MAXIMISE PROFIT **FRUIT SIZERS** MINIMISE WASTE

FRUIT SIZERS & ALLIED

VERSA SORT QUALITY FRUIT GRADERS & PACKLINES

RORY 082 294 2260 - DAVE 083 463 4332 - JOHNNY 082 925 9177

PO Box 475, Villiersdorp, 6848 - Factories in Grabouw & Villiersdorp

sales@fruitsizers.co.za www.fruitsizers.co.za

***OUR SIZERS OFFER AN EXCELLENT RETURN ON INVESTMENT IN EXCESS OF 20 YEARS.***
***MECHANICAL COMPONENTRY & CARRIERS ARE DEVELOPED & OWNED BY OURSELVES & MANUFACTURED TO HIGH SPECIFICATIONS IN SA.***
***REDUCTION OF ESCALATING IMPORTED COMPONENTRY COSTS.***
***ELECTRONICS INSTALLED ARE GLOBAL LEADING SPECIFICATIONS WITH KEY BACK UP ELECTRONICS IN STOCK SA.***

***OVER 2,000 ELECTRONIC SYSTEMS IN USE. FULL 24 / 7 SERVICE IN SA.***
***OUR SIZERS GRADE IN EXCESS OF 2 MILLION BINS PER ANNUM IN SA.***

# VERSA SORT

POWERED BY

ellips

Vision Technology

True sort

FRUIT SIZERS

FRUIT SIZERS

FRUIT SIZERS & ALLIED

VERSA SORT

# QUALITY GRADING FOR ALL FRUITS

number of pictures is adjustable up to 80 / fruit

unique detection of stalk and calyx

leaf detection to avoid erroneous measurements

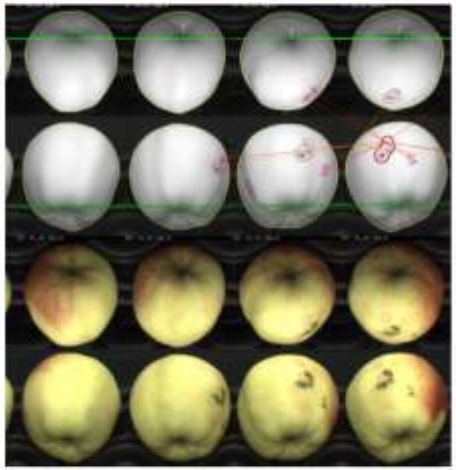
adjustable smallest defect size and sensitivity

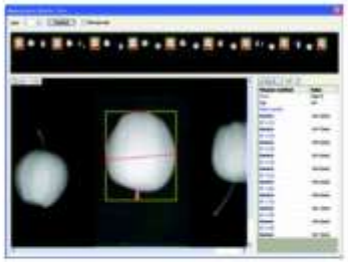
grade on number of defects or defect percentage

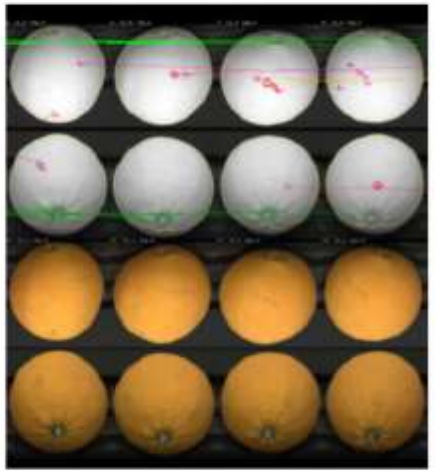
customer friendly support by internet

best price / performance available

| | |
|---|---|
| NrDefects | 3 |
| DefectArea | 2.5% |
| NrDarkDefects | 2 |
| DarkDefectArea | 2.3% |
| RotPercentage | 0.4% |
| RustPercentage | 3.9% |
| LeafDetected | 0.0% |
| MoldPercentage | 0.4% |







**Contact - Rory - 082 294 2260 - Dave - 083 463 4332**

**sales@fruitsizers.co.za**

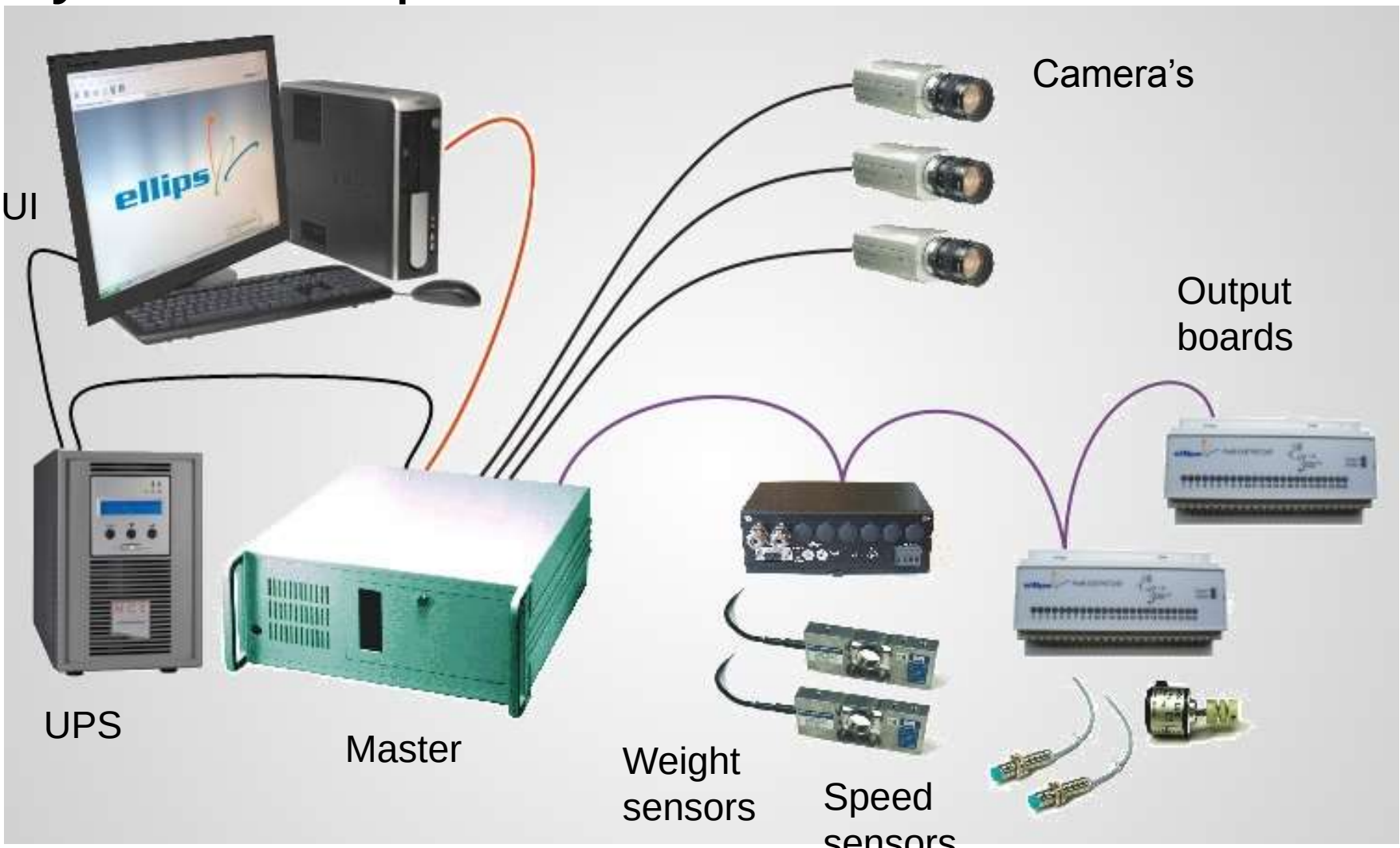
**www.fruitsizers.co.za**

VERSA SORT

This overview gives an insight to the Truesort Grading System as installed on FSA Versasort sizers manufactured in SA.
For a more in depth detail call Rory 082 294 2260.
Visits to packers using weight, diameter, colour & quality grading can be arranged.
The panoramic below is a 16 lane x 38 drop full quality grader handling 500 bins per shift commit to pack with minmal manual grading separation. This site is in the Cape.

