1993 ~ 2014
General seed production automation facilities

2015 ~ Future
Quality seedling production automation facilities

Open Paper pots laboratory
- Always welcome the visit of farming person, nursery grower, Government official, university official
- Operate permanent exhibition, promotion hall, consulting room etc.

Overseas affiliated companies

Facility horticulture robot specialized company

Quality seedling
Production automation facilities
AUTO SEEDING SYSTEM & GRAFTING ROBOT

Vegitables, onions, flowers, forest trees, specialty crops

Future Vision

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Tel (055) 314-5858  Fax (055) 314-5656
E-mail helpersys@hanmail.net  Website www.hr24.co.kr
Automatic Seeding System

“Quality raising of seedling lies in uniform raising of seedling.”

- Secure a high productivity of 400 sheets per hour (based on 128 holes)
- Precise seeding applying control apparatus of seed sowing
- Completely prepared a prevention function of clogging of seeding needle
- Fill up uniform bed soil of the method of pressing, tamping and cutting
- Installed equipment of controlling dust scattering of covering soil

<table>
<thead>
<tr>
<th>Description</th>
<th>Dimension (mm)</th>
<th>Weight (kg)</th>
<th>Required power (W)</th>
<th>Compressed air</th>
<th>Remarks</th>
<th>Use water</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mixer of Medium / MX-1000L</td>
<td>L 1,800, W 1,450, H 1,800</td>
<td>1,540</td>
<td>7,400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Filler of Medium / FL-300W</td>
<td>L 1,800, W 2,400, H 1,300</td>
<td>450</td>
<td>180, 375</td>
<td>6kg/cm²</td>
<td>vibrating</td>
<td></td>
</tr>
<tr>
<td>3. Dibbler and seeder / SD-900W</td>
<td>L 1,400, W 790, H 920</td>
<td>150</td>
<td>40</td>
<td>6kg/cm²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Top dresser / CV-900W</td>
<td>L 900, W 790, H 1,000</td>
<td>150</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Irrigator / IR-900W</td>
<td>L 900, W 790, H 1,000</td>
<td>150</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Manifold</td>
<td>L 52, W 50, H 72</td>
<td>105</td>
<td>128, 162</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Compressor</td>
<td></td>
<td></td>
<td></td>
<td>Three-phase 1HP (Option)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

03. Dibbler and seeder / SD-900W
- Use & features
  If gauge of nozzle is changed, it can seed from the smallest tobacco to the biggest watermelon in various shapes and dimensions widely. As it can produce 400 sheets (based on 128 holes) per hour continuously, it guarantees high productivity. It enables precise seeding to be made by suppressing the position movement by seed bouncing at the maximum in the close access method on medium of drop guide.
- Effect of use
  If manpower does suppression for making seeding seat of cell unit, the depth and shape are not so even that it is the cause of uneven seeding. What seeds fine by manpower is the inefficiency that can be beyond expression. Only this can start raising of seeding.

05. Irrigator / IR-900W
- Use & features
  It implements fine irrigation work on the covered surface. It is necessary to irrigate enough in the range of covering soils not washing away. It is made with stainless material so that it can secure durability for the long-term use.
- Effect of use
  As it is not possible to irrigate while inside germination room (72 hours), it is necessary to irrigate enough before going into germination room. As covering soils are specially light material, it can be washed away when irrigating.
Smart Seeding System-500

- 2 times speed against the existing automatic seeding system/labor saving/clean-up system
- Developed as optimal model for specially raising onion seedling.

01. Tray Feeder TF-900
- A tray of packing 100 sheets is supplied, each sheet is divided at lower part.
- Automatically adjust supply speed, tray distance

02. Smart Filler SF-500
- Expansion function of medium supply hopper 300ℓ (+ 500ℓ)
- Excess medium recovery function

03. Clean Conveyor CC-500
- Brushing the surface of medium filling
- Shake down excess medium of edge part
- Special technology of maintaining the shape of dibbling result

04. Double Seeder DS-500
- Share seeding function of odd number row, even number row
- Only one seeder works, another seeder for spare purpose

05-1, 05-2. Seed Feeding Device SS-F15W
- Adjust supply speed in proportion to the speed of seeding line
- Raise precision by maintaining optimal waiting quantities of seeding tray

06. Clean Top Dresser CD-500
- Function of preventing flying of covering soil, dust
- Safely recovery excess covering soils

07. Clean Irrigator CI-500
- Function of preventing flying of excess irrigated water
- Maintain clean environment of collecting waste water

