# DELTRON 道创智能

**Shenzhen Deltron Intelligence Innovation Technology Co., LTD**

Empowering agriculture with AI & Robotics

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Advanced intelligence
Leading fruit sorting solution company

**Intelligent Fruit Sorting System**

Provide intelligent post-harvest fruit sorting solution and improve production efficiency

## Our Mission

### Empowering Agriculture with AI & Robotics

Deltron is dedicated to enabling traditional agriculture with technology to truly realize the standardization, intelligence and high efficiency of post-harvest fruit sorting.



# ABOUT DELTRON

**Hardcore technology enables agriculture**

Founded in 2018, with the mission of 'Empowering agriculture with AI & Robotics', Deltron is committed to improving production efficiency through advanced self-developed technology.

**High-tech team from renowed institutions**

Deltron's members come from renowned universities and research institutes such as RI of HKUST and MSRA. Guided by Professor Li Zexiang(Chairman of DJI), Deltron builds the leading robot research and development team, CV team and spectral team. We are dedicated to applying robots and intelligent technology to the agricultural industry.

**High-tech enterprise Continually innovation**

Starting from the post-harvest standardized treatment of fruits, Deltron, a national high-tech enterprise, uses advanced computer vision and spectrum technology to develop two products, '4.0 intelligent fruit soritng system' and 'portable intelligent fruit inspection device'. Running through the upstream and downstream of the industry, we provide all-round quality inspection for fruits to improve the standardized production efficiency of fruit sorting.
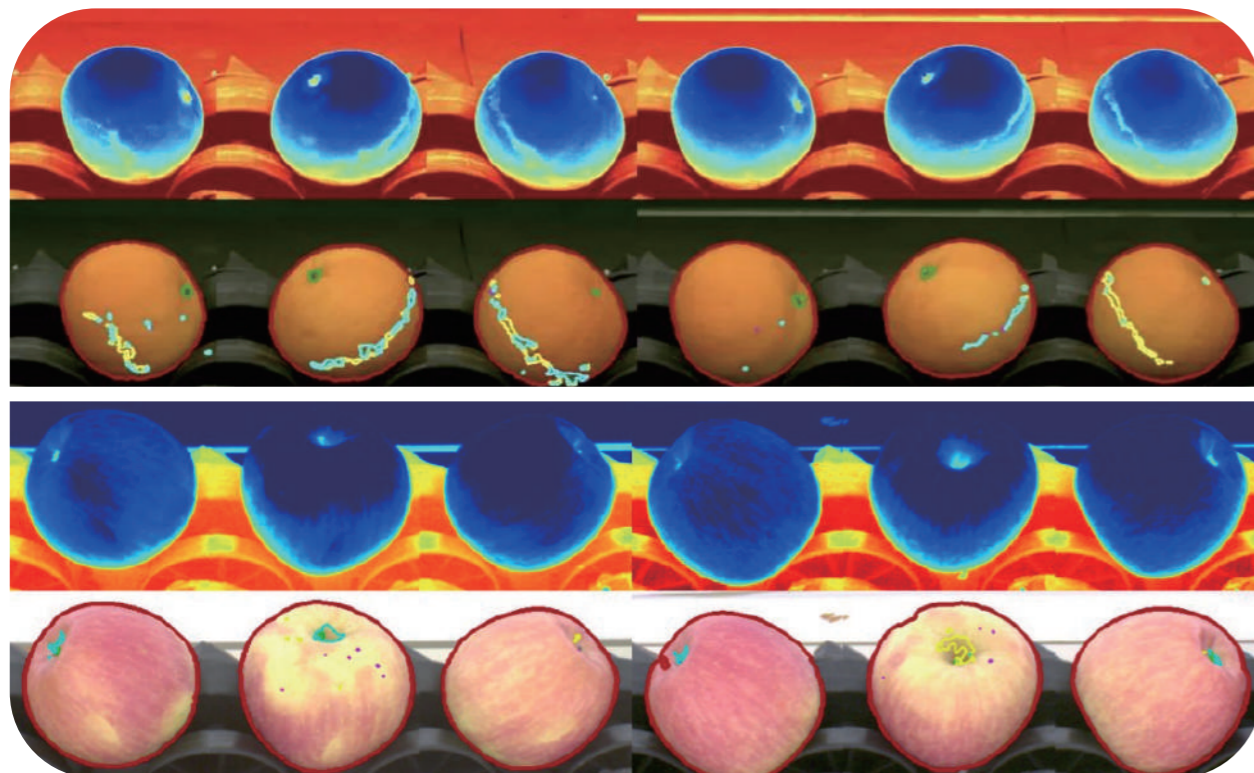
## Honors

