

NXTGEN hightech Agrifood

NVTL Jaarcongres 2026

10 maart 2026

Jente Klein Holkenborg



Who am I

Jente Klein Holkenborg



- **Researcher Precision Farming, vision and robotics**
- **Agro Field Technology Innovations @Wageningen Research**

- **Studied Biosystems Engineering Wageningen**

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<https://www.wur.nl/plant-research>

NXTGEN hightech program

The next generation high tech equipment, for our future generations



Our goal is to make the Netherlands the number 1 high tech equipment provider

Handsfree Agrifood

Totaal ruim 150M

Programmamanagement

Laser Satcom

Energie

Biomedisch

Semicon

Composiet

Agrifood

Sleutel technologieën

Smart Industry

System Engineering

19. Ecosysteem

Handsfree open teelt, veeteelt, boomgaard

Handsfree Glastuinbouw

Handsfree voedselverwerking

1. Full autonomy enabling systems

2. Plasma4Agrifood

3. E-tractor

4. Pixelfarming Robotics

5. Appelpluk robot

6. Handsfree autonoom oogsten vollegrondsgroente

7. Handsfree Orchards

8. Hollandse Data linie

9. Towered Imaging Sensors

10. Collectieve data

11. Digital Twin

12. Oogstrobot

13. After Harvest

14. Dark fruit factor

15. Ready to go (m)eat

16. Ready Made Meals

17. Local tea production

Techontwikkelaars lopende activiteiten



Techontwikkelaars afgesloten activiteiten



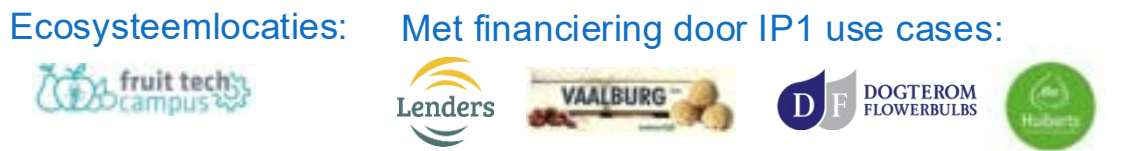
Eindgebruikers lopende activiteiten



Kennisinstellingen lopende activiteiten



Eindgebruikers afgesloten activiteiten



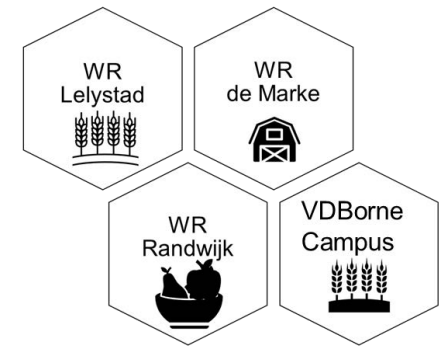
Use Cases: Open field cultivation



Agrifood ecosystem for shared infrastructure, testing and validation, dissemination and more.

Testing and validation services

- (Technical Validation)
- ELSA validation: ethical, legal, and social aspects
- User Acceptance Testing
- Business Model Validation
- Economic Assessment
- Digital Maturity Test



Handsfree autonomous harvesting of open-fields vegetables

Harvesting more efficiently with autonomous technology



Havermans, S.; Klein Holkenborg, J.; Bresilla, T.; Leunissen, A; Boersma, S; (2025).
 Harvest Optimization for Efficient and High-Quality Vegetable Harvest.
 LAND.TECHNIK AgEng 2025 (pp.67-72); VDI Conference- AgriRobot





Pea harvesting - Machine setting explained

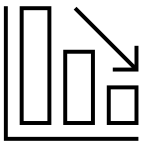


Bunker quality check

(Cleanness, damage, non-threshed pods)



