



since 1991

# WORLDRO

WORLDRO SUK SAN INDUSTRY

P.E.T STAPLE FIBER PLANT

## *The world leader of Recycling fiber*

We have manufactured several recycling plants using PET wastes as main raw material. Final products manufactured in our plants are widely used in the textile sector, which is a necessary requisite in our daily lives. Durational growth with a drive to further develop technology is our priority. We devote our efforts in the recycling industry by contributing to use resources already available. Our ultimate goal is to conserve the environment by carrying out our corporate social responsibility.



Chairman  
Seung-Hyeong Cho

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- 2019**
  - Award Certificate of Daegu Regional Environmental Office.
  - Ministry of Trade, Industry and Energy commendation.
- 2018**
  - Best environmental Company Selected by KEITI
  - Technology Innovation Acquisition
- 2017**
  - Multi extruding System development
- 2014**
  - Drying-pellet equipment & Compactor Pellet
- 2013**
  - Worldro NIT Registration
- 2012**
  - Changed to an incorporation as WORLDRO CO., LTD.
  - Relocating to own factory (Address: 838-86, GumDan-Dong, Buk-Gu, Daegu, Korea)
  - Designated as Venture Business Company by Small & medium Business Cooperation
  - Granted CE certification (Plastic/Rubber Crusher)
  - Designated as Superior Exporting Firm
  - Patent No. 10-1147504: Can Winding Device for SYNTHETIC RESINS TEXTILE
  - Certified Corporate R&D Center by Korea Industrial Technology Association
  - Designated as Enterprise specializing in parts materials

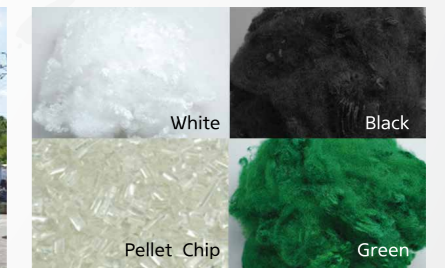
**HEAD OFFICE  
R&D CENTER**



**PLANT**



- 2011**
  - Registration of KITA (Korea International Trade Association)
- 2009**
  - Opening website www.suksanit.com
  - Granted ISO 9001:2008 certification
  - Name changed to SUK SAN INDUSTRY CO.
- 2008**
  - Developing the new PSF line (1200 ton/month)
- 2006**
  - Technology Contract with KOLON Company
- 2001**
  - Technology Contract with RIST (Research Institute of Industrial Science & Technology) in POSCO
- 1997**
  - Registration of Utility Model No. 13707-13708
- 1994**
  - Exporting to Indonesia - PSF line (400 ton/month)
- 1991**
  - Establishing SUKSAN MACHINERY IND.



PRINCE



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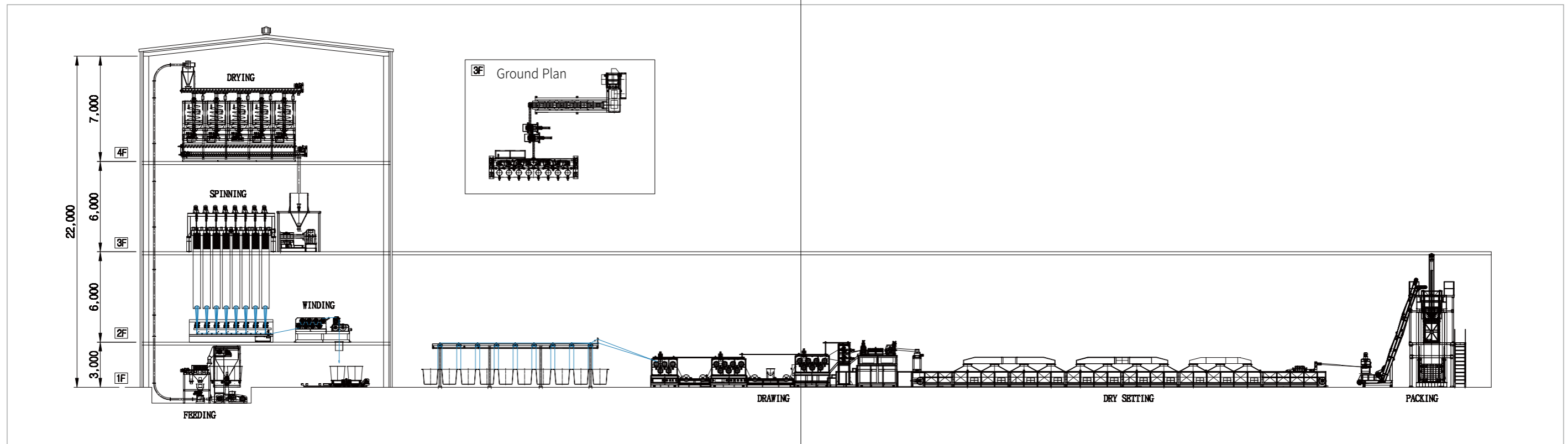