# TECHNOLOGY AND ADVANTAGES

## 1. Top Algorithm R&D Team

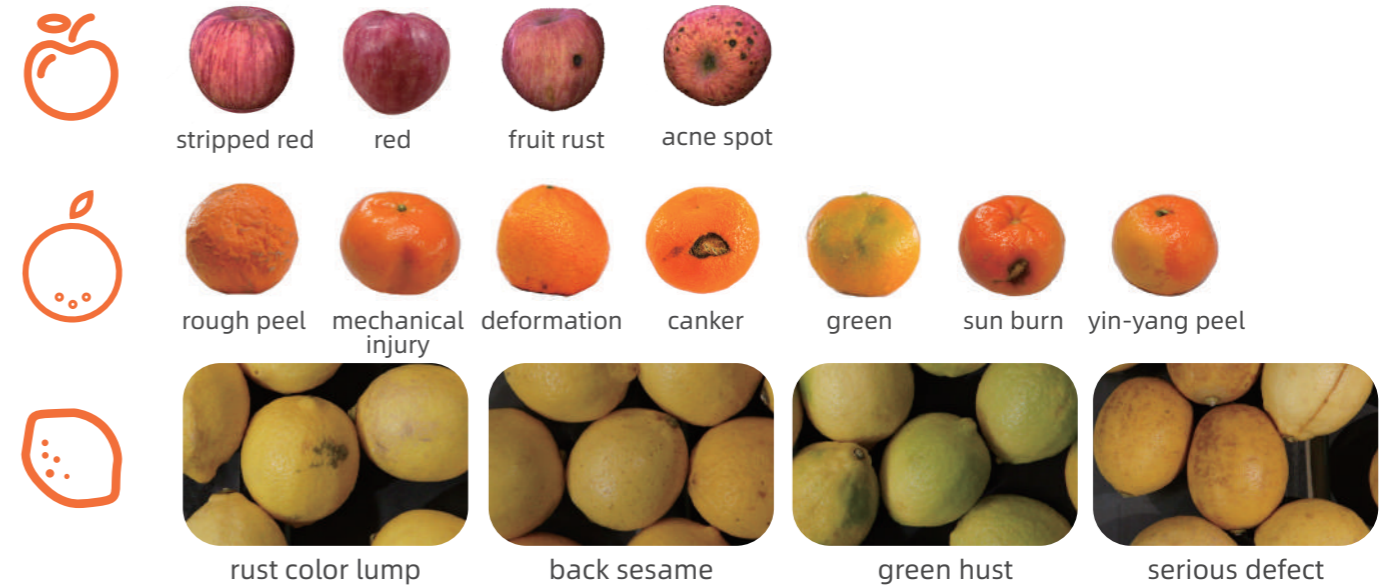### ⤵ SpekVision® External Defects Examine Module

**First self-developed vision detection system with pixel level accuracy**

A customized light source system, high-resolution industrial camera lens are adopted to collect data at high speed in all directions.



## 1 second to identify multiple defects

Define all sorts of defects with clear standards in respect to fruits, Customized modeling provided.



| stripped red | red | fruit rust | acne spot |

| rough peel | mechanical injury | deformation | canker | green | sun burn | yin-yang peel |

| rust color lump | back sesame | green hust | serious defect |

**Precisely find defect location**

Accurately identify fruit pedicle and defects, with 97% accuracy.

**Accurate measurement**

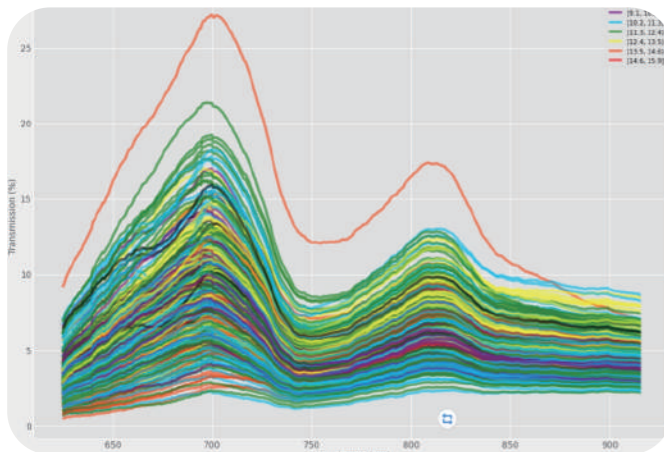Precisely count number of defects and calculate defect area.

**Efficient & Convenient**

The sampling process of modeling is fast and easy to use. Built model could be applied repetitively.