FRUIT SIZERS

# System Components



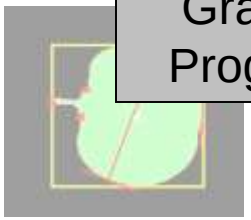
# System Components Workflow

Speed/ position Sensors

Taking Images

Image processing

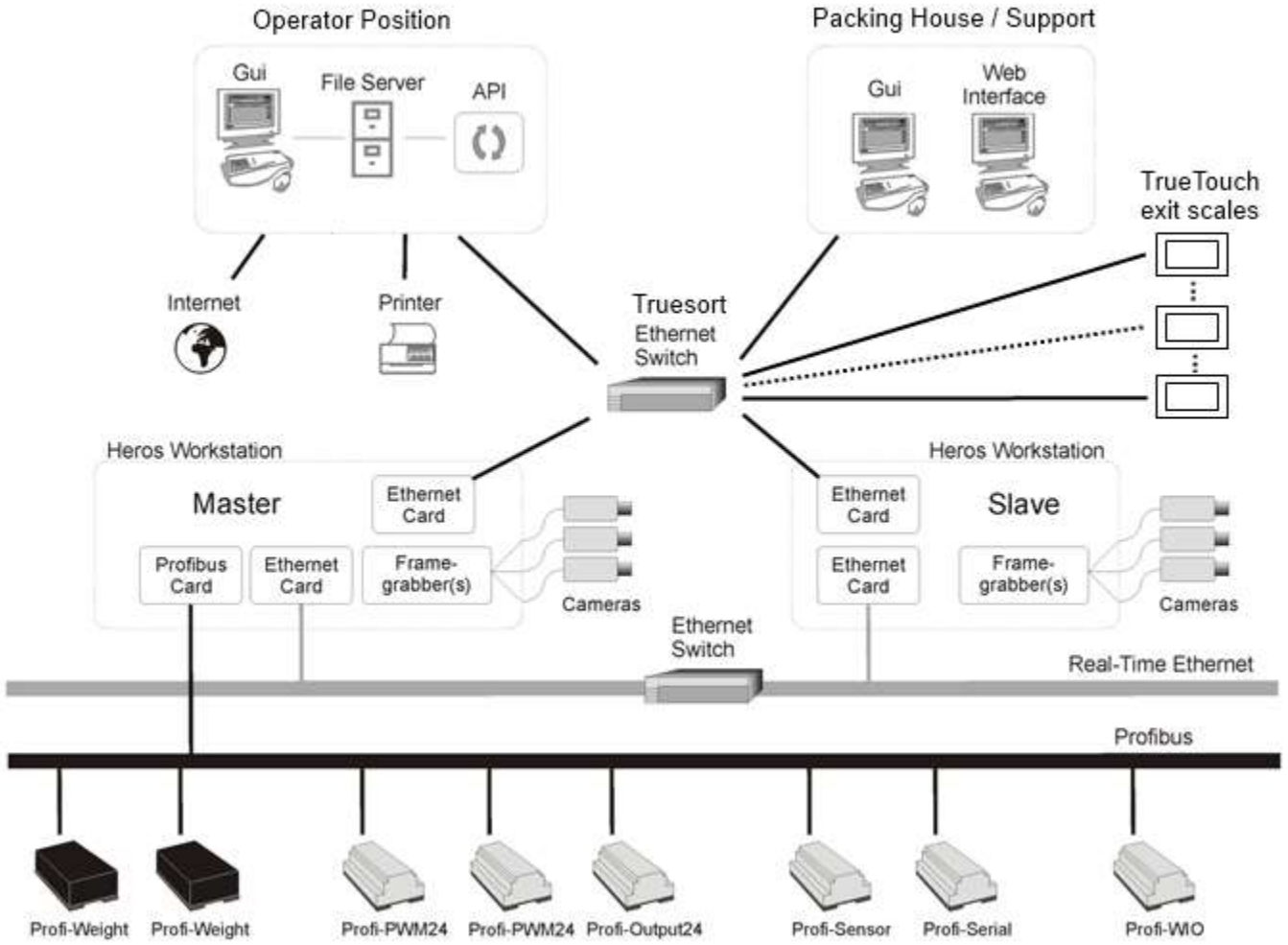
Check Grading Program



Send to GUI

Control Exits

# Schematic System Overview



# User Interface Computer

- GUI (Graphical User Interface)
  - Lenovo M90 / M58
  - Windows Embedded Standard (windows 7 for machines)
- Connections
  - Ellips network interface connection
  - Internet / Company network
  - Printer
- Dongle for software protection
- Internal USB stick

SFF Front

SFF Back

# Master (or Slave) Computer

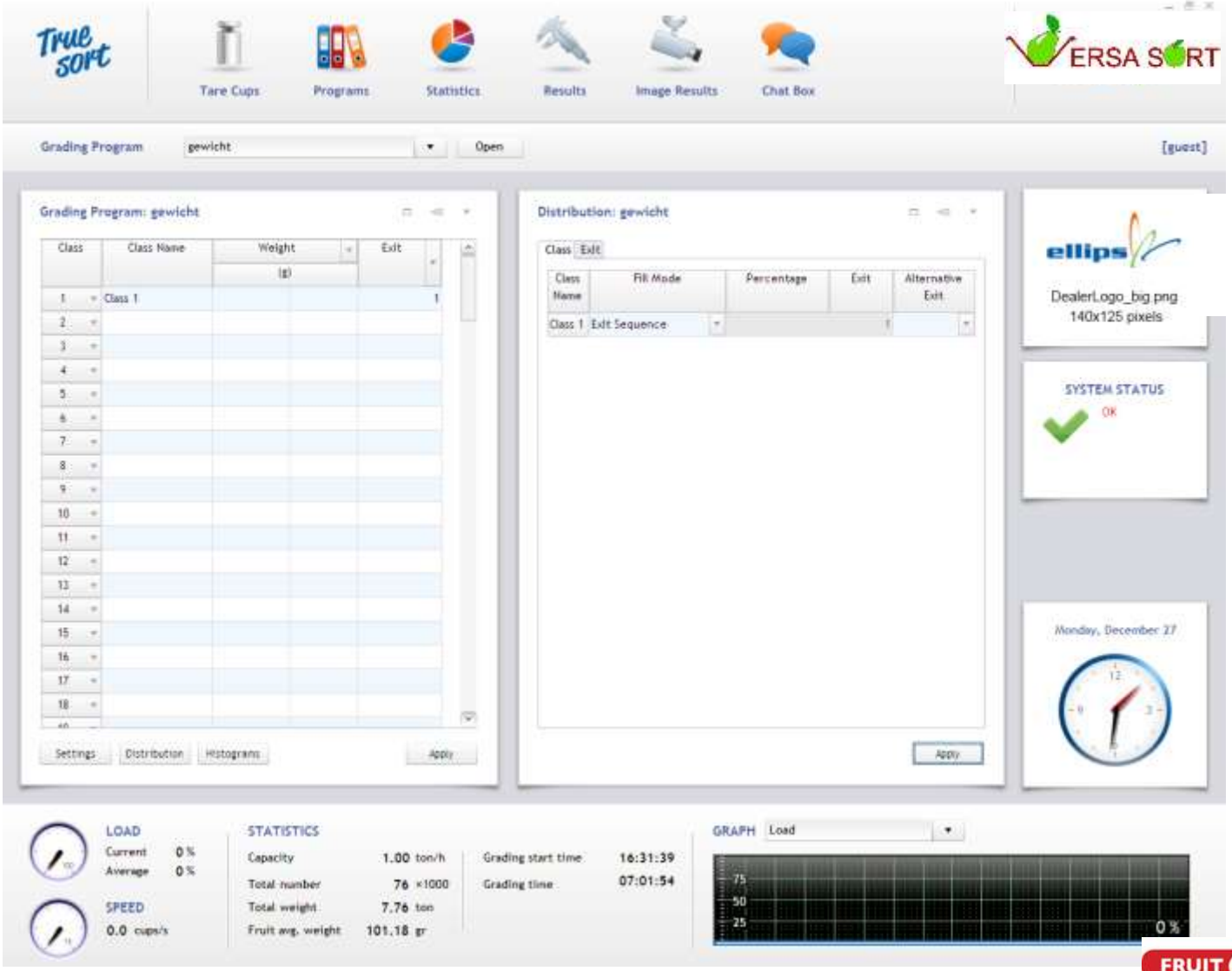
- Master with FireWire cameras
- Clean the filter on regular base