Header Losses



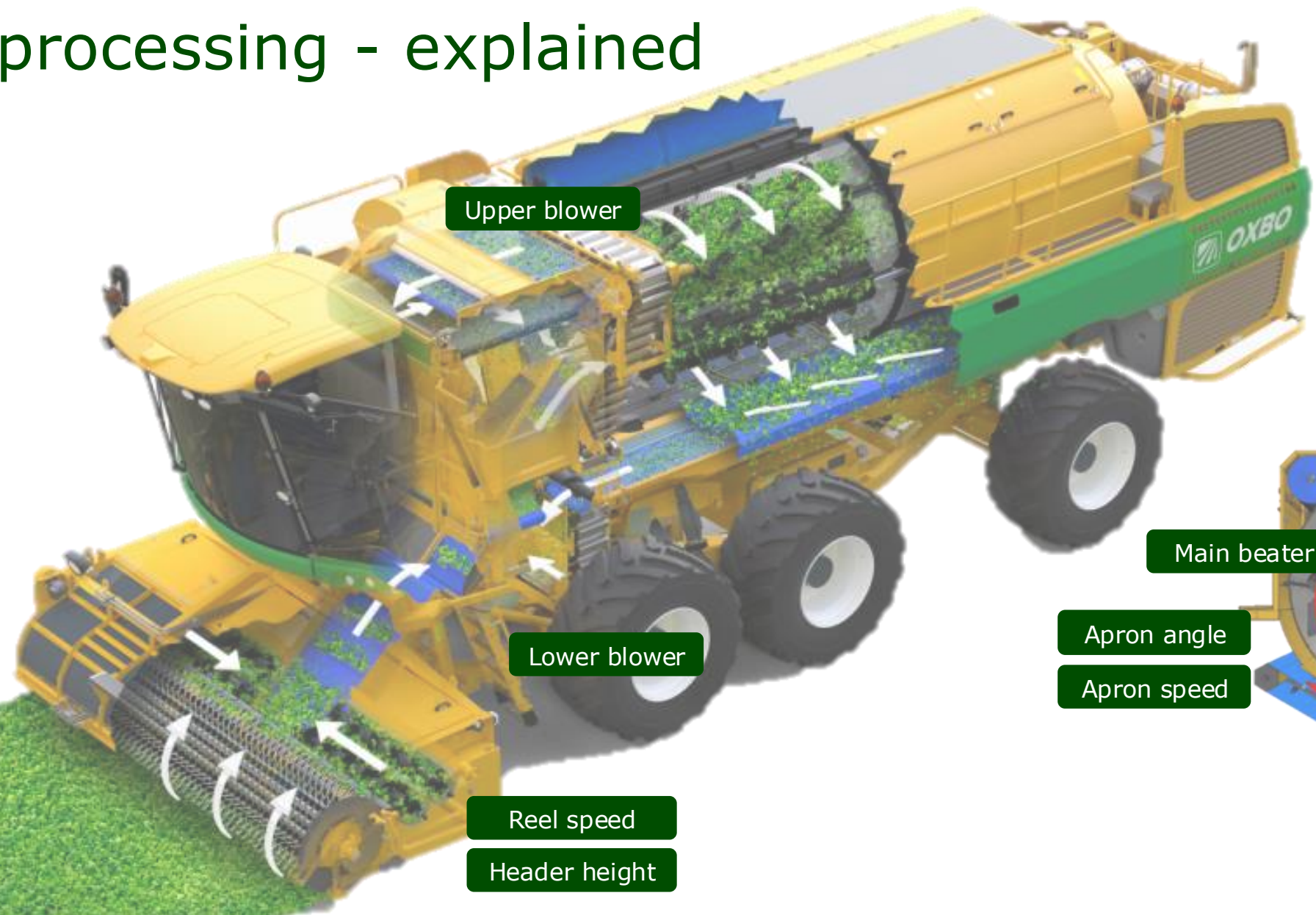
Apron Losses



Rear Discharge Losses



Crop processing - explained



Upper blower