# SpekSense® Internal Quality Inspection Module



## Multiple indicators in respect to fruits

Customized internal quality index modeling, such as moldy core, dry water, etc, for different fruits.



## Self-developed nondestructive detection algorithm

Self-turning near-infrared spectrum detection module, high signal-to-noise ratio, wide wavelength range.
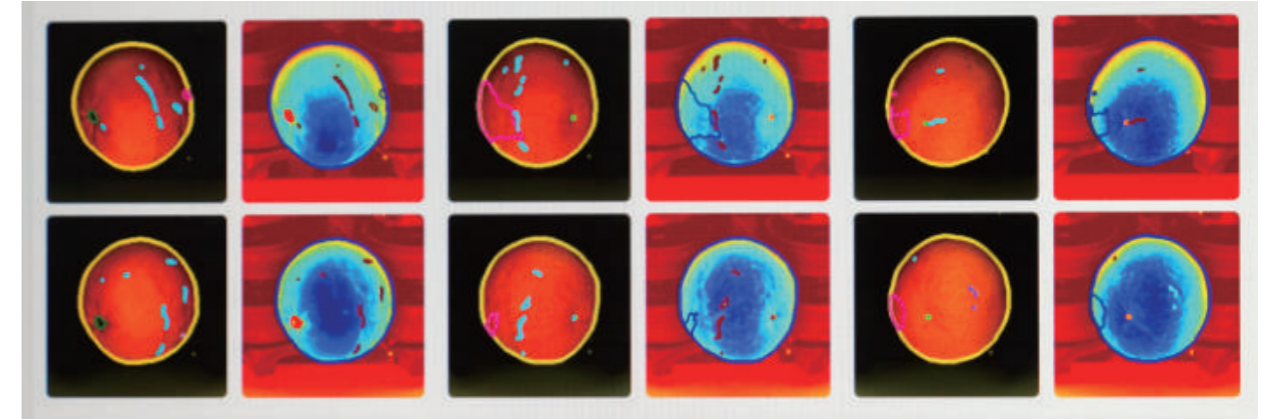


**AI**

## Increased Accuracy

The algorithm automatically corrects and compensates the detection results for a low-temperature environment to reduce the detection error. The accuracy is up to 95%, which is the industry-leading level.

*Data is derived from the fruit varieties that Deltron has modeled before, specific to the differences of each fruit variety.

## 2. Quick & Easy-to-use Modeling Procedure

Modeling is no longer a problem since Deltron created a set of simple and efficient modeling procedures. Novice operators can quickly personalize modeling of fruit sorting, inspection metrics(appearance and interior), and sorting according to customer criteria.