08. Tray Stacker TS-900
- Block 5 sheets tray of seeding completion(setting function)
- Form 1 block of 5 sheets, distribution margin

09. Finish Conveyor FC-500
- Distribution waiting space by block unit
- Final clean-up space for wastes

10. Air Compressor : 10HP

Required power (1P 220V, 3P 380V) Total: 8.4 kW

<table>
<thead>
<tr>
<th>Description</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>06</th>
<th>07</th>
<th>08</th>
<th>09</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart system</td>
<td>Tray feeder</td>
<td>Smart filler</td>
<td>Clean conveyor</td>
<td>Double seeder</td>
<td>Seed Feeding Device</td>
<td>Clean top dresser</td>
<td>Clean irrigator</td>
<td>Tray stacker</td>
<td>Finish conveyor</td>
<td>Compressor</td>
</tr>
<tr>
<td>Required power</td>
<td>1P 40W</td>
<td>3P 555W</td>
<td>1P 160W</td>
<td>1P 40W</td>
<td>1P 30W</td>
<td>1P 65W</td>
<td>1P 40W</td>
<td>1P 40W</td>
<td>1P 40W</td>
<td>3P 7.4W</td>
</tr>
<tr>
<td>Compressor</td>
<td>10HP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Convenient Seeder**
*Model name: SD-1800W*

- Dibbling + Seeding + Covering soil function
- Possible to connect & install water irrigator on the front side, on the rear side of medium filler in future.
- Manifold: Supply customer specified 1 piece set

**Stepping Seeder**
*Model name: SD-1200S*

- Secure private seeding by standstill seeding
- Function of seeding of multiple seeds in a cell
- Able to seed uniformly even on any kind of seeding plate
- Work by setting the distance between cells, not by optical sensor
- Stepping dibbler is separately made as a sister product.

**Private Seeder**
*Model name: SD-600*

- Private seeding by cooperative unit or farmhouse unit (lettuce, onion, flower etc)
- Easy to carry out moving tour work due to an ultra-light weight(30kg)
- Manifold: Supply customer-specified 1 piece set

**Large Seed Seeder**
*Model name: SD-1212*

- Stock seeding for grafting preparation like pumpkin, gourd.
- Possible to installin the middle of the existing seeding system line
- Seeding of seed soaked is recommended after removing water.
- Seeding forest trees seed such as landscape plants, economic trees etc.
Medium Pressing Filler for Forest Nursery

Model name: PF-400

![Image of Medium Pressing Filler for Forest Nursery]

**Applicable forestry nursery tray**

<table>
<thead>
<tr>
<th>Description</th>
<th>24holes(L) tray</th>
<th>24holes(H) tray</th>
<th>28holes tray</th>
<th>40holes tray</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tray</strong></td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td><strong>Use</strong></td>
<td>Larch, acorn, honey oak</td>
<td>Cypress, Thuja</td>
<td>Pine tree, Korean nut pine</td>
<td></td>
</tr>
<tr>
<td><strong>Cell spec.</strong></td>
<td>6.40Φ×13cm(D)</td>
<td>6.00Φ×16cm(D)</td>
<td>5.70Φ×16cm(D)</td>
<td>4.75Φ×16cm(D)</td>
</tr>
<tr>
<td><strong>Cell capacity</strong></td>
<td>320㎖</td>
<td>350㎖</td>
<td>300㎖</td>
<td>250㎖</td>
</tr>
<tr>
<td><strong>Total capacity</strong></td>
<td>7.7ℓ</td>
<td>8.4ℓ</td>
<td>8.4ℓ</td>
<td>10ℓ</td>
</tr>
</tbody>
</table>

- Freely adjust the degree of compression (150%±α)
- Optional for 1 times compression or 2 times compression
- Automatically able to recovery excess medium.
- Production quantity 400Tray/hr

**Pot Flower Mass Production System**

- Able to fill mixed material such as polishing sand, yellow soil, medium etc
- Possible to adjust the depth of filler
- Repeated work of automatic supply-filler-collection

**Power transplanting robot system**

*System transplanting to rigid pot after seeding & cultivating flowers in the tray*

- **FC-4000 Rigid Pot Feeder**
- **FL-300W Flat Filler**
- **TP-900W Transplanter (Seed autotransplanting robot)**

**Natural Soil Filler / FL-4000**

- Simple repeated work
- Free adjust filling quantity
- Saving labor of heavy material
- Selection of transplanting system
- Simple repetition of bad labor

