NEWTEC

Ensartet kvalitetssortering

Nuværende og fremtidige teknologier

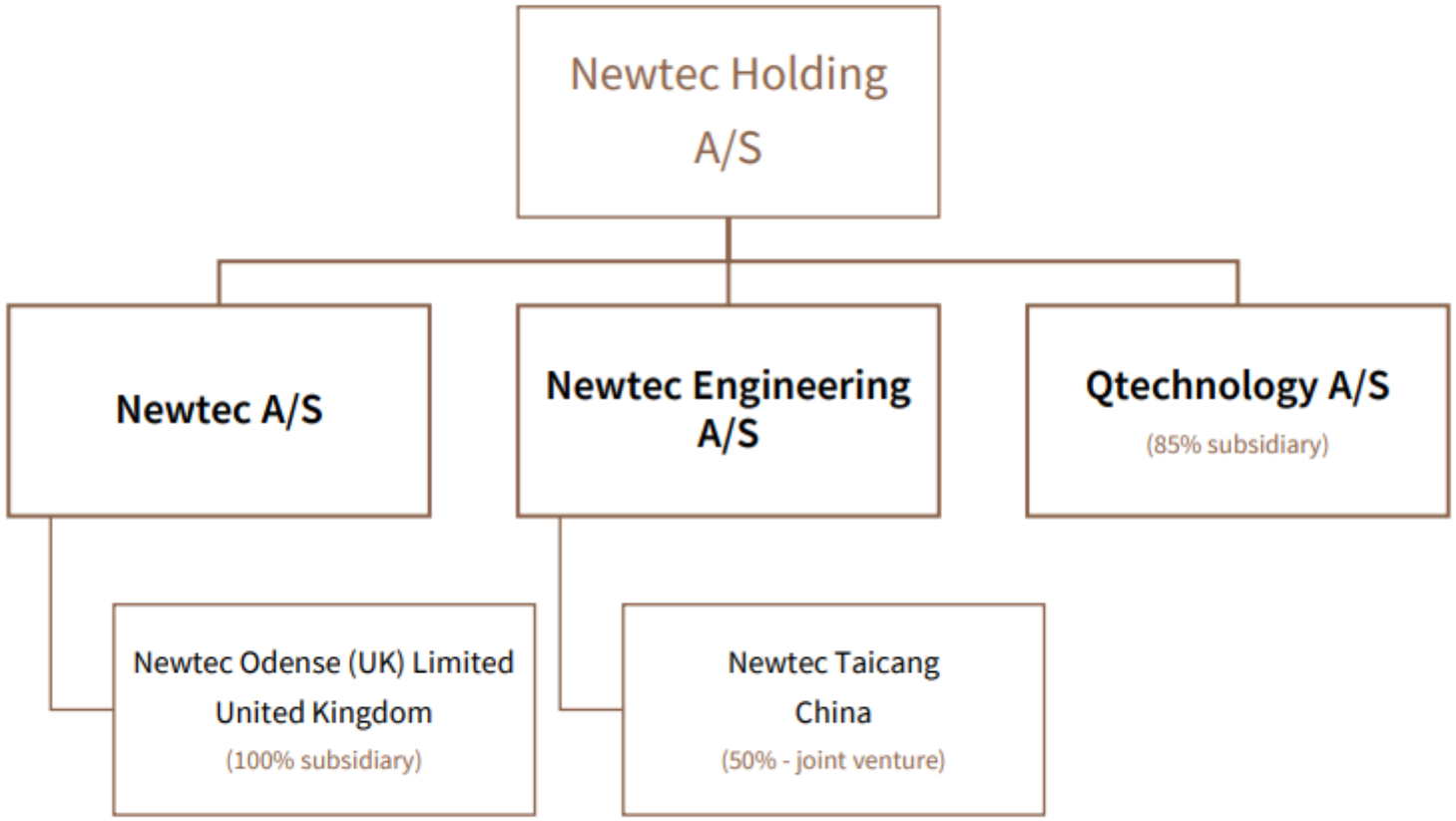
Minikonference vedr. økologiske kartofler