## 3. Humanized Operating System

### Smart Sorting Operating System

Each 4.0 intelligent fruit sorting equipment is equipped with an interactive friendly operating system and clear interfacce. The sorting scheme can be customized according to the needs, and the sorting data is uploaded in real-time.
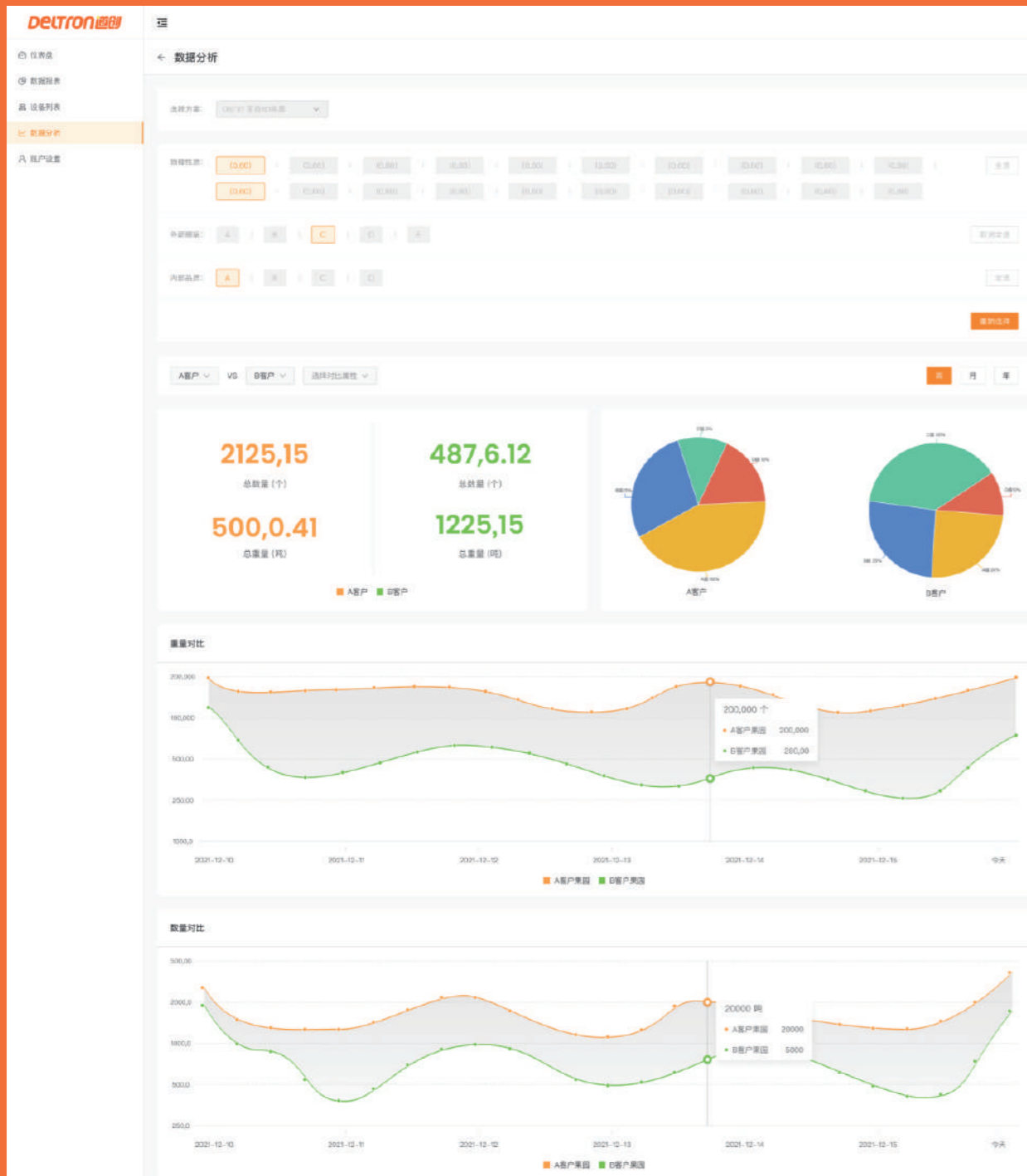
# ♻ Business Intelligence System

The business intelligence system is specifically designed and built for customers. It can help customers collect, organize and analyze data, provide professional and valuable data charts and processing analysis, after which all sorting data is uploaded to the cloud.
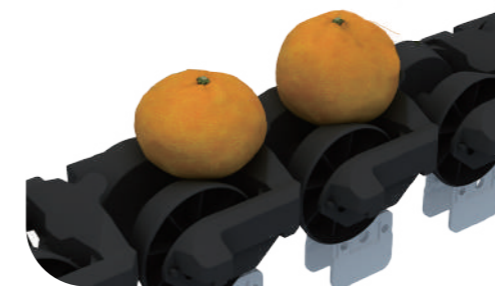
**Scan reports at any time** | **Easily master management** | **Assist in forecast**