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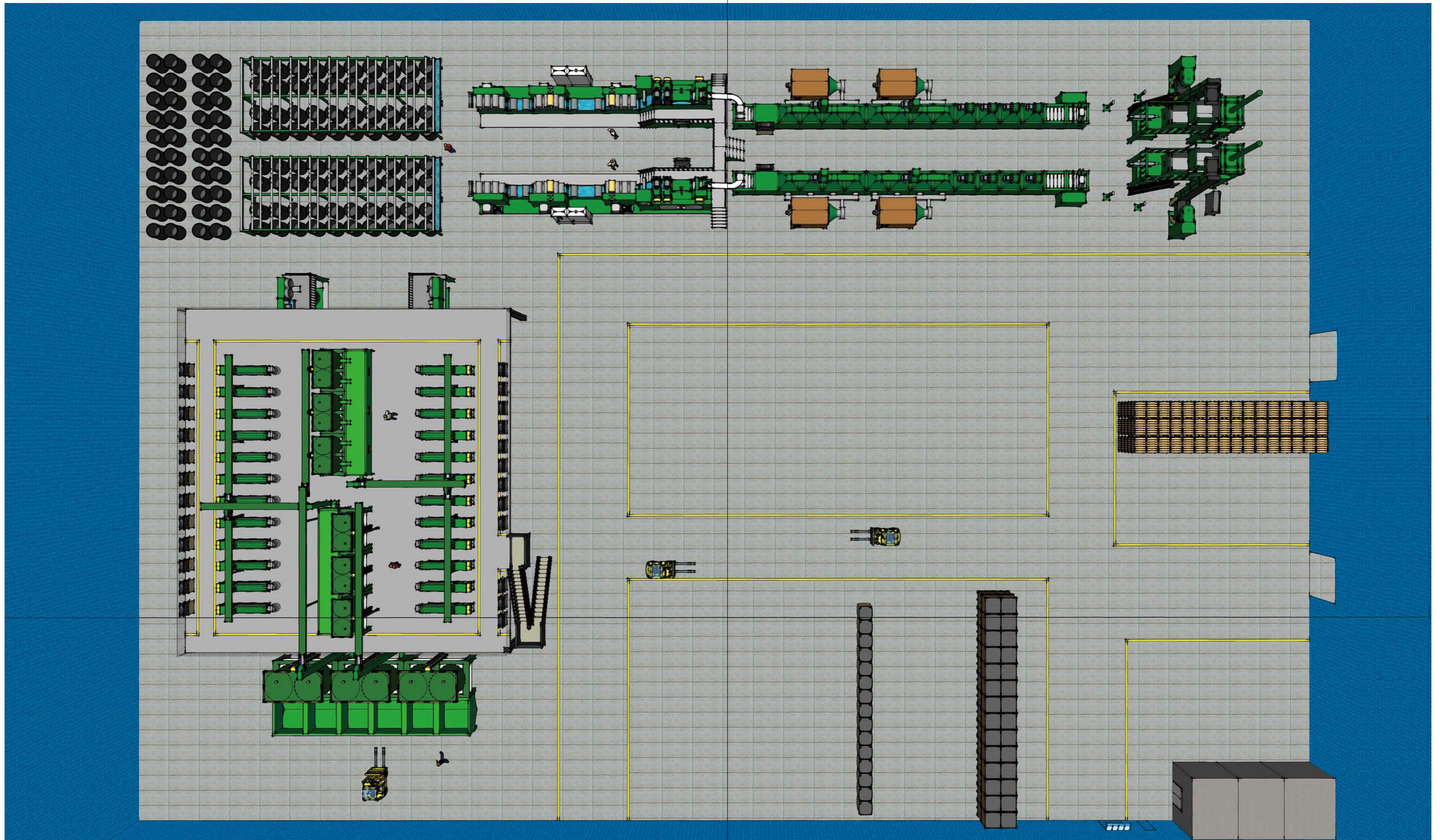
# Production Process