<table>
<thead>
<tr>
<th>Description</th>
<th>Pot feeder</th>
<th>Flat filler</th>
<th>Transplanter</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specification</td>
<td>4,000 pot/hr</td>
<td>400 tray/hr</td>
<td>About 3,000 trees/hr</td>
<td>Based on 200 holes</td>
</tr>
<tr>
<td>Manpower criteria</td>
<td>1,000 tray/hr</td>
<td>100 tray/hr</td>
<td>250 trees/hr</td>
<td></td>
</tr>
<tr>
<td>Manpower saving (A/B)</td>
<td>4 times</td>
<td>4 times</td>
<td>12 times</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>Simple repeated work</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Production quantity 400pot / hour**

<table>
<thead>
<tr>
<th>Dimension(mm)</th>
<th>L</th>
<th>W</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L</strong></td>
<td>3,700</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>W</strong></td>
<td>2,300</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>H</strong></td>
<td>1,800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Weight**

| **Weight** | 1,800kg |

**Power(W)**

| **Power(W)** | 3P 1,500 | 1P 310 |

**Dimension(mm)**

| **L** | 2,500 |
| **W** | 2,500 |
| **H** | 1,300 |

**Weight**

| **Weight** | 900kg |

**Required power**

| **Required power** | 990W |

**Compressed air**

| **Compressed air** | 6kg/cm² |

**Manifold**

| **Manifold** | 24L, 24H, 28, 40 |
**Grafting Robot for Fruit Vegetables**

**GR-800CS**
- Applicable vegetable: watermelon, melon, cucumber, melon, red pepper, tomato
- Productivity: over 800 trees (When skilled, work efficiency is highly increased)
- Main composition: grafting robot+tongs supply apparatus+air compressor(option 3HP)
- Grafting tongs: Specified plastic tongs(Option)
- Dimension/Weight: 670D×1,080W×950H / 170kgs (Not included in our supply scope)
- 1Φ220V 300W (Air compressor not included)
- Manpower of Use: Rootstock supply 1 person, scion supply 1 person, assistant manpower 0.25 person
- Composition of economic operation team: When composing grafting line after installing 4 sets it can be composed of 9 persons.

---

**Paper pot®**
Automatic line & Quality seed production system
**PAPER POTS SYSTEM**

### [PP] Auto Line (1)

- **Fixed quantity hopper for manufacturing paper pots**
  - Operate so that medium used as optimal amounts can be supplemented.

- **Fixed quantity supply conveyor**
  - Automatically drive with a sensor of fixed quantity hopper
  - Function of adding water by water content increment(50% -> 60%)

- **Completed paper pot**
  - Basic specification: Ø40, Ø52 (Medium)
  - Special order: Ø20, Ø30 (Small)
  - Special order: Ø60, Ø80 (Large)

- **Paper pot manufacturing machine**
  - Imported product from Italy techmek company
  - Standard type: 5,000 ea production per hour
  - Turbo type: 10,000 ea production per hour

- **Peatmoss block lifter**
  - Peatmoss block on the bottom face
  - One time crushing or partial crushing

- **Peatmoss block crusher**
  - 100ℓ, 200ℓ, 300ℓ block
  - One time crushing or partial crushing

- **Note**
  - Peatmoss gets dry when being laid aside in the natural condition; removal of vinyl packing just before using is desired.
  - Peatmoss exposed in the air needs frequent irrigation to prevent dryness.

### [PP] Auto Line (2)

- **PP tray auto feeder**
  - Inside structure is different from the tray for general raising of seedling
  - 32 holes, 40 holes, 50 holes

- **PP auto loading**
  - 6,000~7,000 ea per hour
  - Linked with exclusive tray

- **Fine irrigation**
  - Prevent peatmoss dryness during work.

- **Dibbling**
  - Prevent peatmoss dryness during work.
  - Inserting seeding work after grafting(Cucurbitaceae)
  - Augering(Solanaceae) / Optional

- **Subsidiary equipment**
  - Air compressor: 10HP (Total use power 3 phase 10kW)
  - Installation space: 4m x 8m (Reserved space for stacking is separate)

- **PP tray**
  - Special inside structure for providing PP with good aeration, good drainage.
  - Exclusive tray preset in accordance with auto line specification.