FRUIT SIZERS

# User Interface

- Grading/Statistics Programs
- Splitting lanes to create virtual machines
- Distribution/Packaging/Exit Control
- Weight, Size, Color, Quality
- Statistics

# User Interface - add or remove required grading columns.



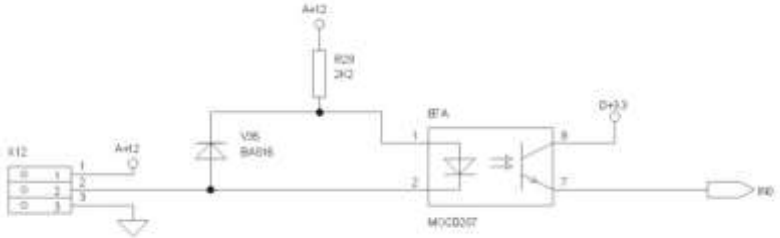

FRUIT SIZERS

# Weightmaster

- Compact ‘Master’ computer for weight only systems
- 3 integrated sensor inputs (position sensors and first cup sensor)
- Up to 8 integrated weight channels
- Profibus connection for output boards and other I/O

# Profi-Sensor  Cup positioning & other output controls

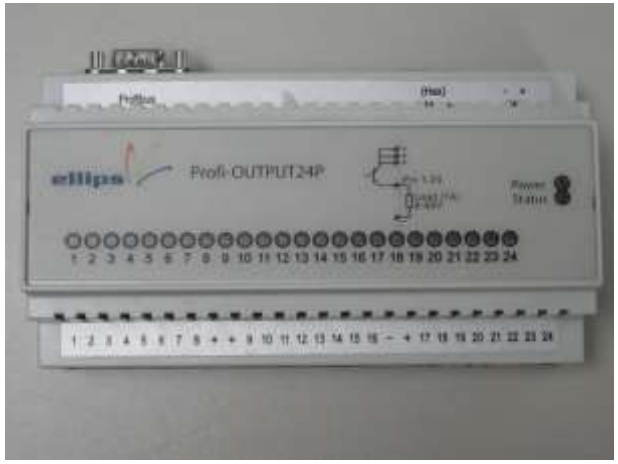
- 14 inputs
- 2 inputs in use for position sensors
- 1 input in use for systems with weight measurement (first cup sensor)
- Every input can have a user configurable function
- Galvanic isolation of sensors possible



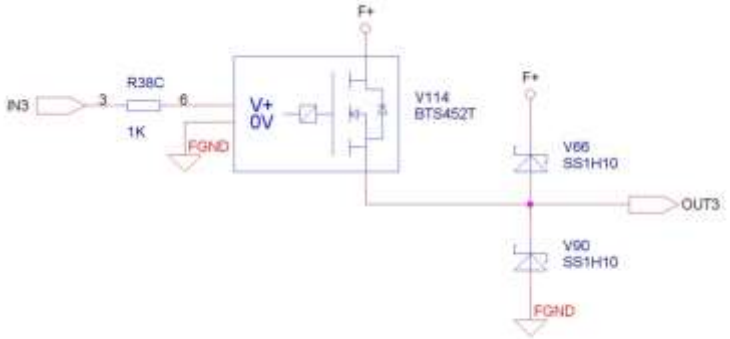
- Other input functions:
- Block/reset exit
- Count products (pre-selection)
- Register new supply crate
- Etc.

# Profi-Output24P

- 24 outputs
- Shortcut/thermal protection
- 1 Amp. continuous, 5 amp. peak
- Each output can be used for any function




- Output functions:
  - Drop-outs
  - Exit belt movement
  - Status lamps at the exits
  - Status lamps for supply registration
  - Soft PLC.



# Profi-Weight

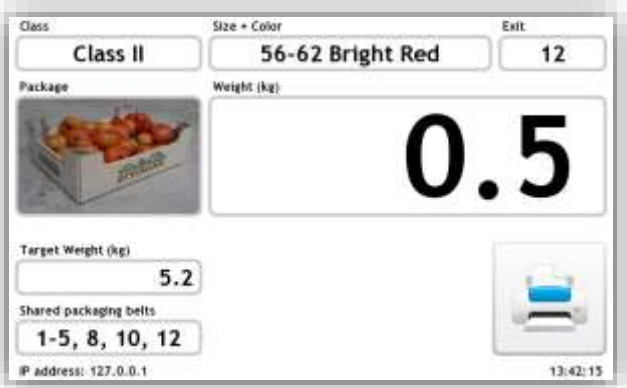
- 8 inputs for weight measurement
- Primarily developed for fast weight measurement of each cup
- Every input can be used for any (weight measure) function
- Supply the exitation power +5V and -5 V (check LED's inside)

- Functions:
- Measure the weight of each cup
- Measure the package weight at the exit
- Measure the weight for preselection
- Measure the weight of supply crates