## 4. Innovation & Care for fruit

### Spheroid fruit holder          Small-sized fruit holder



For different fruit varieties, deltron customize innovative mechanical structures and materials to protect each fruit.
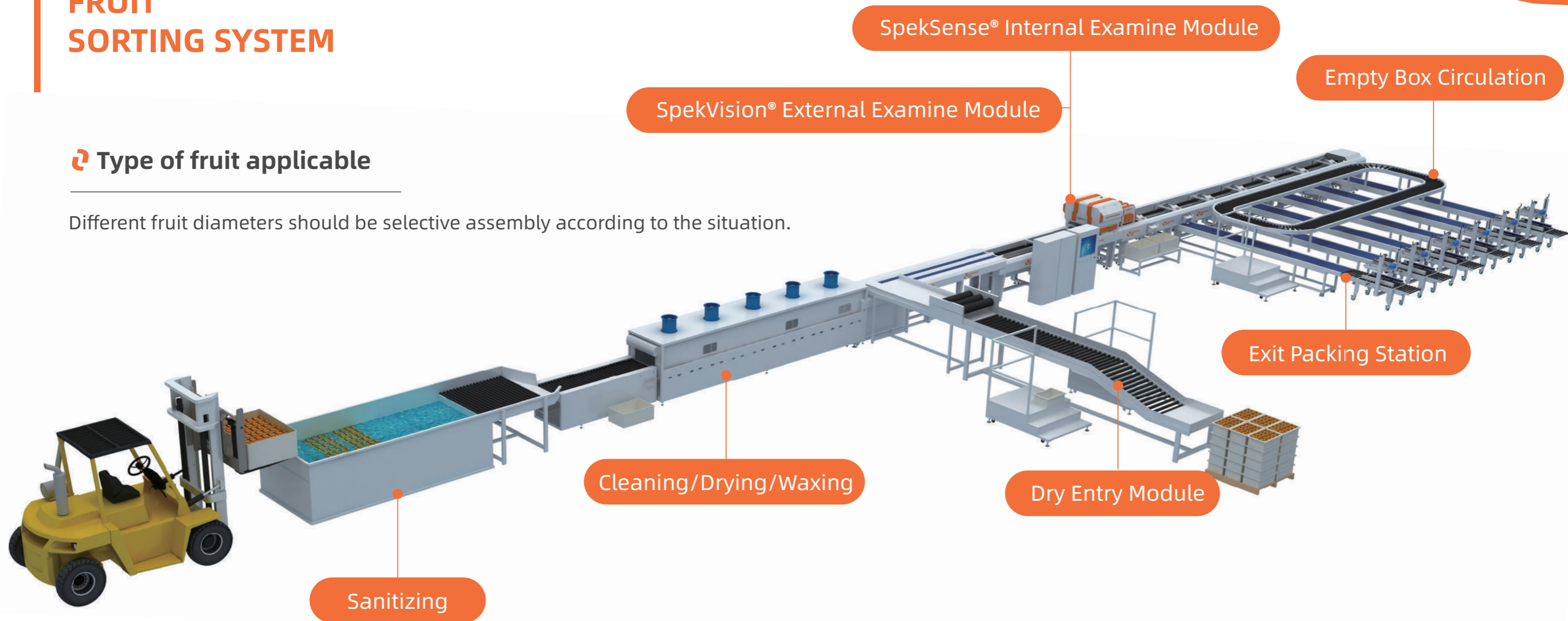


Personalized modeling, different varieties, different defects, high standards to meet the individual needs of customers.

# 4.0 INTELLIGENT FRUIT SORTING SYSTEM

SpekSense® Internal Examine Module

SpekVision® External Examine Module

Empty Box Circulation

## Type of fruit applicable

Different fruit diameters should be selective assembly according to the situation.

Exit Packing Station

Cleaning/Drying/Waxing

Dry Entry Module

Sanitizing

Prune    Jujube    Plum    Pluto

Kiwi fruit    Lemon    Orange    Grapefruit    Avocado

## SpekSense® Internal Examine Module

Our self-developed algorithm uses near-infrared spectroscopy, machine learning, and AI training technology. Targeting different fruits, customized internal quality index modeling can non-destructively detect the internal sugar/acidity, moldy core, and sugar core of fruits.
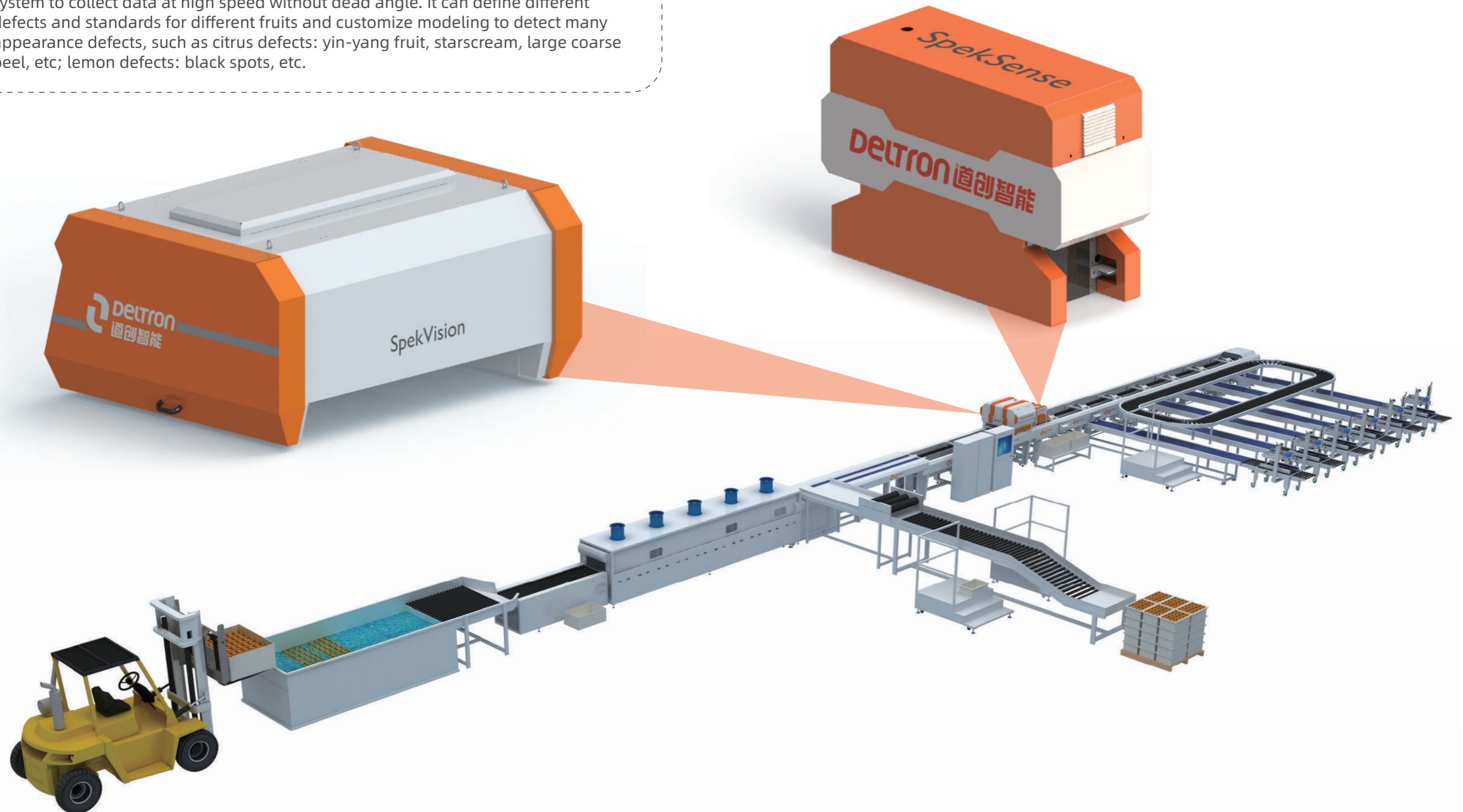
## SpekVision® External Examine Module