Lower blower

Reel speed

Header height

Drum speed

Main beater

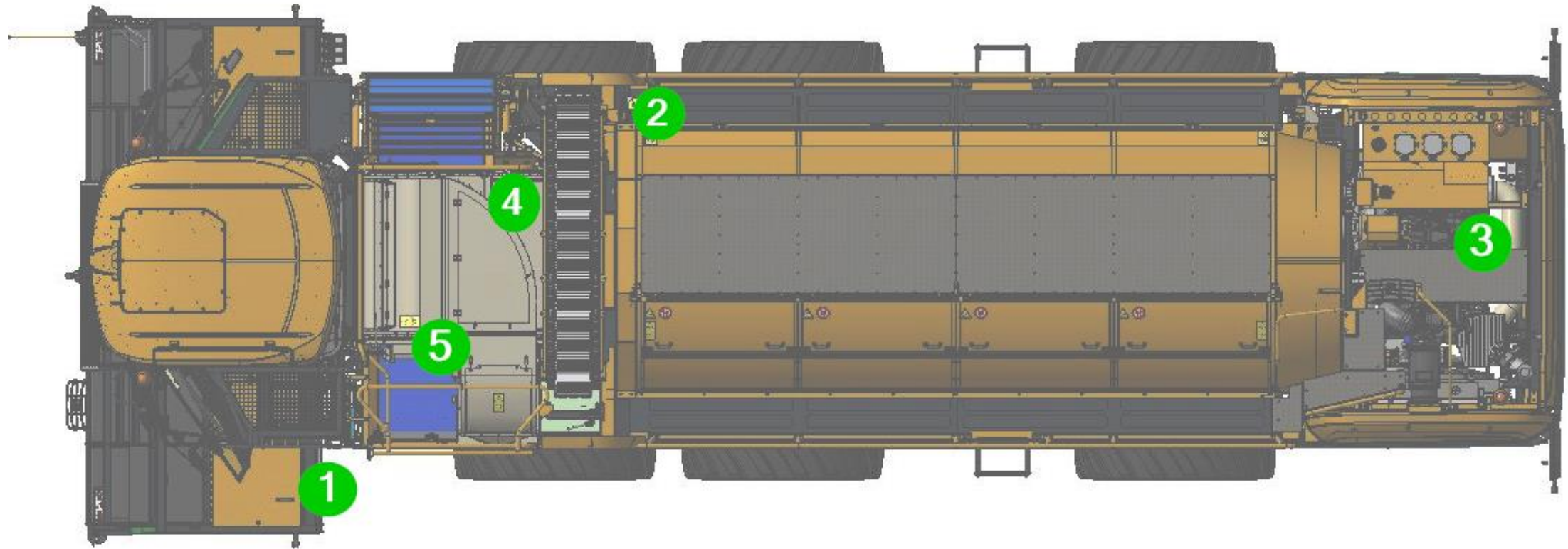
Apron angle

Apron speed