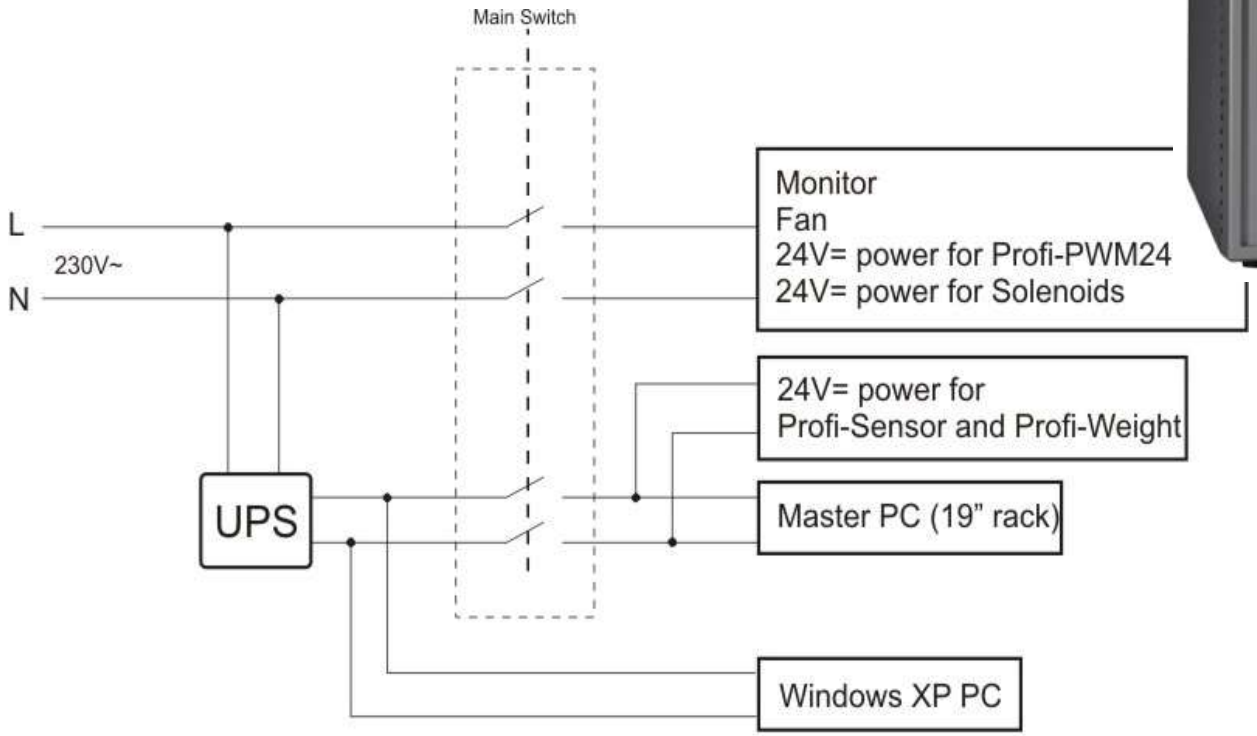
HEX
address 05

# TrueTouch

- Configuration
- Test



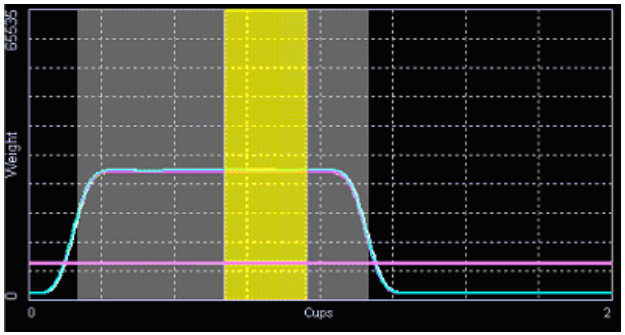
# UPS (Uninterruptible Power Supply)




Emergency stop may not switch off the EFG400 system!!

Windows XP PC must be switched off by user or automatically by the UPS

# Weight
# Auto calibrates




- Choice of collecting the empty weight of each cup only once at startup or continuously. ‘Continuous’ mode will compensate for temperature and dirt. ‘Only once’ mode must be used only when the weight of the product can be very low (under 10 grams)

- Empty cup weight average is memorized for each cup (number of measurements for average is selectable)

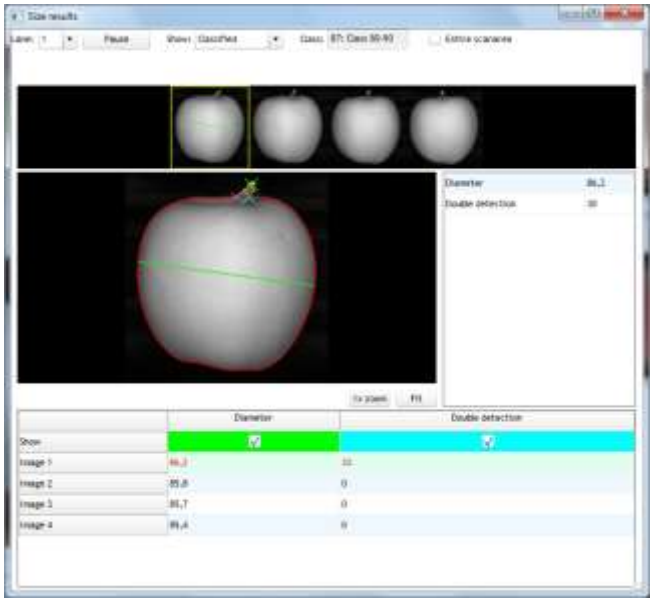
- Reference weight (average of all empty cups) is determined per lane to compensate for big changes in machine speed or temperature

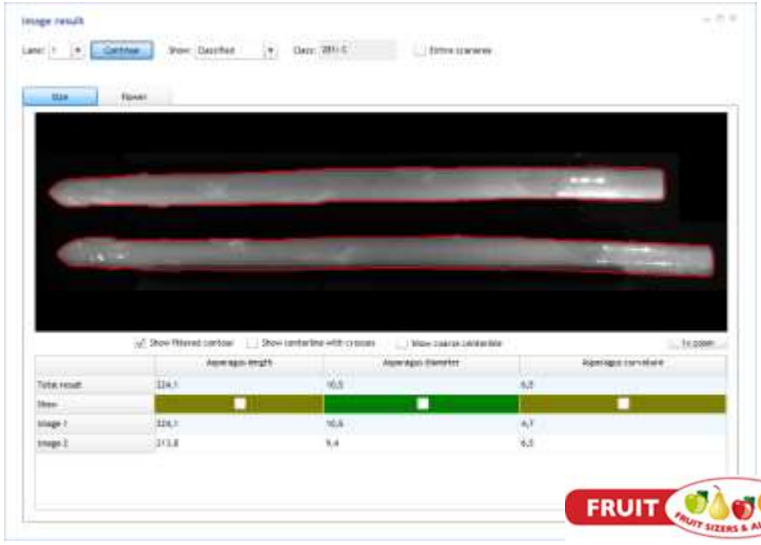
- The empty cup weight differences with respect to the reference are stored on disk and enables the system to restart more quickly after a restart/reboot

# Versasort camera box & server rack on an 8 lane quality grader in SA

# Size

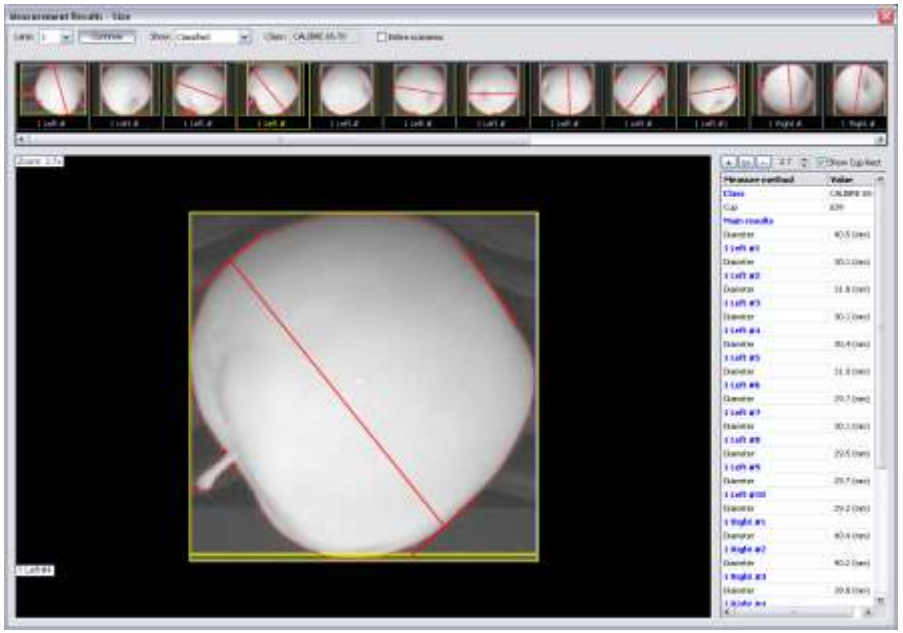
- Is used for sorting on size and shape
- Camera focus/Iris
- Camera calibration
- Background separation
- Grayscale