We adopts a high-resolution industrial camera lens and customized light source system to collect data at high speed without dead angle. It can define different defects and standards for different fruits and customize modeling to detect many appearance defects, such as citrus defects: yin-yang fruit, starscream, large coarse peel, etc; lemon defects: black spots, etc.

# H-Type Fruit Holder 4.0 Intelligent Fruit Sorting System

## ⮌ Advantage

**AI**

### Intelligent sorting More efficient

High holder having fruit rate, fast speed of fruit sorting. H-type equipment can achieve a full range of fruit grading and sorting to eliminate defective products.

### Innovative anti-collision design

By improving the mechanical structure and using innovative materials, H-type equipment can achieve an ultra-low fruit bruising rate while ensuring efficiency. It greatly improves the working efficiency and standardization level of fruit sorting.

### Apdapted to various kinds of fruits

It can be adapted to apples, lemons, oranges, navel oranges, avocados, and other spherical fruit with diameters between 55mm-95mm.

# H-Type Fruit Holder 4.0 Intelligent Fruit Sorting System

## Specifications

| Function | | |
|---|---|---|
| | Index | Weight, size, diameter, color, appearance defects, internal quality |
| | Weight | Detection error < ±3g |
| | Size | Detect fruit diameter, fruit length, etc., detection error ≤ ±2mm |
| | Defect classification | Distinguish defects such as flower bark, wormhole, ucler, split fruit, coarse bark, black star, and pitting, etc., and detect area of defects |
| | Brix & Acid | Modeling for different fruits, different specific data for each variety |
| | Moldy Core | 95% accuracy(Results varied according to different varieties) |
| | Dry Water | 90% accuracy(Results varied according to different varieties) |
| | BI System | Data can be uploaded to cloud and visualize the data |

| Spec | | |
|---|---|---|
| | Sorting speed | 36000 holders per hour in a single channel. 3-5 tons/hour/channel |
| | Amount of exit | 10-24+(optional level) |
| | Having fruit rate | 75%~90% |
| | Power | 7-26kw（Depends on the number of channels） |

| Others | | |
|---|---|---|
| | Gentle treatment | BUBBLES engery absorbing material is used to reduce the fruit surface damage caused by drop. |

*1. Above information is for single-channel intelligent sorting equipment. The size of multi-channel equipment will increase according to the actual width of the working face.
2. Deltron can carry out a full set of project designs according to the actual needs of customers.

