D' e                     | g/D           | E%         | U%            | OPU        | IV         |
|--------------------------|---------------|------------|---------------|------------|------------|
| 110~130 d $\pm$ 1.5d     | $\pm 3\sigma$ | $\pm 10\%$ | $X + 3\sigma$ | $\pm 0.07$ | $\pm 0.01$ |
| 220d $\uparrow \pm 2.5d$ | $\pm 3\sigma$ | $\pm 10\%$ | $X + 3\sigma$ | $\pm 0.07$ | $\pm 0.01$ |

| 120/72   | D' e | g/D  | E%  | U%   | F70 | OPU  | IV    |
|----------|------|------|-----|------|-----|------|-------|
| Stantard | 122  | 2.80 | 134 | 0.72 | 142 | 0.41 | 0.640 |
|          |      |      |     |      |     |      |       |
| 250/48   | D' e | g/D  | E%  | U%   | F70 | OPU  | IV    |
| Stantard | 247  | 2.69 | 135 | 0.55 | 272 | 0.44 | 0.640 |



# Reference

# Process details

Recycled plastic bottles are used as raw materials, which are crushed, cleaned, decomposed, polymerized, granulated and melt spinning into green and environment-friendly fibers

- Grade yarn is regenerated for direct spinning.



# About The Discharge CO<sub>2</sub> Data

- Discharge CO<sub>2</sub> reference data :

| Item        | Use    | Discharge CO <sub>2</sub> |
|-------------|--------|---------------------------|
| Electricity | 1Kwh   | 0.638 kg                  |
| Heavy Oil   | 1Liter | 2.950 kg                  |
| Water       | 1 Ton  | 0.194 kg                  |

- Recycle Bottle to Flake 1kg      Discharge CO<sub>2</sub> 202 g/kg
- Flake to Chip 1kg      Discharge CO<sub>2</sub> 503 g/kg  
Total 705 g/kg
- Product 1kg Pure PET      Discharge CO<sub>2</sub> 3720g/kg
- Recycle procedure can reduce 81% CO<sub>2</sub>



**The End**

***Communication  
time***