## LAY-OUT



# Product Drawing



## Feeding Part

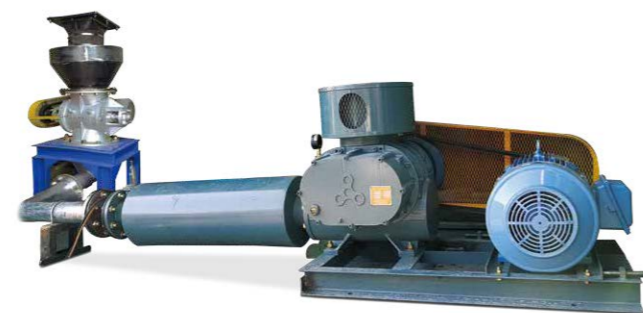
This system is to weigh and to mix raw-material according to the set mixing ratio.  
The mixed raw-material is transferred by blower or bucket elevator, and it features accurate feeding with short time.

### Material Feeding System



■ Specification

Storage Tank	500 ~ 2000kg
Feeding Screw	Ø205 x 4000 ~ 9000L
Bucket Elevator	610 x 300 x 4000 ~ 10000H



■ Specification

Rotary Valve	200A ~ 300A
Roots Blower	13m <sup>3</sup> / min, 6000mmAq

## Drying Part

The oil heating drying system has high efficiency and energy saving.  
This system has been developed by WORLDRO

### Screw Dryer



■ Specification

Capacity	400 ~ 700kg
Motor	15 ~ 22.5kw
Reducer	Helical Gear Type
Heating	Oil heating / Band heating

### Dehumidify Dryer (500 ~ 1000kg/hr)



## Spinning Part

The raw-material is spun through spinneret of extruder.  
The SOLID & HOLLOW fibers can be produced and the denier range is 1.5 to 40D.

### Extruder



■ Specification

Capacity	720 ~ 860kg / hr
Screw	Ø100 ~ 180
Motor	110 ~ 225kw

### Non Stop Filter Changer



■ Specification

Type	3 Filter
Filter Size	Ø160 x 250L
Filter	#60 ~ 100
Operation	Hydraulic Cylinder

### Spinning Type



[ Single Head Extruder ]

■ Specification

Capacity	80 ~ 100kg / hr
Motor	15 ~ 22.5kw
Barrel Screw	Ø70 ~ 80
Nozzle	Ø 300 ~ 400



[ Multi Head ]

■ Specification

Capacity	90 ~ 108kg / hr - 1pos
Motor Type	G / M 2.25kw
Metering Pump	60 ~ 70CC
Nozzle	Ø300 ~ 400



[ Spin Beam ]

■ Specification

Capacity	90 ~ 108kg / hr - 1pos
Motor Type	G / M 2.25kw
Metering Pump	60 ~ 70CC
Nozzle	Ø 266 ~ 328

## Cooling Chamber



### ■ Specification

Type	Stainless Steel Mesh
Size	Ø330 x Ø590 x 1000H
Stroke	200 ~ 500st
Operation	Air Cylinder

## Air Handling Unit



### ■ Specification

Working Temperature	18 ~ 24°C
Wind Speed	0.5 ~ 10m / sec

## Cooler



### ■ Specification

Capacity	15 ~ 100RT
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## Winding Part

The line consists of Draw-off, Capstan roller, Nip reel and Can traverser.

Easy cooling, No tangle and Anti-corrosion of Stainless steel.

These rollers and motors are designed to provide ease of installation and allow ease of maintenance and to minimize Mean Time To Repair.