- **Auto stacker of completed tray**

**Note**

- **Subsidiary equipment**
  - Air compressor: 10HP (Total use power 3 phase 10kW)
  - Installation space: 4m x 8m (Reserved space for stacking is separate)

- **PP tray**
  - Special inside structure for providing PP with good aeration, good drainage.
  - Exclusive tray preset in accordance with auto line specification.
The Effect of Paper Pot [PP]

- **Air**: Top and bottom left and right, 4 sides always in touch with air.
- **Water**: Good Aeration
- **Good Drainage**: Simple to carry out running work, Easy Pick-out, Drop-in
- **Easy Handling**: Tap rooted growth, Protect root hair, Shorten entire growth period, Stable farming
- **Good to Root Growth**: No Transplanting Stress
- **UP 20~30%**: Soil disease and insects distribution (outer layer), As main root plants below the outer layer, fusarium is avoided.
- **Special Large Approx. 100dia mm**: Good Aeration, Good Drainage, No Transplanting Stress, Easy Handling, Good to Root Growth

The Adoptable Size for its Planting

- **Inserting seedling crop soil block**
  - Mum
  - Rose
- **Fruit vegetable**
  - Watermelon
  - Cucumber
  - Tomato
  - Pepper
- **Herbaceous flowers for pots**
- **Leafy vegetables for house gardening**
- **Small Ø20, Ø30**
- **Medium Ø40, Ø50**
- **Large Ø60, Ø80**
- **Special Large**
  - Rubber Tree
  - Palm Tree
  - Fruit Tree
  - Economic Tree
Paper pots manufacturing machine

Non-woven paper for propagation of cuttings and seeds for flowers, vegetable, fruits and trees

Medium of paper pots is with Klasmann Peatmoss of Germany produced under strict quality control.

Biological paper is ECO FRIENDLY with this system plants haven’t ANY TRANSPLANT SHOCK
Optimum rooting environment for the plant, thanks to Techmek non-woven paper that FACILITATES ROOTS PENETRATION

<table>
<thead>
<tr>
<th>PAPER POTS SYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Paper pots manufacturing machine</strong></td>
</tr>
</tbody>
</table>

| **Length** | 1,450 mm |
| **Thickness** | 1,150 mm |
| **Height** | 1,600 mm |
| **Weight** | 450 kg |
| **Production quantity** | Max 10,000 pot/hour |
| **Paper Dimension** | Min 18mm ~ Max 60mm |
| **Power** | 380v  60Hz |
| **Required power** | 1.75 KW  3A |
| **Usage per min** | ± 1,700liter/min |
| **Air pressure** | 6 bar |

| **Length** | 2,000 mm |
| **Thickness** | 850 mm |
| **Height** | 1,600 mm |
| **Weight** | 200 kg |
| **Production quantity** | Max 3,000 pot/hour |
| **Paper Dimension** | Min 28mm ~ Max 52mm |
| **Power** | 220v  60Hz |
| **Required power** | 2.5 KW |
| **Usage per min** | ± 600liter/min |
| **Air pressure** | 8 bar |

To achieve ideal blends for substrates, black and white peat are in many cases supplemented with additional organic and mineral ingredients. Product developers in Klasmann-Deilmann are thoroughly familiar with their properties and effects. They know which admixing agent must be used and in what quantity in order to obtain a given substrate property. Admixing agents of high quality are required in this respect. Admixing agents used for the Klasmann select product line are produced and controlled according to strict RHP standards. This includes control of the suppliers of these products, who are generally also members of the RHP quality assurance system.

Proven and new admixing agents are continuously tested for their suitability for substrates and are subjected to extensive growing trials in order to guarantee and further optimise the physical, chemical and biological properties of the substrates.

KLASMANN K DEILMANN
we make it grow

ka@@t® Essential for every substrate
Process overview of raising seeding factory

Germinating chamber GC-05 [Standard]

<table>
<thead>
<tr>
<th>Description</th>
<th>Scope</th>
<th>Apparatus</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension</td>
<td>4,200D×4,000L×2,300H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption</td>
<td>10KW [3Φ 4W 380V 60Hz]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Scope of environment control

Example of fruits & vegetables
grafting seeding production

Germinating chamber
Room(A)  Room(B)

Temperature control, humidity control
(Optimal environment applied)

- Raising bed/Growth facilities
- Travelling irrigating Boom
- Grafting robot
- Grafting tongs
- (Watermelon+melon+cucumber+tomato+red pepper)
- Taking root control facilities after grafting
- Raising bed growth facilities
- Packing & shipping

- Tray feeder
- Seed feeding device
- Mixer of Medium
- Filler of Medium
- Large seed seeder
- Dibbler & seeder
- Top dresser
- Irrigator
- Tray stacker

Germinating chamber
Room(A)

• Dimension can be expanded according to the Dimension of raising seeding place
• Effect of maintaining saturated humidity through bottom temperature (Option)
• It is desirable to install with two separate spaces of A, B.