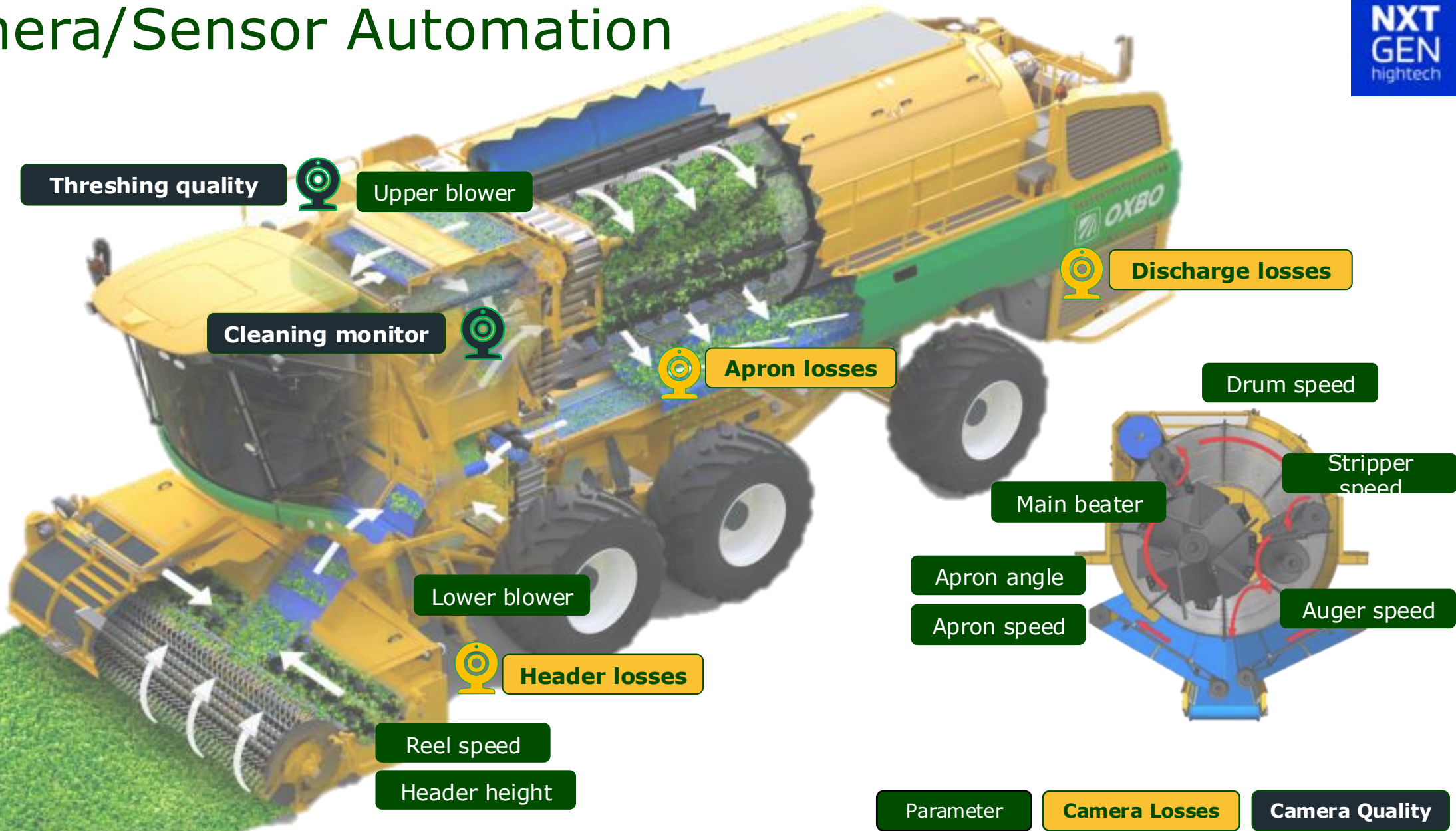
Stripper speed

Auger speed

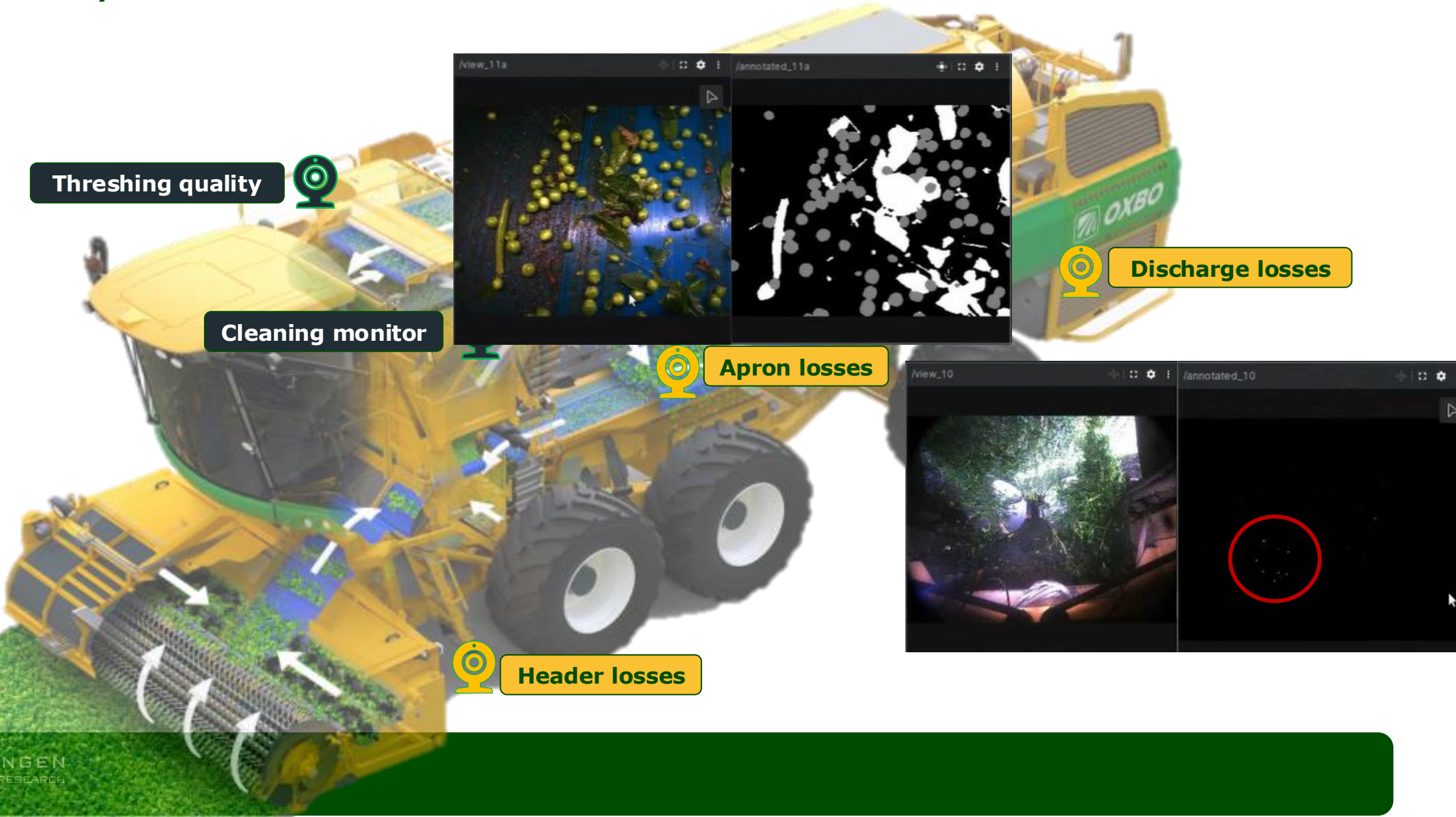
Sensing system