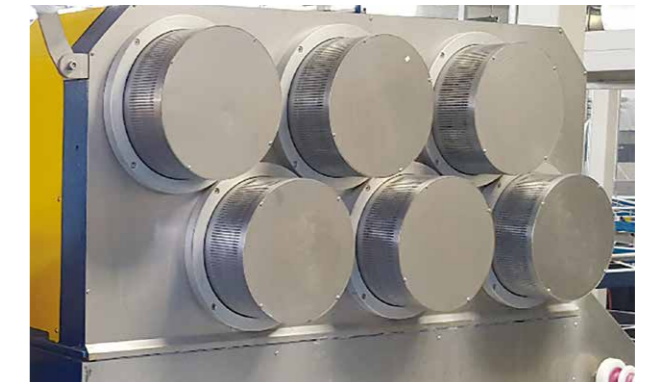
### Draw off



### ■ Specification

Roller	Ø165 x 250
Frame	Stainless Steel
Pitch	650 ~ 1500

### Capstan Roller



### ■ Specification

Roller	Ø318 x 150
Motor	1.5 ~ 2.25kw
Type	Speed : 500 ~ 1200m / min

### Nip Reel



### ■ Specification

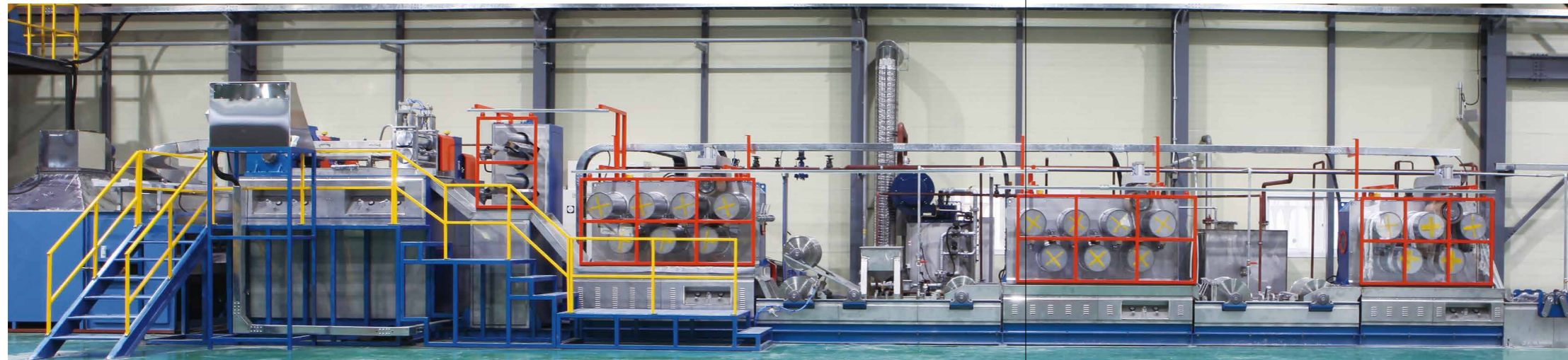
Speed	500 ~ 1200m / min
Motor	3.75 ~ 5.63kw

### SunFlower Wheel



## Drawing Part

The winded thread is collected as tow after creel stand and the tow is drawn and crimped. The capacity is 20 ~ 60ton per day in non-stop operation. Undrawn mechanism, no tangle, safety cover for operators,easy operation and anti-corrosion of stainless steel.



### Stretcher

■ Specification

Roller	Ø350 x 600 ~ 700 L
Motor	15 ~ 56.3kw
Capacity	1.5 ~ 3TON / hr

### Crimper

■ Specification

Roller	Ø200 x W150 ~ 300
Material	SUS420 J2
Motor	22.5 ~ 37.5kw



## Dry Setting Part

The drawn tow is set and dried through 3 parts of the machine.  
The drying performance is excellent for producing siliconized fiber and hollow fiber,  
and fuel-consumption is economic.

### Dry Setting M/C

■ Specification

Capacity	1.5 ~ 3TON / hr
Type	Hot Air / Steam
Motor	3.75 ~ 7.5kw
Punching Plate	W900, 1200, 1500



## Packing Part

The cut fiber is weighed and packed by bale. The weighing range is 200 ~ 300kg per bale  
and capacity is 20 ~ 60ton per day. Several safety equipments, low-noise operation and  
PLC control.