Innovationscenter for Økologisk Landbrug

Christian Max Villadsen

Funded by
the European Union
NextGenerationEU

Newtec Group



Newtec product portfolio

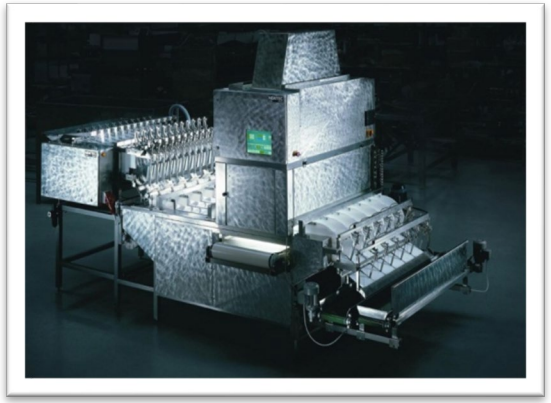
- Weighing machines for processed food
- Weighing machines for washed products
- Weighing machine for unwashed products
- Optical sorting machines for carrots and potatoes
- Packing machine for trays
- Packing machine for cups and trays
- Baggers for wicketed bags
- Check weighers
- WebServices
- Upgradable solutions





25 years experience with optical grading and neural networks

ASTRO/1997

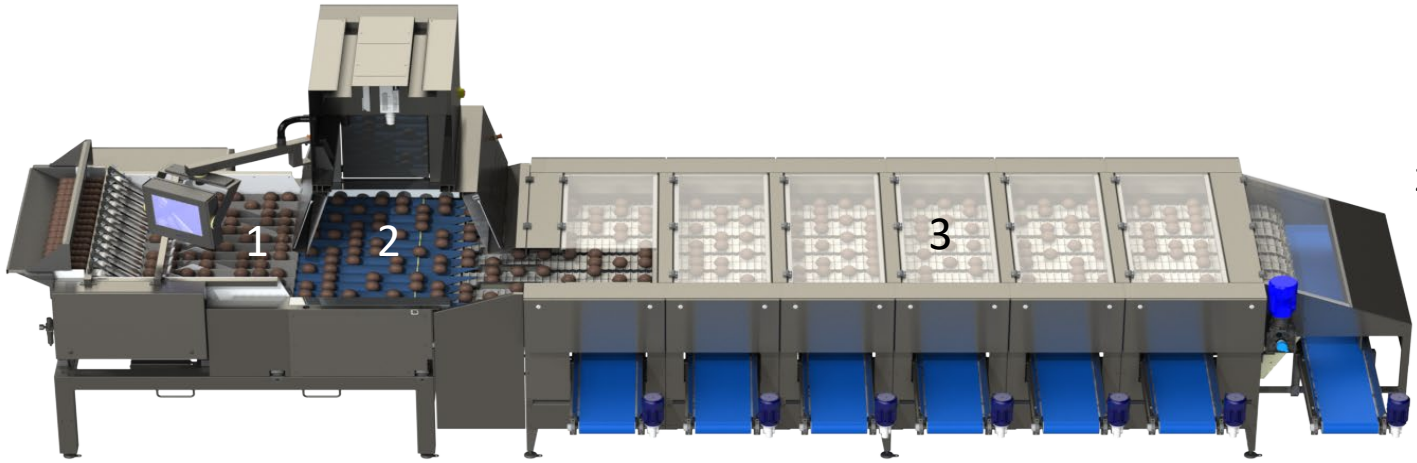


Celox-P-UHD, 6+1

Did you know that in 1997 Newtec constructed the first AI-based grading machine for potatoes before:

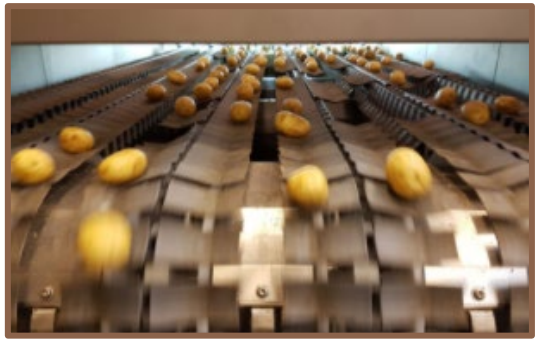
- WiFi was introduced
- Facebook.com was registered
- Netflix was established
- Operating systems were still installed from floppy disks
- Intel launched their Pentium II
- A computer beat a reigning world chess champion under tournament conditions?