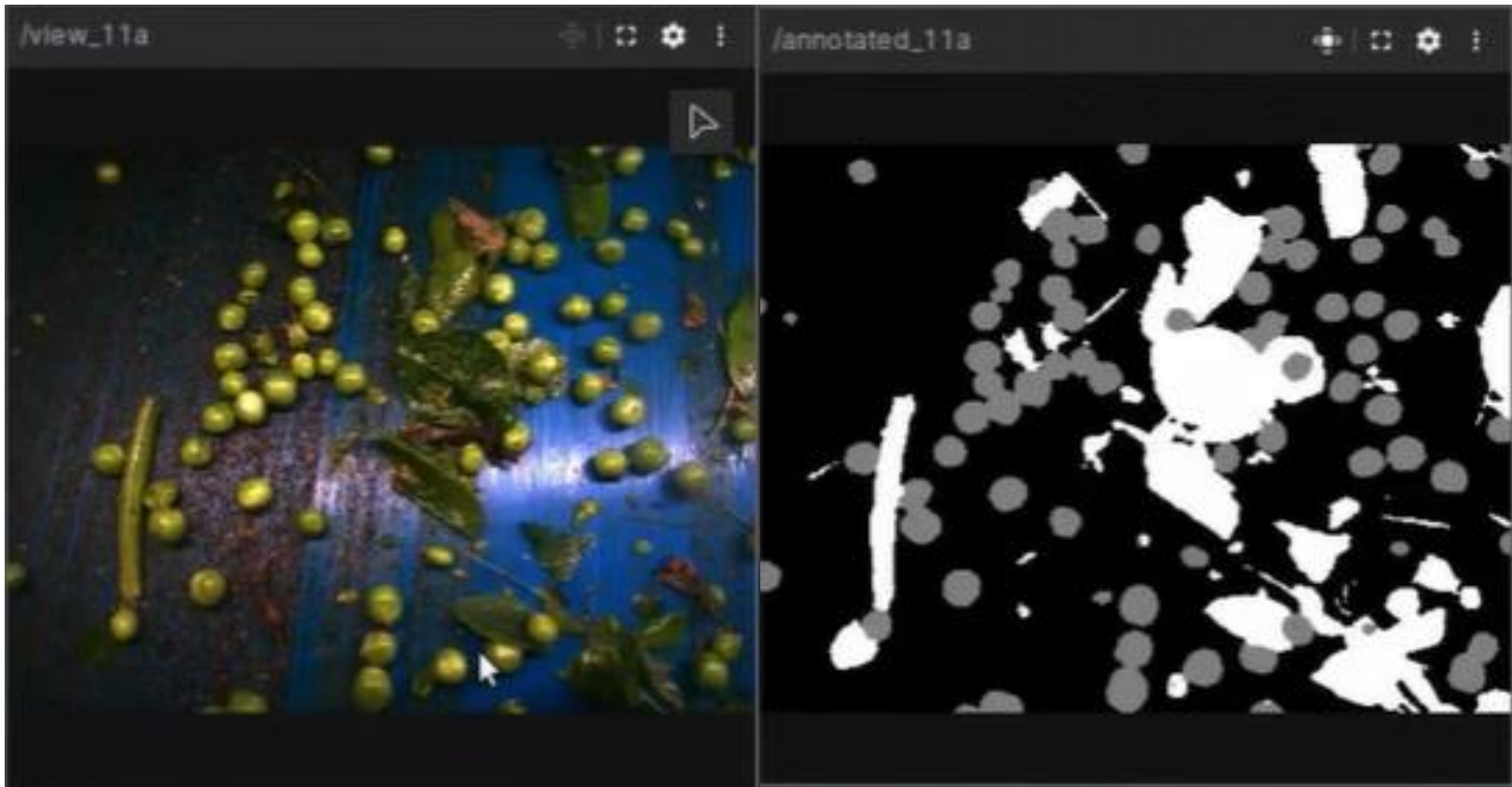


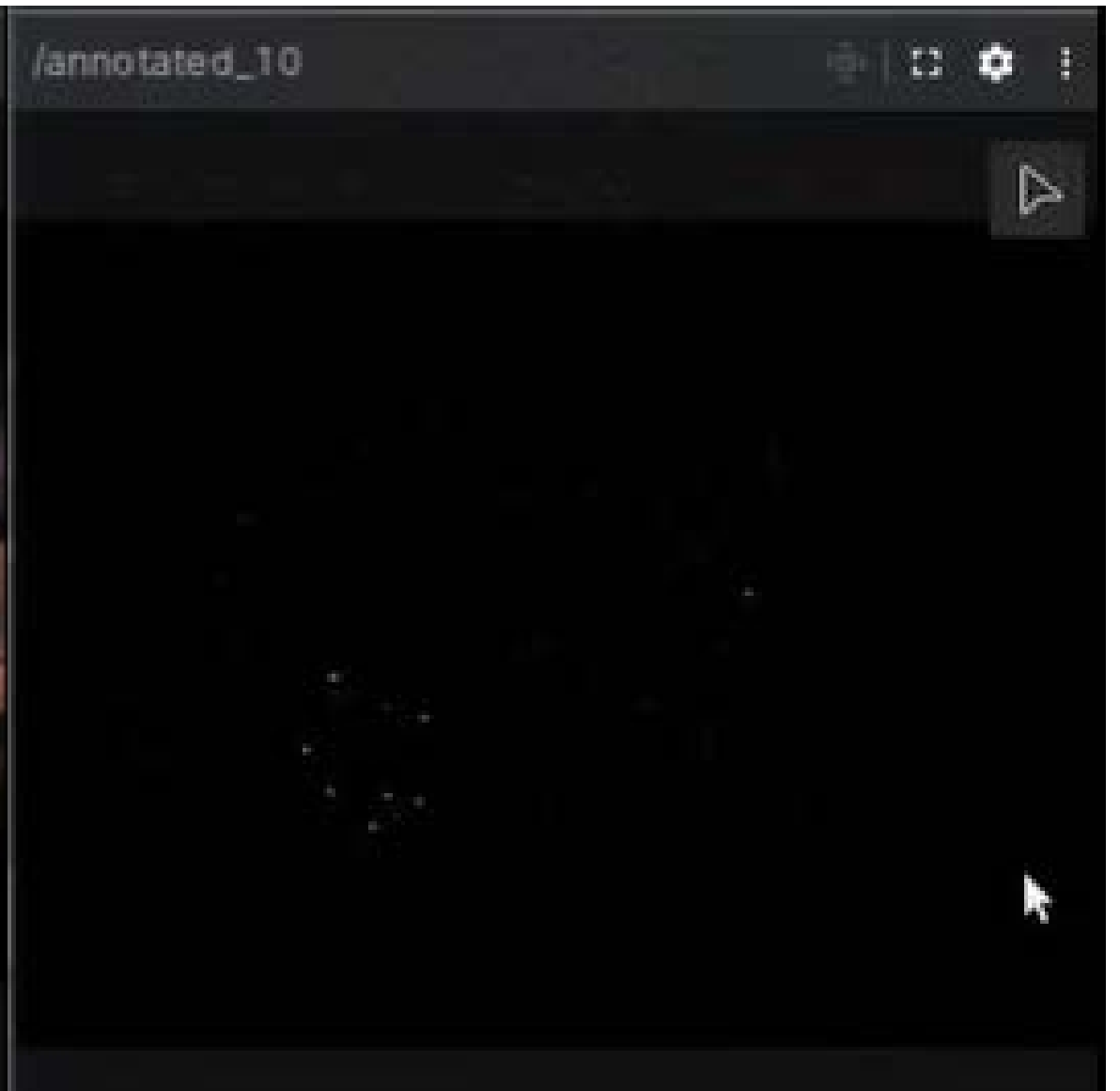
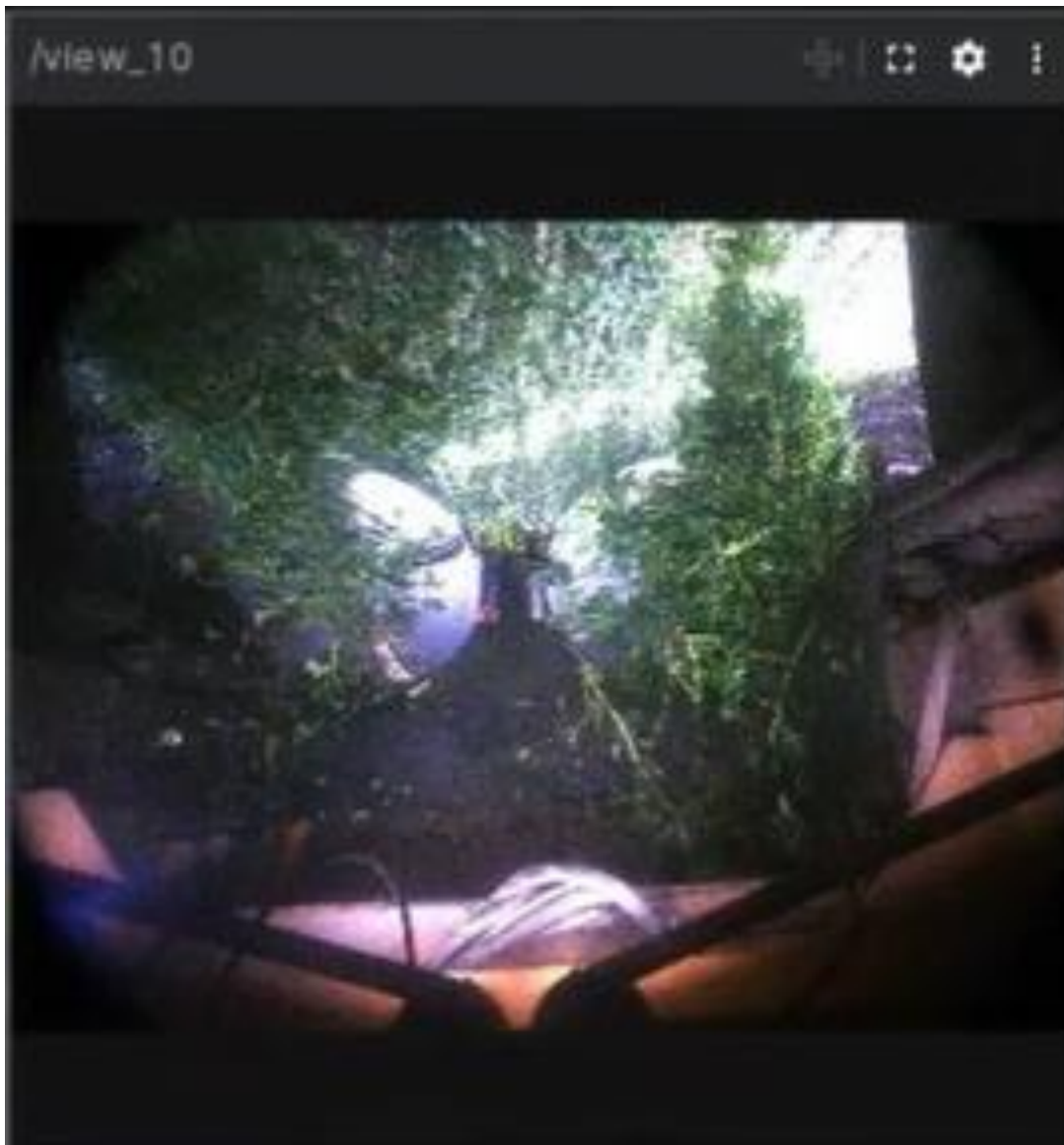
Camera/Sensor Automation