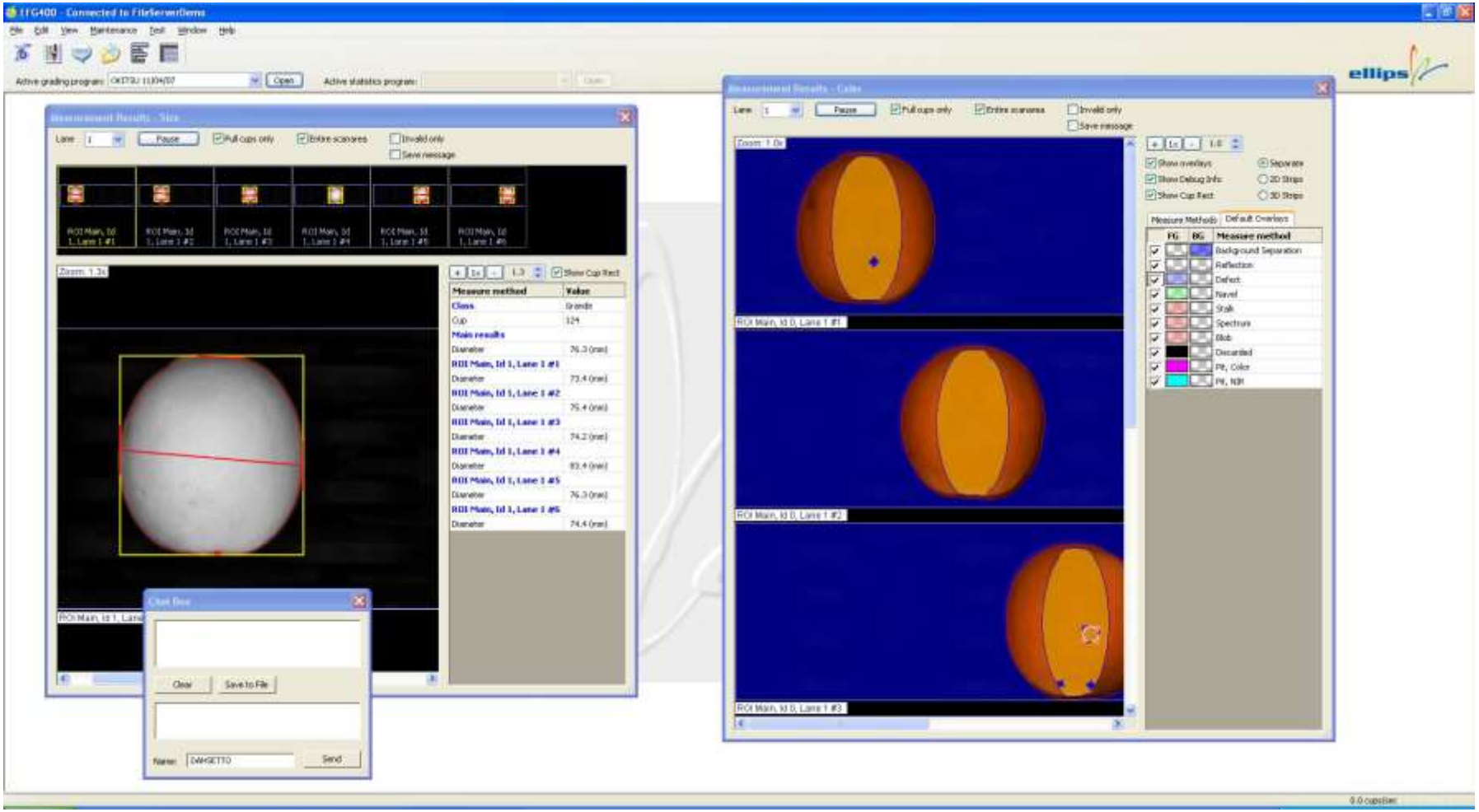


# Size

- Algorithms
- Double detection
- Diameter min., max., average, %
- Use expressions to create new ‘size’ measure methods like Ratio
- Using ‘Diameter %’ in combination with expressions for shape recognition
- Split touching fruit



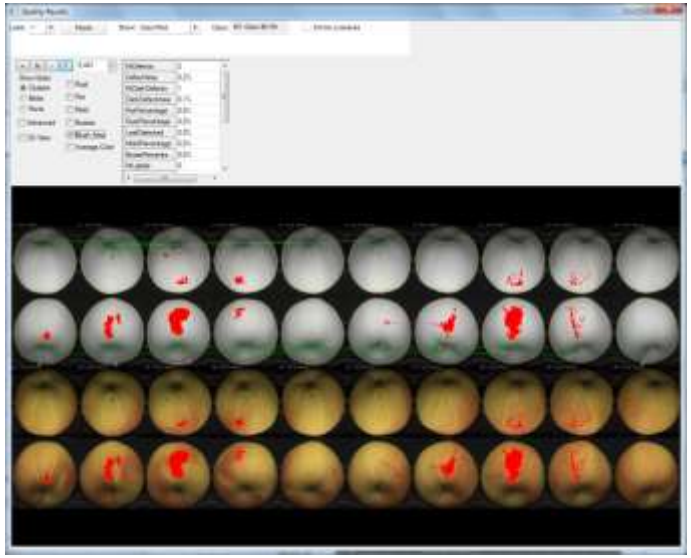
# Diameter & length are accurately determined, Fruit is “peeled” in to 3d for further examination.

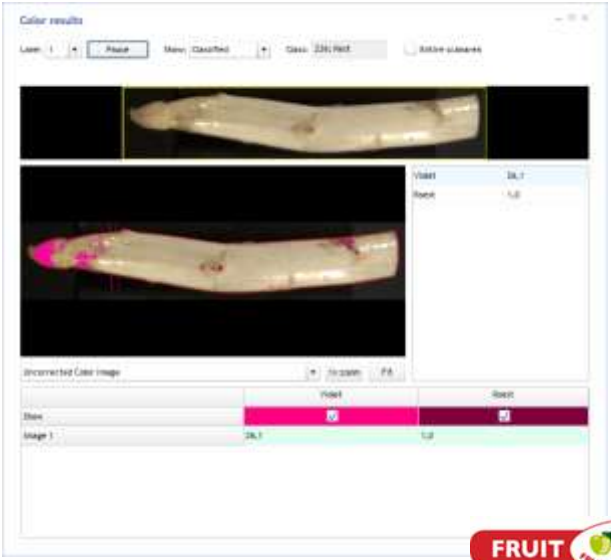



FRUIT SIZERS

# Color

- Can be used to sort on absolute colors
- Camera focus/iris
- Camera calibration
- Background separation
- Photo / Strip mode
- Average Color, percentage of a Color