Overview of the 3 main units



1) 

2) 

3) 

1) Singulation unit (product separation)

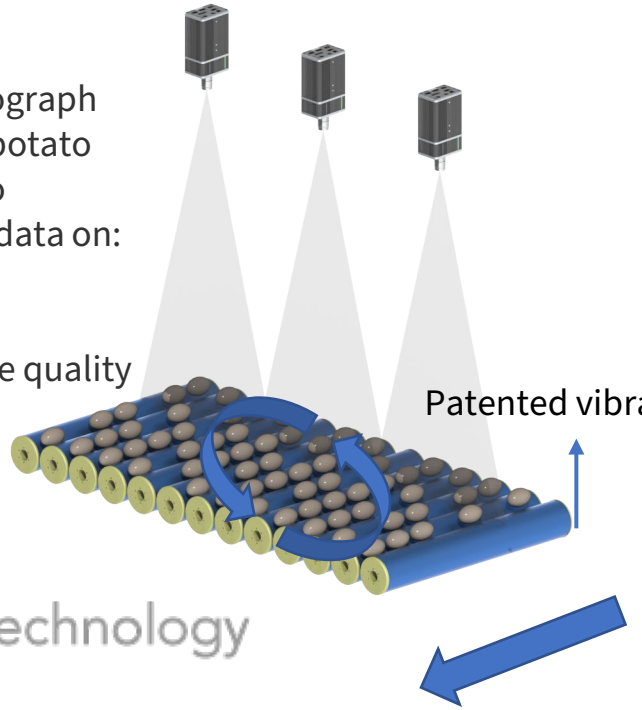
2) Inspection unit (camera vision system)

3) Sorting unit (Newtec Spinaflex system)

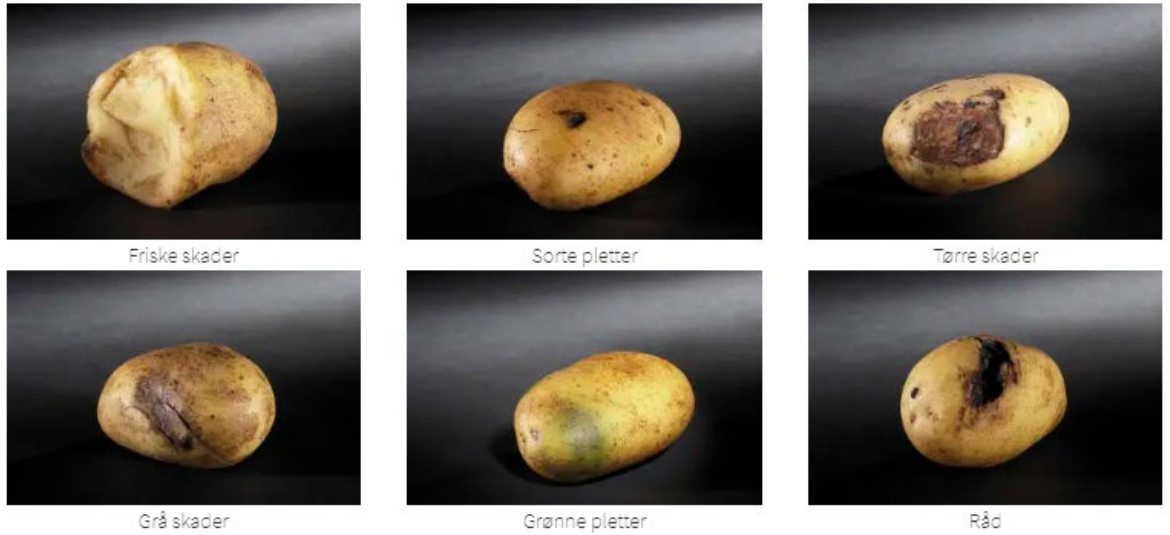
High precision optical sorting of potatoes