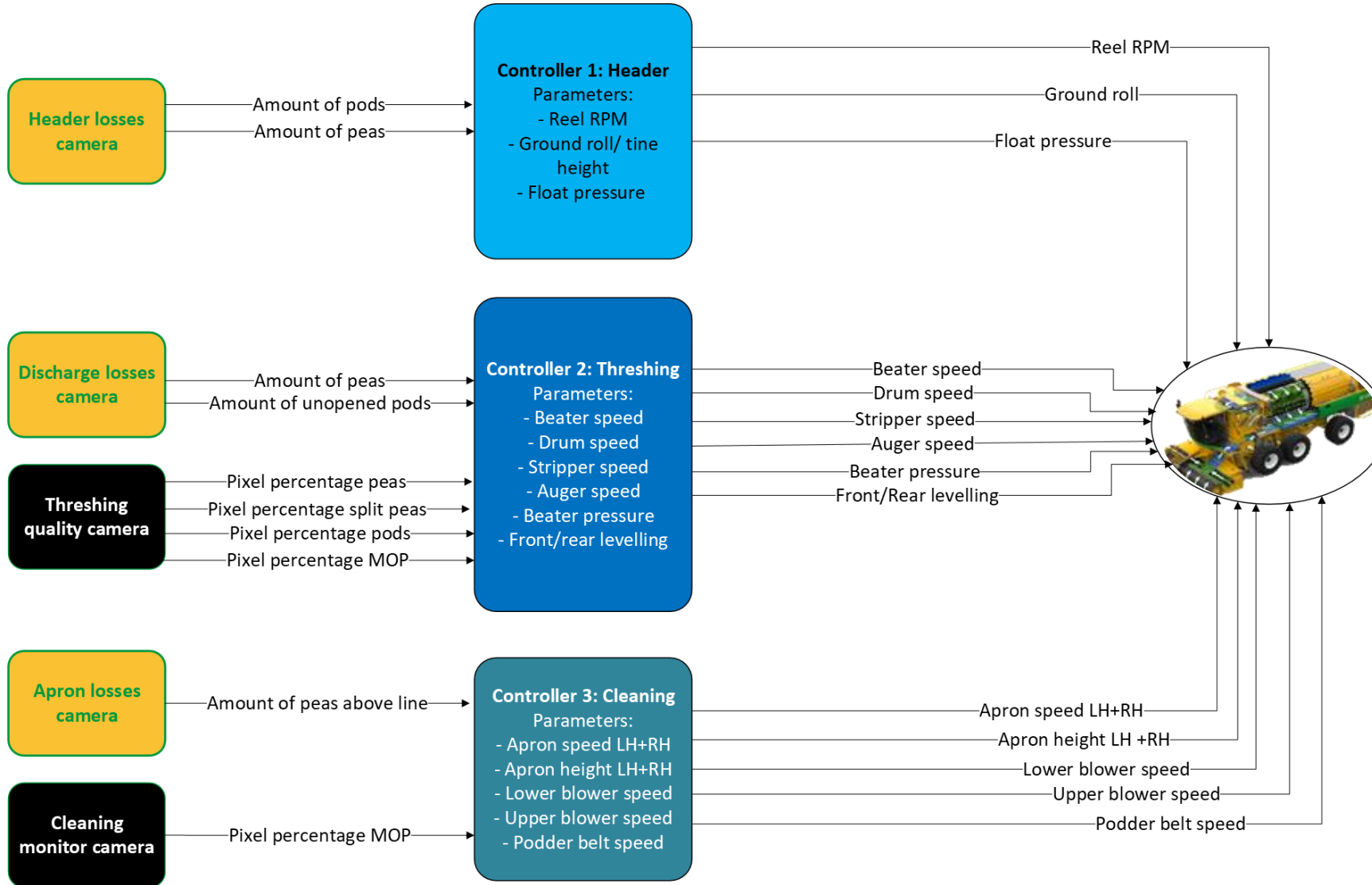
Camera/Sensor Automation







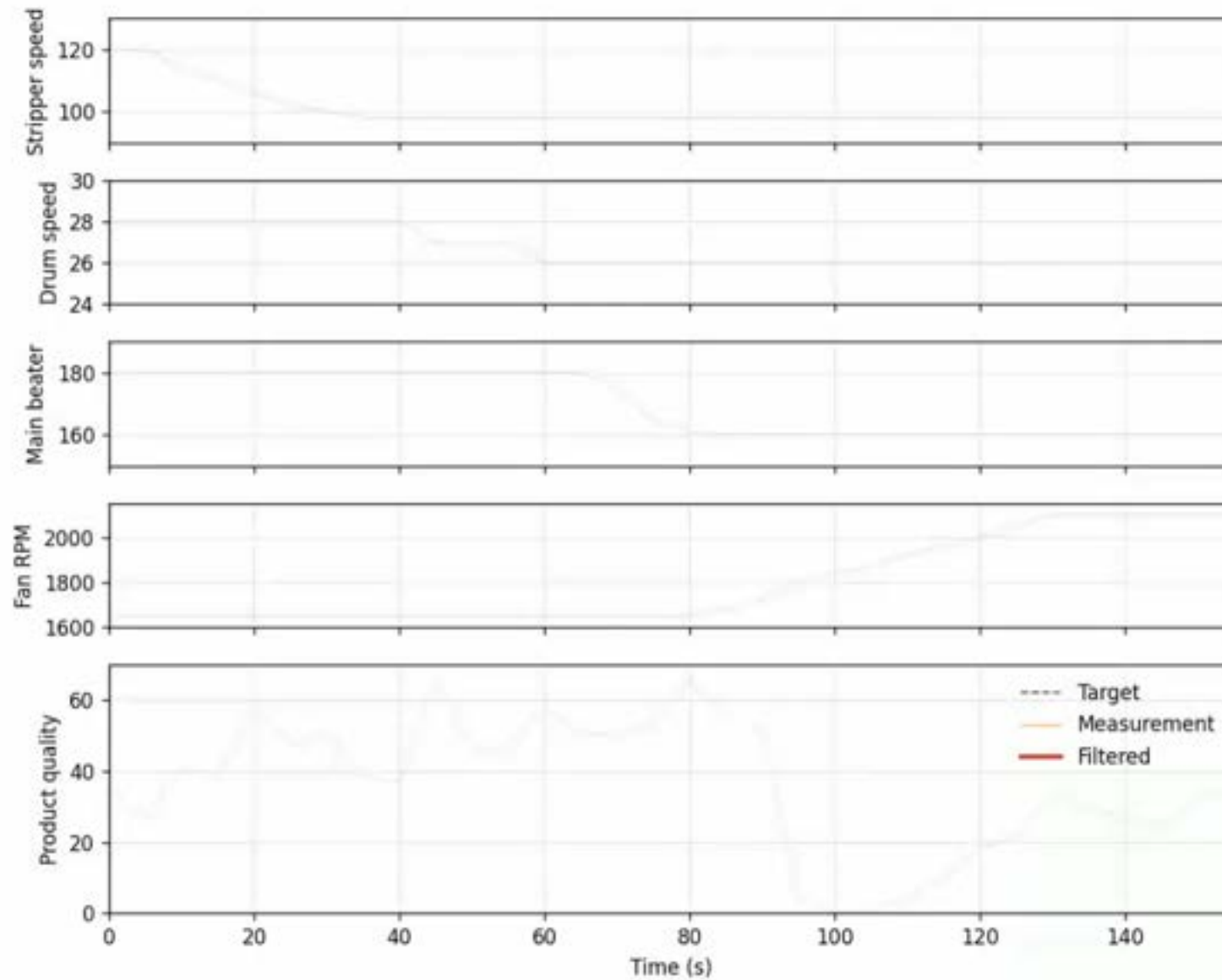
Control system



Comments

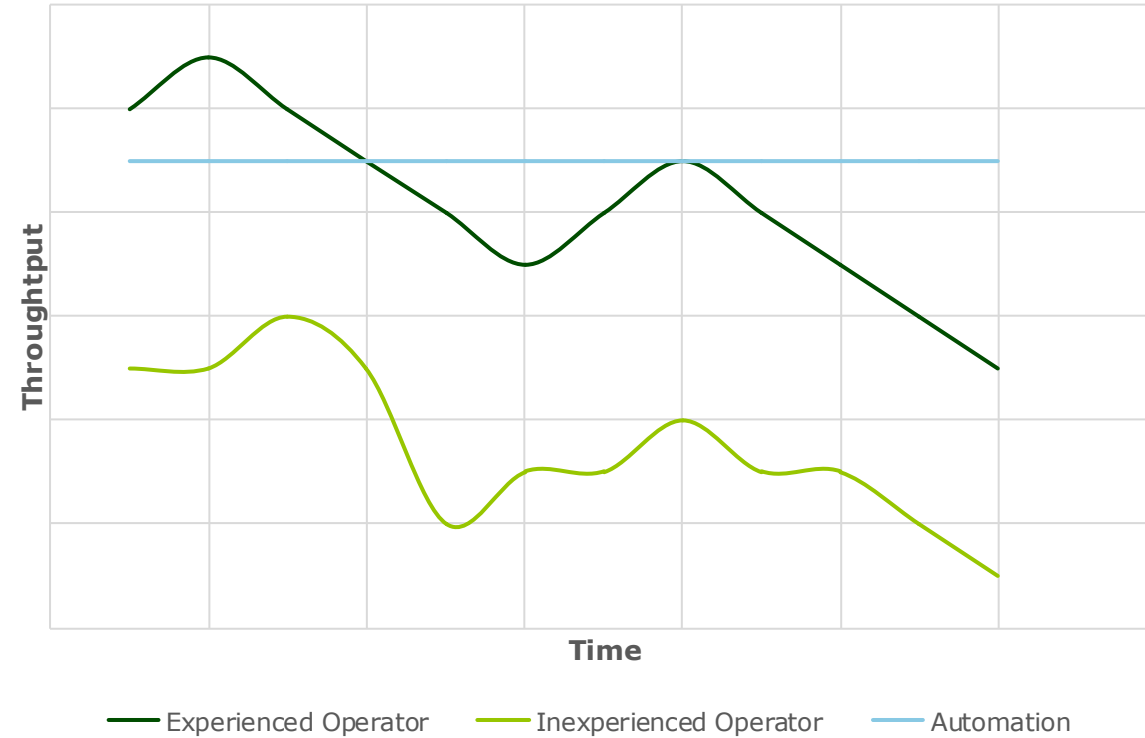
- 1 5 cameras into 3 controllers according to function of the machine
- 2 Controllers parallel to the rest of the machine
- 3 Parameter sequencing and "Skip-if-no-effect" per controller