## Optional Modules

| Name | Function |
|---|---|
| Automatic box turing module | Automatically turn the raw material box |
| Water entry module | Sanitizing fruit and flexible entry |
| Dry entry module | Flexible dry entry |
| Waxing module | Spray wax and dry |
| Exit packing station | Used for packing fruit |
| Empty box circulation | Supply empty packaging boxes |
| Weight measurement module | Used for fast weight measurement |
| Automatic palletizing module | Used for automatic stacking |

# FLEXIBLE H-TYPE FRUIT HOLDER
# 4.0 INTELLIGENT
# FRUIT SORTING SYSTEM

## Type of fruit applicable

Spherical fragile trype of fruit with a diameter between 55mm-95mm.

Harrow oranges    Tomatoes    Ugly oranges    Pears    Apples    Peaches

## Advantage

### Flexible connecting
Creatively design the connection of all links to substantially reduce bumps in the fruit sorting process

### AI Intelligent sorting
High holder having fruit rate, fast speed of fruit sorting. H-type equipment can achieve a full range of fruit grading and sorting to eliminate defective products.

### Innovative anti-collision design
By improving the mechanical structure and using innovative materials, H-type equipment can achieve an ultra-low fruit bruising rate while ensuring efficiency. It greatly improves the working efficiency and standardization level of fruit sorting.

# Flexible H-type Fruit Holder 4.0 Intelligent Fruit Sorting System
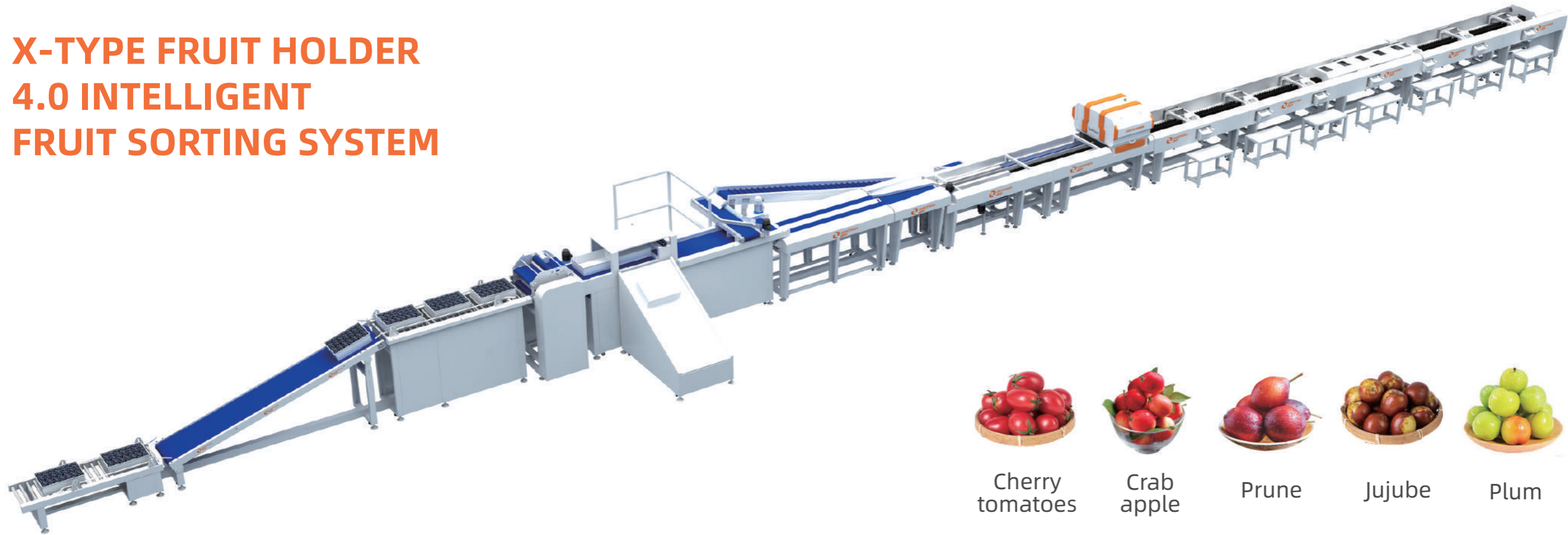
## Specifications

**Function**

| | | |
|---|---|---|
| **Index** | Weight, size, diameter, color, appearance defects, internal quality | |
| **Weight** | Detection error < ±3g | |
| **Size** | Detect fruit diameter, fruit length, etc., detection error ≤ ±2mm | |
| **Defect classification** | Distinguish defects such as flower bark, wormhole, ucler, split fruit, coarse bark, black star, and pitting, etc., and detect area of defects | |
| **Brix & Acid** | Modeling for different fruits, different specific data for each variety | |
| **Moldy Core** | 95% accuracy(Results varied according to different varieties) | |
| **Dry Water** | 90% accuracy(Results varied according to different varieties) | |
| **BI System** | Data can be uploaded to cloud and visualize the data | |