3 cameras photograph each and every potato up to 45 times to capture precise data on:

- size
- shape
- surface quality



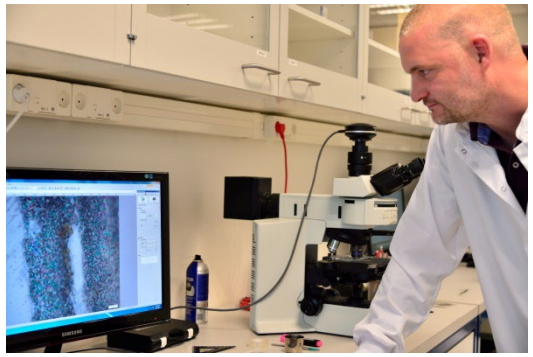
Complete surface analysis

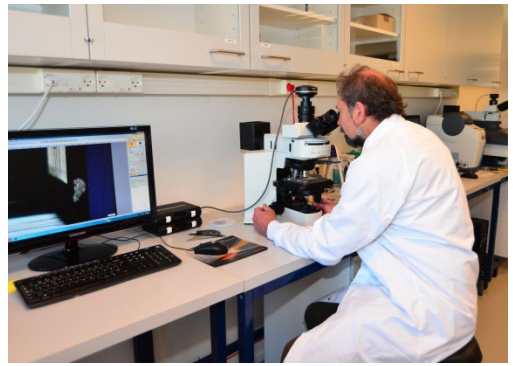


Quality check and classification of every single potato before it is presented in the sales packaging.

Research & development

With our own laboratory, we continue to invest significant resources on
research and development
to ensure that our solutions remain one step ahead.





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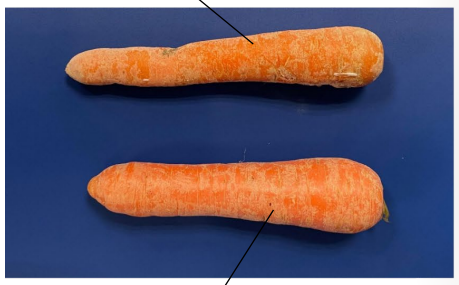
Hyperspectral image