### Baler



[ Single Baler ]



[ Cutting M/C ]



[ Dual Baler ]

■ Specification

Capacity	200 ~ 300kg / Bale
Motor	37.5 ~ 75kw
Hydraulic cyl	Ø300 x 3500 ~ 4500st
Type	Single / Dual

This machine cuts dried tow at the range of 8 ~ 100mm. Good performance on  
miss-cut, easy replacing scabbard, tungsten blade, MC roller and safe foothold switch.

# PET Bottle Flake Line

Float/Sink Tank



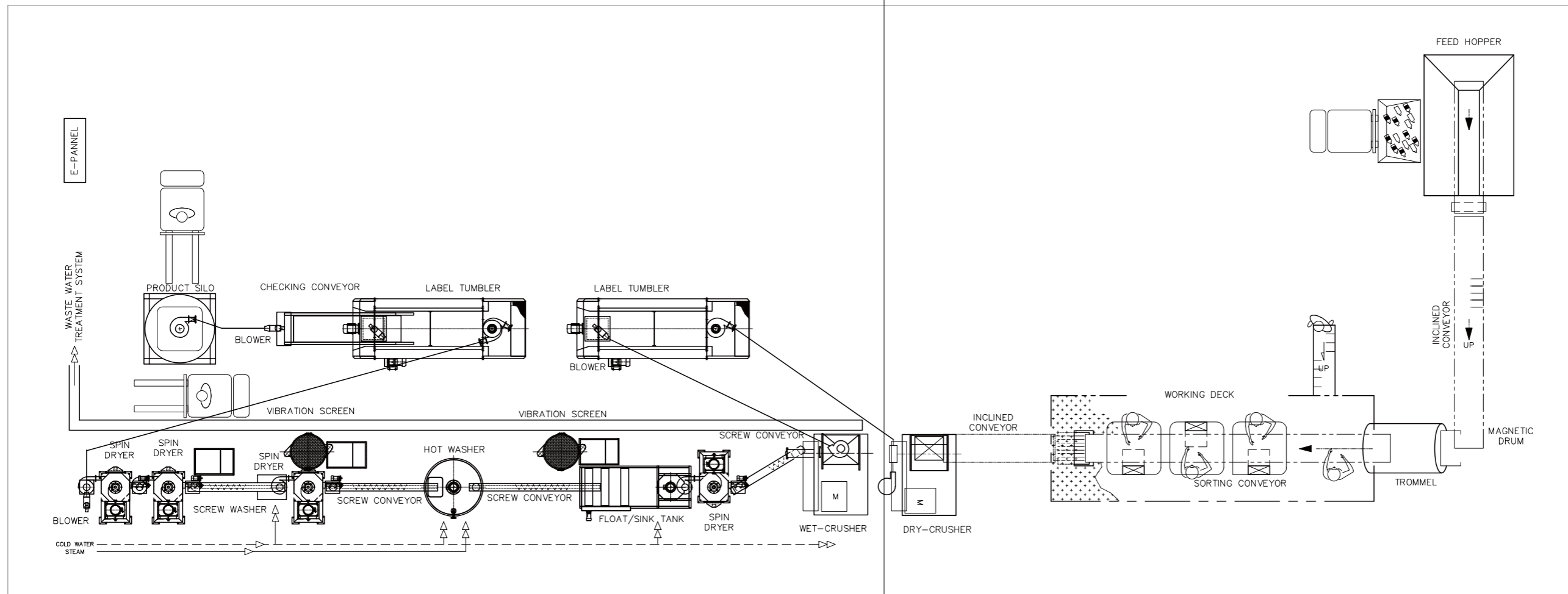
Spin Dryer



Crusher



Tumbler



Bottle Flake

## Pellet Chip Line



PELLET CHIPS are produced with recycling PET bottle-flake powder, popcorn chip, waste-yarn, etc and are used as the sub raw-material in RPSF line for regenerated PET staple fiber with quality.

■ Specification

Capacity	300 ~ 500kg / hr
Material	PET, PP, PE
Type	Compactor / Dryer

[ Pelletizer M/C ]



Pellet Chip



## Popcorn Chip Line (Super Mixer)

[ Chopping M/C ]



Fabric scrap, film sheet, non-woven scrap and yarn wastes are chopped into small pieces.  
The capacity is 1000 ~ 2000kg per hour and power is 22kw.