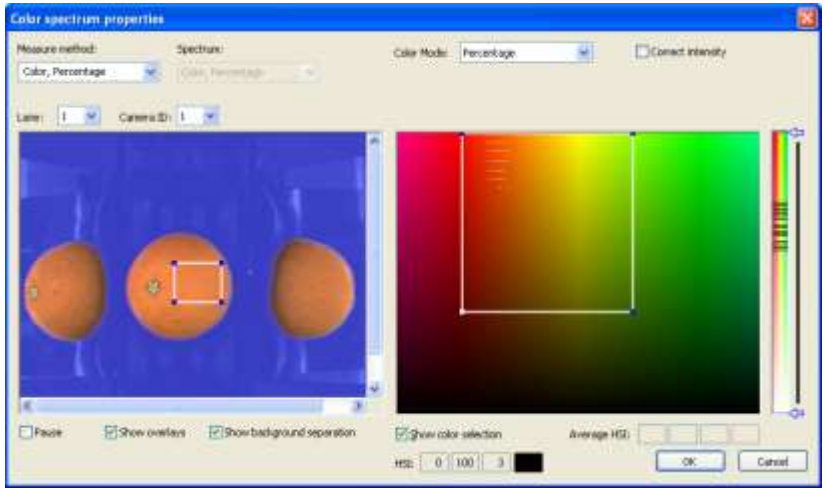


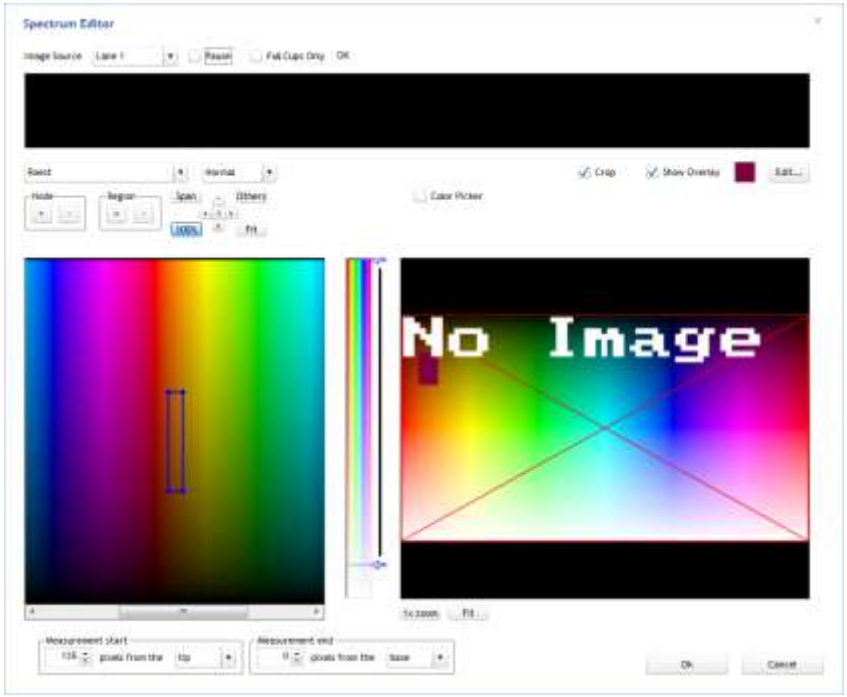


# Color

- Adding a new color measure method
- Average, Median, Percentage or Pixel

- Defining the color selection
- Color picker



# Quality

What does quality do that color cannot do:

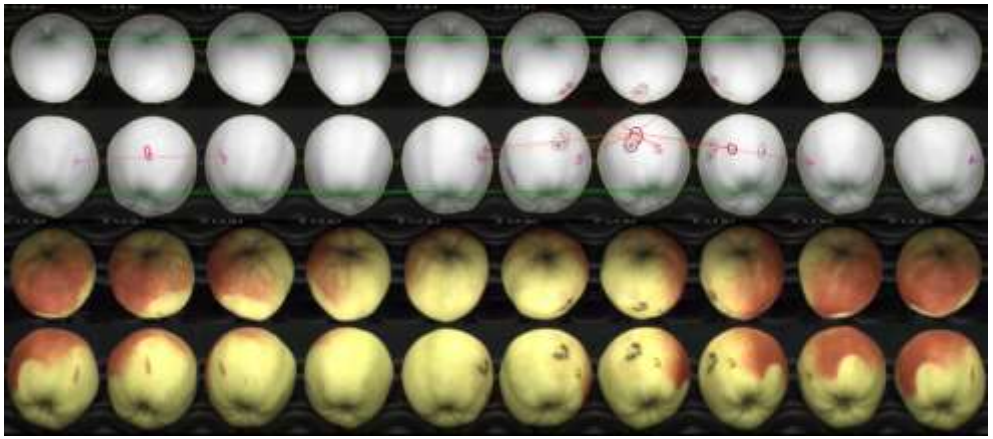
- Intensity correction
- Relative selection
- Blob detection
- Locate specific fruit characteristics like stalk and navel

| | |
|---|---|
| NrDefects | 3 |
| DefectArea | 2.5% |
| NrDarkDefects | 2 |
| DarkDefectArea | 2.3% |
| RotPercentage | 0.4% |
| RustPercentage | 3.9% |
| LeafDetected | 0.0% |
| MoldPercentage | 0.4% |