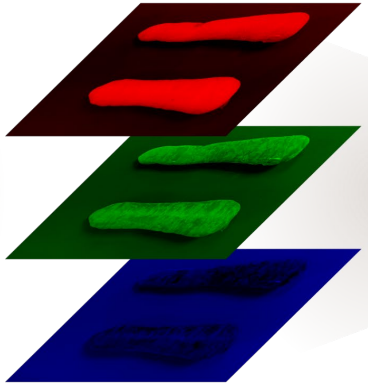
Fresh carrot

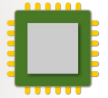


Defrosted carrot

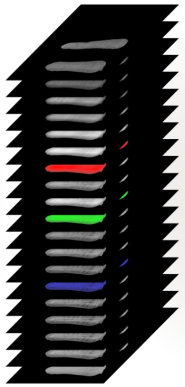
Conventional RGB camera

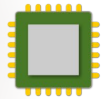
Color channel intensities

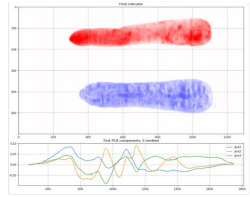


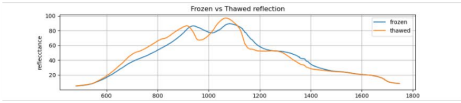


Newtec Hyperspectral camera



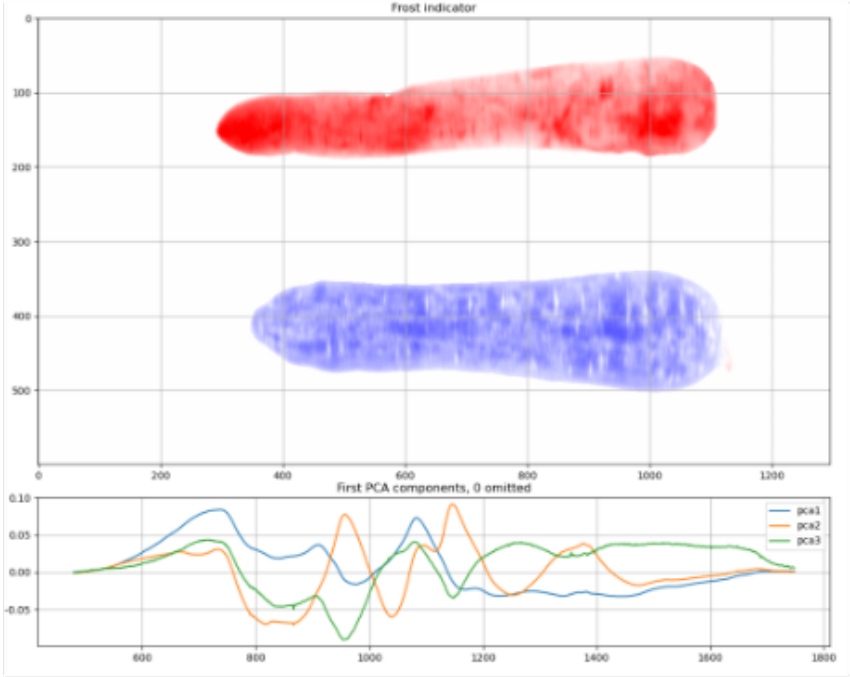




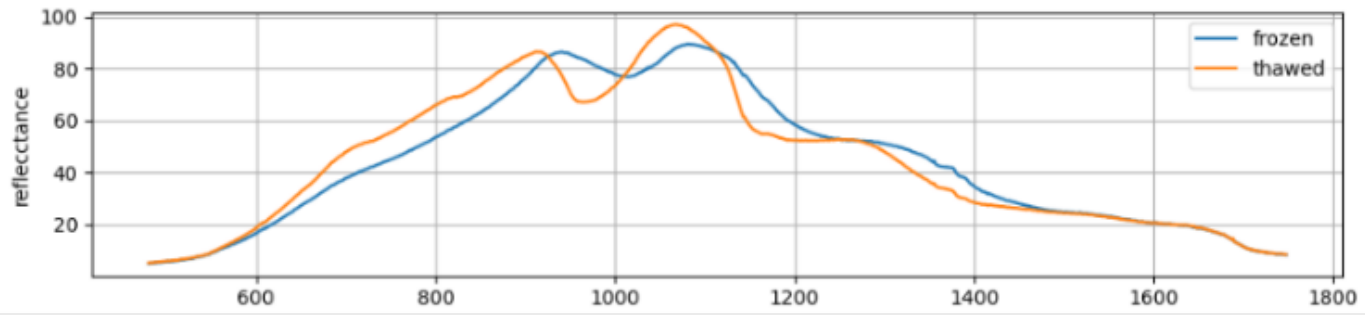


Wave length intensities

Hyperspectral image



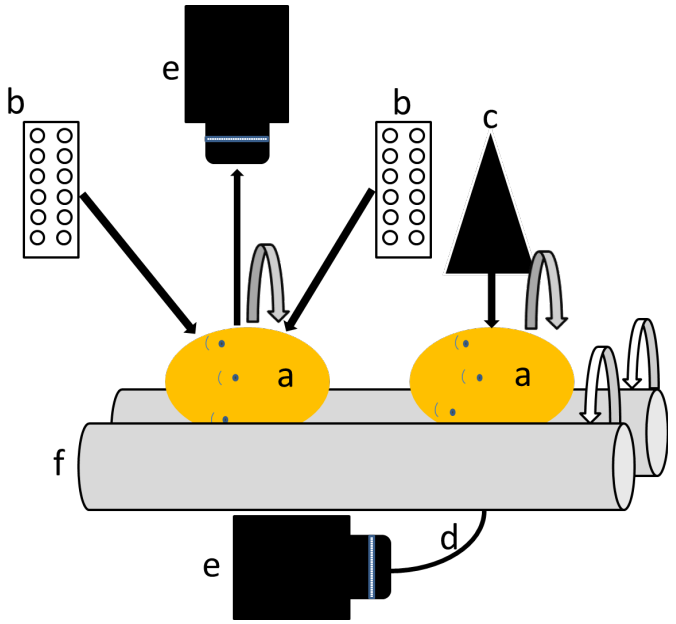
Defrosted vs. Fresh



Blackheart detection in potatoes using hyperspectral Imaging

Performed by 2 methods:

- Reflection based imaging method (R-HS) Left side
- Transmission based method (T-HS) Right side