The available raw-material is fabric scrap, film sheet, non-woven scrap, yarn wastes and other wastes.  
They are recycled as popcorn chip. The motor of machine is 187.5 ~ 300kw

[ Super Mixer ]

■ Specification

Capacity	300 ~ 500kg / hr
Disk	750 / 850
Motor	187.5 ~ 300kw



Popcorn Chip

## Extra Product

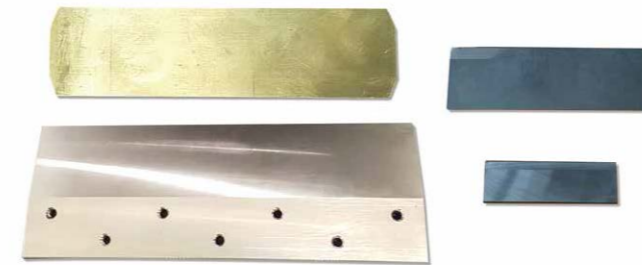
### Pilot Line



### Sheet Line



### Knife



Bronze Side Plate

Tungsten Knife

### Fiber Cutter



#### ■ Specification

Cutting Size	25 / 51, 32 / 64 , 38 / 76, 8 ~ 100mm
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### Spinning Nozzle



#### ■ Specification

Type	Solid / Hollow
Denier Range	1.5 ~ 40D

### Hydraulic Unit



#### ■ Specification

Type	Radiator Oil Cooler
Tank	100 ~ 3000ℓ
Motor	7.5 ~ 75kw

### Nozzle Braker



## Extra Product

Preheater



Electric Furnace



Boiler



Ultrasonic Cleaning M/C



Hydraulic Cutting M/C



Crusher



## Achievement

CLIENT	Seowoo Material
COUNTRY	KOREA
REMARKS	P.S.F (Multihead)



CLIENT	SAMSUNG FIBER
COUNTRY	KOREA
REMARKS	P.S.F (Multihead)



# Achievement



CLIENT	Stein Group (IFL / USI)
COUNTRY	USA
REMARKS	P.S.F (Single head)

CLIENT	CUSTOM SYNTHETIC FIBER
COUNTRY	USA
REMARKS	P.S.F (Single head)



CLIENT	JF
COUNTRY	KOREA
REMARKS	P.S.F (Multihead)



CLIENT	DAE JAE
COUNTRY	KOREA
REMARKS	P.S.F (Multihead)



CLIENT	Dae Yang
COUNTRY	KOREA
REMARKS	P.S.F (Multihead)

CLIENT	Dong Ho
COUNTRY	KOREA
REMARKS	P.S.F (Spin Beam)



# WORLDRO Certification Status

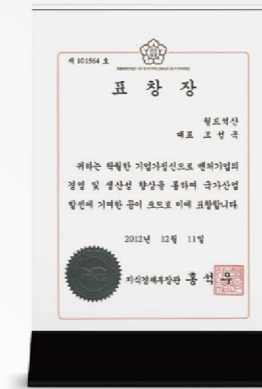
“ We will use PET waste to produce **Polyester staple fibers!** ”

## Registration of Design

- Parts and materials company specializing in corporate ..... Korea. Minister of Knowledge Economy
- R&D department Certificate ..... KIAT
- Promising export company ..... Small and Medium Business Administratoin
- Korea & America FTA Selected company best practices
- Korea Textile Machinery Association Member
- Korea Textile Machinery Research Institute Development of texltei machinery Recommended Company
- Yeungnam college of science & Technology Cooperative Family Company
- The korea international Trade Association Member ..... No. 13133483
- Crimper in recycled polyester staple fiber Registration of desgins & Filter for Extruder Head Registration of designs ..... No. 13707, 13871 Korea Patent and Trademark Office
- Can Winder in recycled polyester staple fiber Patent ..... No. 10-1147504, Korea Patent and Trademark Office
- Europe CE Certificate ..... Plastic / Rubber Crusher
- Export Trade of the Day Award ..... R. O KOREA President



Presidential Citation



Minister of Knowledge Economy Citation



Confirmation of Inno-Biz



Certificate of Leading Environmental Company



certificate



certificate



Corporate R&D Center



Korea International Trade Association membership card



Quality Management System Certificate -ISO 9001:2015



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