Results



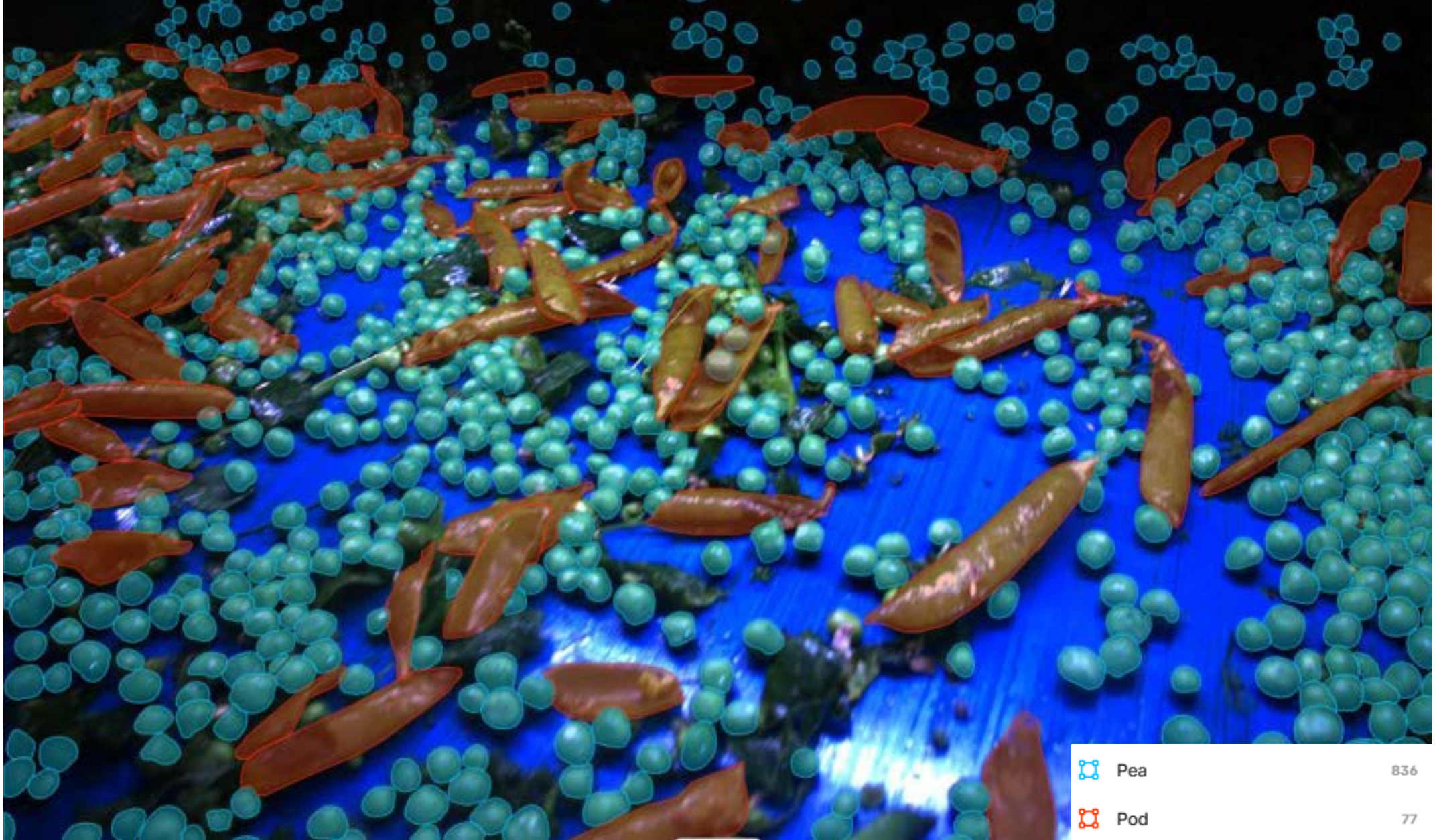
Conclusion

- 1 Parameter sequencing together with "Skip-if-no-effect"
- 2 Consistent and stable machine behavior in all tested situations
- 3 Increased overall machine throughput in approx. 20%
- 4 Reduction of dependency on operator and Field Manager









 Pea	836
 Pod	77



ws://localhost:8765 for glove... 2024-07-23 2:03:18:453 PM CEST

Panel Topics Problems

Map panel

Title Map

General

Tile layer Satellite

Follow topic /machine/gps_status


Topics

/machine/gps_status

Enabled Off On


Coloring Custom

Color #4279e3




Map

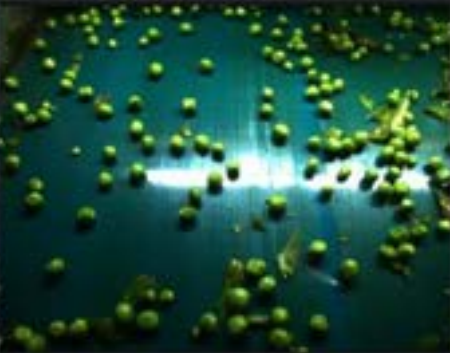
View_1




View_10




View_11a




View_11b




View_13



View_4



/machine/speed_data



/machine/gps_status

```

    title: /machine/gps_status @ 1721736198.430000000 sec
    + header: {} frame_id: gps
    + stamp: 2024-07-23 2:03:18.430 PM CEST
      sec: 1721736198
      msec: 430000000
    frame_id: "gps"
    + status: {} 2 keys
      status: 0 (STATUS_Fix)
      service: 0
      latitude: 51.666013
      longitude: 4.7386115
      altitude: 0
  
```

/machine/speed_data

1.2000000476837158

/machine/harvest_mode_data

True









WAGENINGEN
UNIVERSITY & RESEARCH

Questions?



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www.nxtgenhightech.nl | AgriFood