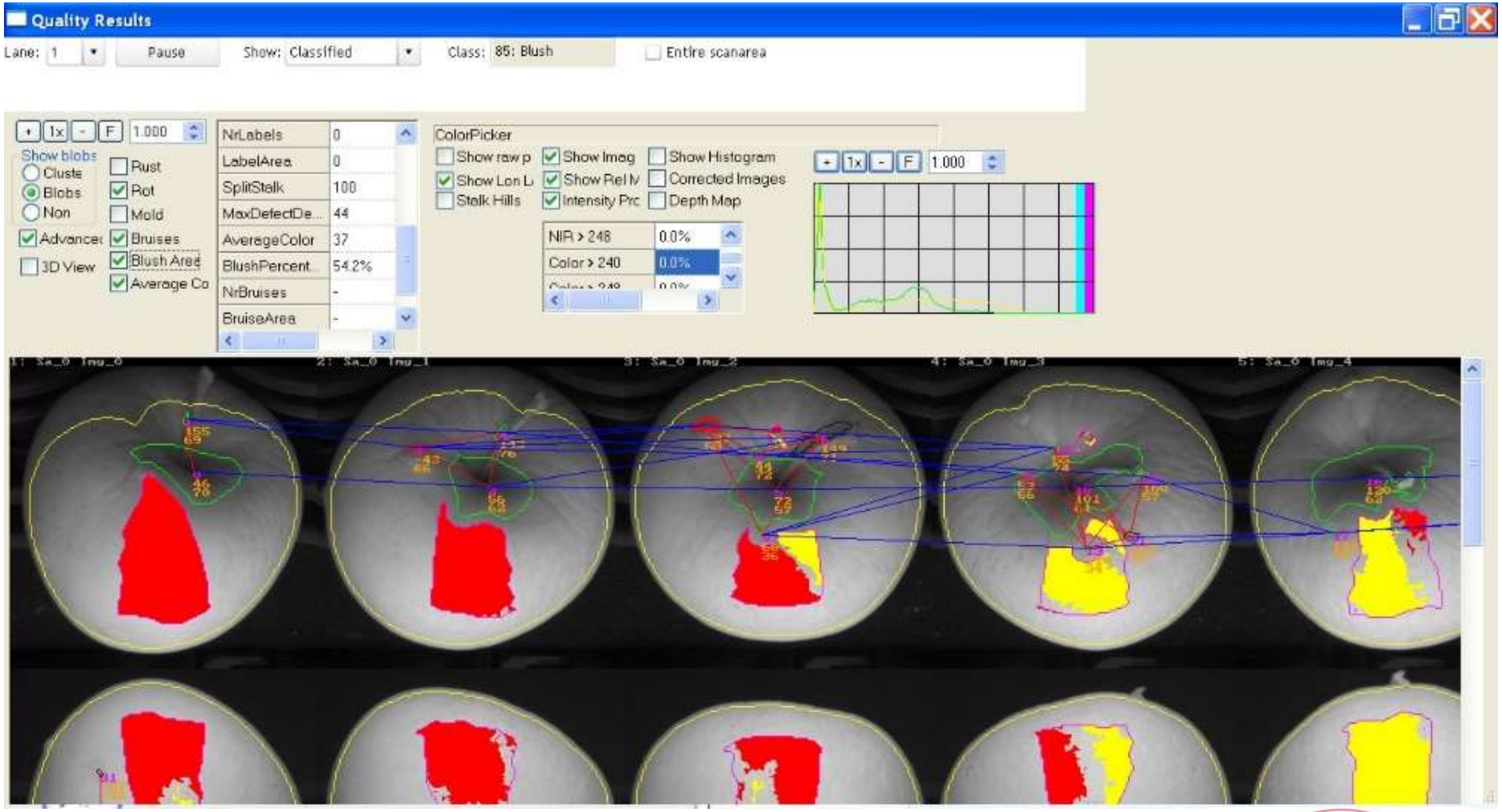
Color / NIR offset

Using NIR camera for contour

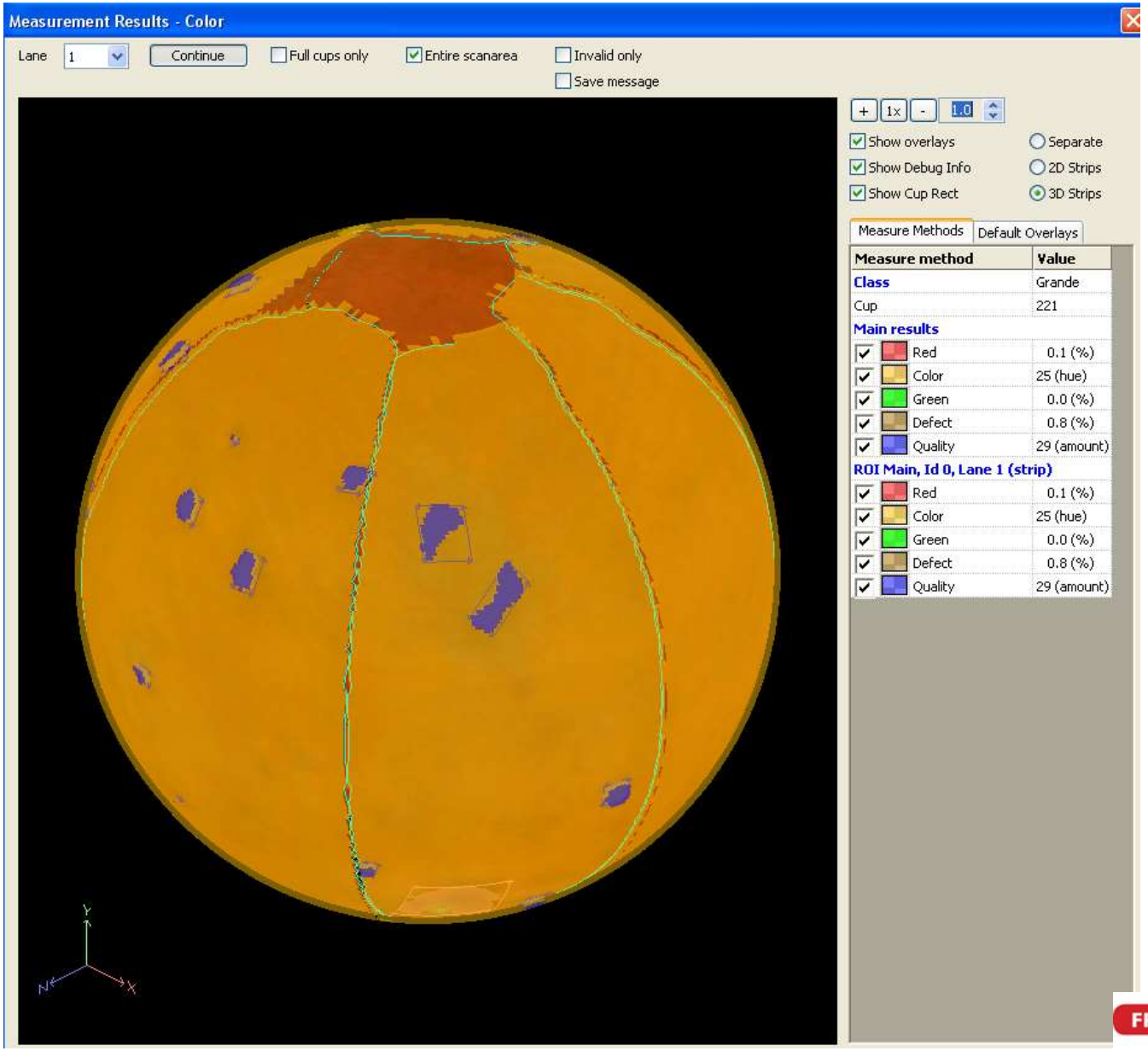
Calculation time setting



# Images are mapped as fruit rotates, no guessing on results.



# You can actively roll the fruit in 3d to evaluate



# Packaging/Distribution

Packages

Distribution

3 types: uniform, sequential, percentage, dynamic

Per class:

- Uniform: all exits receive same amount of fruit.
- Percentage: set a percentage per exit.
- Sequential: fill a package before continuing to the next exit.
- Dynamic exits: the software decides which class is sent to an exit according to statistical information.

This algorithm always comes in combination with TrueTouch scales.

# Statistics

- Batch ID
- Tracking and tracing data in user friendly comment fields
- Load (cup fill percentage), speed
- Virtual machine
- Class, exit, packages

# Software Structure

- GUI PC
- Drive C: Operating system

Drive D: TrueSort applications, settings and statistics.

- Drive E: backup memory stick

- Master
- Boots from network card.
- No software on disk.
- Heros operating system
  (Ellips advanced architecture for running computer)
  and master application are loaded from the file server (GUI PC).

# Remote Service – ADSL Fast Internet Connection

- Connecting to the customer
- Dial-up
- Remote Desktop
- VNC
- Remote GUI
- Software updates
- Solving problems/Event viewer

FRUIT SIZERS

FRUIT SIZERS & ALLIED cc

AME QUALITY FRUIT SIZERS
ALQUAN MECHANICAL ENGINEERING

## Some of our key members involved in our projects

Dave Hind – FSA – A career in materials handling covering all industries.
Serving Cape + national fruit packers needs for 3 decades.

Rory Cole – FSA - 20 years in surveying of industrial
& agricultural projects. International experience.
Customer & project development plus implementation.

Johnny van Zyl – Alquan Engineering cc, Grabouw
Engineering background, apprenticed at SA Railways with extensive mechanical experience.
18 years in the fruit packing industry in pack house management & projects.
Extensive fruit sizer + packing equipment experience.

Eugene van Zyl –Alquan - 20 years in mechanical projects & maintenance.
Sizer manufacture & service of mechanicals & electronics.