**Spec**

| | |
|---|---|
| **Sorting speed** | 36000 holders per hour in a single channel. 3-5 tons/hour/channel |
| **Amount of exit** | 10-24+ (optional level) |
| **Having fruit rate** | 75%~90% |
| **Power** | 7-26kw (Depends on the number of channels) |

**Others**

| | |
|---|---|
| **Gentle treatment** | BUBBLES engery absorbing material is used to reduce the fruit surface damage caused by drop. |

*1. Above information is for single-channel intelligent sorting equipment. The size of multi-channel equipment will increase according to the actual width of the working face.
2. Deltron can carry out a full set of project designs according to the actual needs of customers.

## Optional Modules

| Name | Function |
|---|---|
| Automatic box turing module | Automatically turn the raw material box |
| Water entry module | Sanitizing fruit and flexible entry |
| Dry entry module | Flexible dry entry |
| Waxing module | Spray wax and dry |
| Exit packing station | Used for packing fruit |
| Empty box circulation | Supply empty packaging boxes |
| Weight measurement module | Used for fast weight measurement |
| Automatic palletizing module | Used for automatic stacking |

# X-TYPE FRUIT HOLDER 4.0 INTELLIGENT FRUIT SORTING SYSTEM

Cherry tomatoes  Crab apple  Prune  Jujube  Plum  Pluto

## ⟳ Type of fruit applicable

Small sized fruit with the diameter between 25mm-50mm

## ⟳ Advantage

**AI**

**AI sorting High efficiency**

High holder having fruit rate, fast speed of fruit sorting. H-type equipment can achieve a full range of fruit grading and sorting to eliminate defective products.

**Innovative anti-collision design**

By improving the mechanical structure and using innovative materials, H-type equipment can achieve an ultra-low fruit bruising rate while ensuring efficiency. It greatly improves the working efficiency and standardization level of fruit sorting.

## ⟳ Specifications

| Function | | |
|---|---|---|
| | **Index** | Weight, size, diameter, color, appearance defects, internal quality |
| | **Weight** | Detect fruit diameter, fruit length, etc. detection error ≤ ±1mm |
| | **Classfication** | Distinguish defects such as flower bark, wormhole, ulcer, split fruit, coarse bark, black star and pitting, etc., and detect the area of defects |
| | **BI System** | Data can be uploaded to cloud and visualize the data |

| Spec | | |
|---|---|---|
| | **Sorting speed** | 36000 holders per hour in a single channel. 0.8 - 1.5 tons/hour/channel |
| | **Amount of exit** | 10-20+ (optional level) |
| | **Having fruit rate** | 75%~90% |
| | **Power** | 7-26kw (Depends on the number of channels) |

*1. Above information is for single-channel intelligent sorting equipment. The size of multi-channel equipment will increase according to the actual width of the working face.
2. Deltron can carry out a full set of project designs according to the actual needs of customers.

質检机构检测

生鲜零售质检

消费者使用

产地品质筛查

# PORTABLE INTELLIGENT FRUIT INSPECTION DEVICE

This is the world's first non-destructive fruit inspection equipment covering multiple fruit varieties and indicators. It innovatively realizes the non-destructive testing of indexes of different fruit varieties by one device.

It can do non-destructive quality testing of more than 60 kinds of fruits, such as apple, pear, citrus, orange, peach, etc. The testing indexes include fruit internal sugar, acidity, lesions, dry material, moisture content, etc.

## Specifications

| Function | | |
|---|---|---|
| | Applicable | 60+ kinds of fruits, such as apples, oranges, pears, peaches, and other fruits within the diameter of 10mm~120mm<br>*can customize modeling according to demand |
| | Index | Brix, Acid, moldy core disease, Sugar core disease |
| | Brix & Acid | Modeling for different fruits, different specific data for each variety |
| | Moldy Core | 95% accuracy(Results varied according to different varieties) |
| | Dry Water | 90% accuracy(Results varied according to different varieties) |
| | BI System | Data can be uploaded to cloud and visualize the data |

# CUSTOMER SUCCESS

## Timely & thoughtful
Provide maintenance and after-sales personnel for fruit-producing areas during the production season

## 7*24
Customer Consultation Service

## One-year warranty
One-year free repair and maintenance of the machine

## Create user profiles
Timely tracking and providing the latest services

# CUSTOMERS

Jinjiu Corp

Guxian Tech

Yunnan Jupu

Walmart

Hongzheng Tech

Pagoda

Lvcheng Corp

Julu

Nongbiao Tech

Orange

More

Xianyinong

Anyue Lemon

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