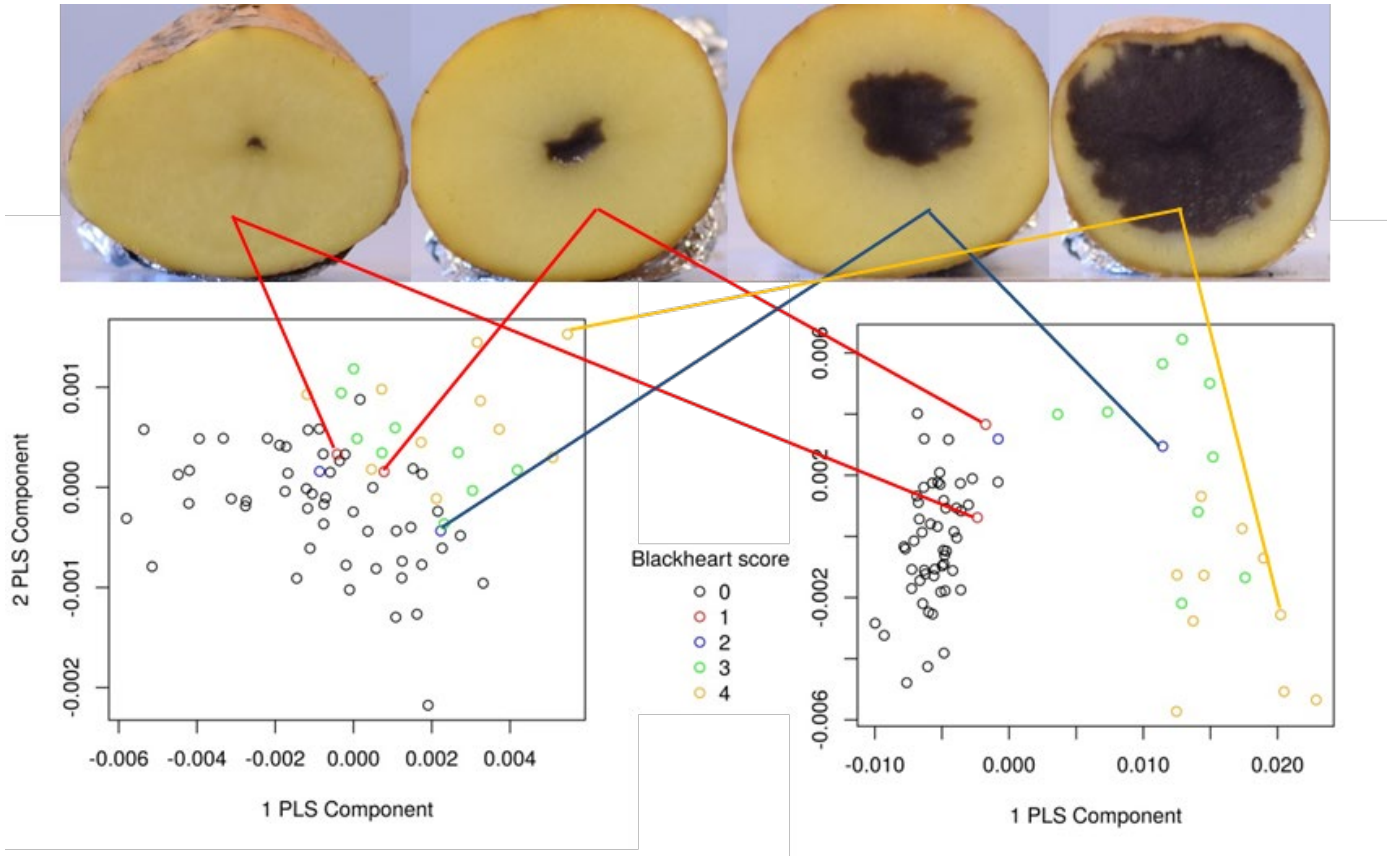


Overview of experimental setup: (a) tubers, (b) LED panels, (c) halogen lamp, (d) optic fibre, (e) hyperspectral sensors, and (f) roller

Blackheart detection in potatoes using Hyperspectral Imaging

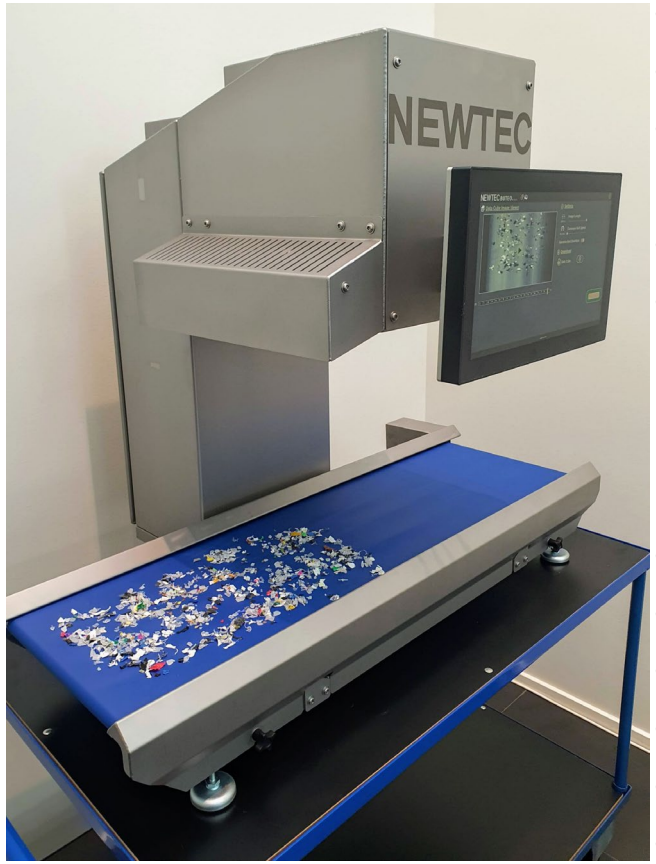
Reflection Method vs. Transmission Method

- **R-HS method**: could only detect the badly affected tubers
- **T-HS method**: able to clearly separate the worst cases of blackhearts



Plots of the PCA analyses. Left plot: the result of the R-HS method. Right plot: The result of the T-HS method.

Hyperspektralt kamera - Buteo



- Industrielt design
- Optimeret til fødevarer
- Hurtig kvalitetskontrol eller Kemisk analyse
- Design: Newtec & Qtechnology
- ZEISS komponenter designet unikt til Newtec

- Ikke-Destruktiv teknologi
- Detektering af plantesygdommen ”black hearts”
- Detektering af solanin også på uvaskede kartofler
- Detektering af svamp
- Skelne svamp fra råd
- Detektering af rust og slagskader

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Tak for opmærsomheden

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