QUALITY FRUIT SIZERS
ALQUAN MECHANICAL ENGINEERING

# AME ACTIVE ENGINEERS

**JOHNNY - CEO & PROJECT ENGINEER.**
**CAREER IN ENGINEERING OF MAJOR PLANTS & 20 YEARS IN FRUIT PACKING DEVELOPMENT & PROJECTS**

**EUGENE - SIZER MANUFACTURE & SERVICES.**
**20 YEARS IN ENGINEERING ON FARMS INCLUDING MECHANICAL & ELECTRONICS**

**JOHNNY VAN ZYL**

**EUGENE VAN ZYL**

## NEW SIZER MANUFACTURE

Dual 40+1 drop 6 laners with weight + colour shown
packing high volumes of all pears and apples for Cape packer

Robust powder coated frame with enclosed side extrusions housing gate drivers + wiring

Soft woven drop chute system, foam covered + diverters - Gate drivers per drop

High power smooth shaft mounted drives - Exceptionally accurate weighing -
Clean lines with aluminium covers and covered chains

High SA local content
Full competent service + spares
Personalised installation + service
Contact : Dave : 083 463 4332

**FRUIT SIZERS & ALLIED**

Dave Hind: 083 463 4332
E-mail: sales@fruitsizers.co.za
www.fruitsizers.co.za

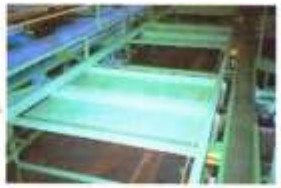
**QUALITY FRUIT SIZERS**

PO Box 475
Villiersdorp 6848 Cape
South Africa

## SIZER RETROFIT

Frame Strip, Clean + Modifications

*Contact*
*Dave*
*083 463 4332*



Singulator +
weigh end

Modular aluminium runners,
flight bars and chain s fitted

weigh unit

Pears handled

FRUIT SIZERS

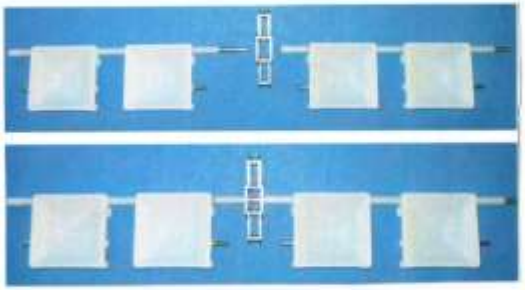
# FRUIT SIZERS

FRUIT SIZERS & ALLIED cc

## TYPICAL INSTALS IN PROGRESS

FRUIT SIZERS & ALLIED cc

## Assembly of aluminium runner sections with pin tracks & gates



## Modular sizer rods & chain assembled in to 10 lanes

## We engineer for any site or any fruit type

## Good project management is essential - Start to Finish

## No problem in tight situations with precise engineering

## 10 lane x 23 drop sizer rebuilt to high specifications

FRUIT SIZERS

**OUR GRADERS HANDLE APPLES, PEARS, STONE FRUIT, CITRUS, AVOCADOS, TOMATOES AND OTHER VARIED FRUIT TYPES**

## THE RIGHT SIZER FOR YOUR FRUIT TYPE

VERSA SORT

ELLIPS of Holland is a leading global supplier of electronic and vision software for quality fruit grading. Online internet programme support and direct remote control of the system ensures peace of mind for users.

The programme is very easy to use - the operator interface of headline icons leads you to the screens needed.

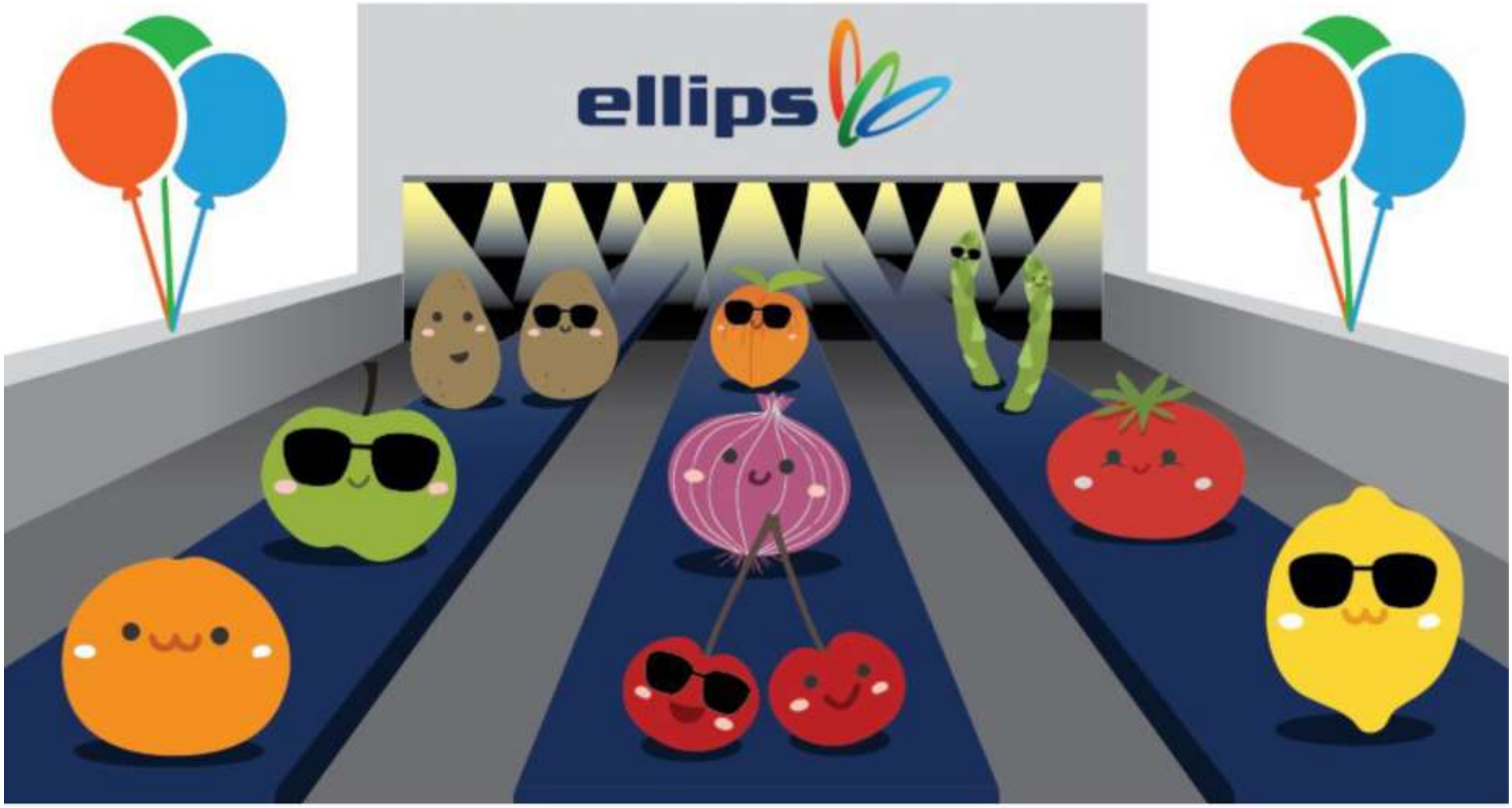
ellips

## IMPROVE GRADING EFFICIENCY

- **New complete fruit sizers**
- **Upgrade your existing sizer**
- **Retrofit Ellips advanced and reliable weight and vision technology offering the highest level of fruit grading available**
- **Full service available in South Africa**
- **No volumes too small or too large!**

FRUIT SIZERS

FRUIT SIZERS & ALLIED cc

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sales@fruitsizers.co.za www.fruitsizers.co.za

TECHNOLOGY & ASSOCIATES

FRUIT SIZERS

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VERSA SORT

www.fruitsizers.co.za

Redpack PACKAGING MACHINERY

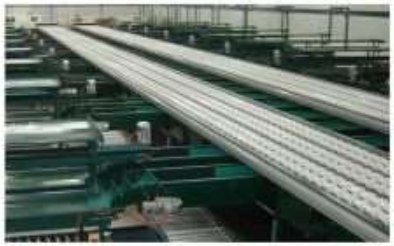
TRAYLESS FLOW WRAPPING SYSTEMS

ellips

ELECTRONICS & VISION

AME QUALITY FRUIT SIZERS
ALQUAN MECHANICAL ENGINEERING

SIZER & PACKLINE MANUFACTURE



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