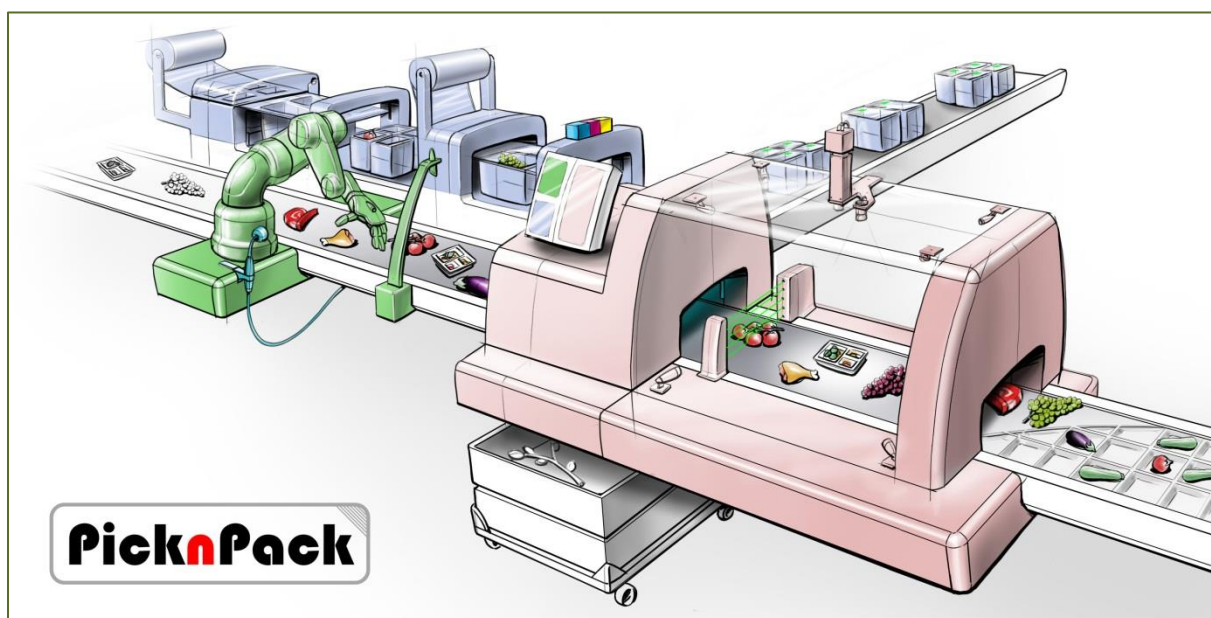


D11.2 - PicknPack report

Documentation of several demonstrations

Søren Østergaard,

9/30/2016



Flexible robotic systems for automated adaptive packaging of fresh and processed food products



The research leading to these results has received funding from the European Union Seventh Framework Programme under grant agreement n° 311987.

Dissemination level

PU	Public	X
PR	Restricted to other programme participants (including the EC Services)	
RE	Restricted to a group specified by the consortium (including the EC Services)	
CO	Confidential, only for members of the consortium (including the EC Services)	



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1 Introduction

The overall objective of WP11 is the demonstration of the PicknPack system in the food business. The demonstration will be conducted in food companies or companies related to the food industry. It will be done in the following kinds of food companies:

- Packaging of fruits and vegetables in the Netherlands
- Ready meal producer in another EU country (most likely UK)

Task 11.1. Liaise with interested companies (DTI, DLO, UM, Tecnalia, Marel, Fraunhofer, MS)

- Identify companies that could be interested in PicknPack results in collaboration with WP11
- Establish contact with selected companies
- Draw up agreements with companies
- Prepare for demonstrations

Task 11.2. Demonstration at two companies in different food packaging sectors (DTI, DLO, UM, Marel, MS, KUL, Spectro, Cam-Tech, Lacquey)

- Transport PicknPack system to demonstration site
- Assemble the system and test operation
- Test under demonstration production circumstances
- Communicate with users during and after the demonstration

2 Demonstrations performed in PicknPack

PicknPack has performed six demonstrations in 2015-16:

- Denmark 23 February 2015 (only the thermoformer and the printer)
- The Netherlands 26 and 27 May 2016 (two separate demonstrations days for industry)
- Spain June 2016 for the industry
- England 13 September 2016 for the industry
- Extra in England 14 September 2014 for students

3 Denmark 23 February 2015

3.1 The programme



Figure 1 – Photos from presentations at the Danish Technological Institute

- 11:30 Welcome and lunch
- 12:15 Project ideas (Søren Østergaard, DTI)
- 12:30 Implementation of flexible packaging lines (Helene Wagtberg, DTI)
- 13:00 Industrial needs for flexible packaging lines seen from the perspective of a food producing company (Bent Dahlgaard, Tulip Food Company)
- 13:30 Demonstration (Cam-Tech, Thorslunde)
- 14:30 Workshop: Brainstorm about design details
- 16:30 End of the day



Figure 2 – Photos from demonstrations of thermoformer at Cam-Tech

3.2 Participants

Name	Company
Adalsteinn Viglundsson	Marel, 8200 Århus N
Bent Dahlgaard	Tulip Food Company, 7100 Vejle
Bjarke Nielsen	Werosys, 3450 Allerød
Bjarne Dahl	Daloon, 5800 Nyborg
Claus Kristensen	Atria Danmark, 8700 Horsens
Erik Werner Jensen	Bosch Rexroth, 2650 Hvidovre
Farid Amandi	Teknologisk Institut, 2630 Taastrup
Flemming Blauert	AVN Teknik, 2605 Brøndby
Frank Jensen	Atria Danmark, 8700 Horsens
Hamid Piek	Teknologisk Institut, 2630 Taastrup
Helene Wagtberg	Teknologisk Institut, 2630 Taastrup
Henning Madsen	Tulip Food Company, 8940 Randers SV

Name	Company
Henrik Ehlert	Dyrmark, 2640 Hedehusene
Jan Finn Pedersen	Beckhoff Automation, 2600 Glostrup
Jan Lund	Orkla Foods Danmark, 2630 Taastrup
Jens Bjørn	Scanteco, 3500 Værløse
Jens Schou Jensen	Gea Food Solution Nordic, 8660 Skanderborg
John Gamstrup	Nordic Sugar, 1014 København K
Jørgen Lund Petersen	Atria Danmark, 8700 Horsens
Jørgen Rheinländer	InnospeXion, 4330 Hvalsø
Kaare Kirstinesgaard	GEA Food Solutions Denmark, 4200 Slagelse
Kiril Andreev Kirilov	Teknologisk Institut, 2630 Taastrup
Lars Bang	Schur Technology, 8700 Horsens
Lars Gustafsson	FESTO, 2610 Rødovre
Lasse Lavrsen	Toms Gruppen, 2750 Ballerup
Mads Boel	Multivac, 7100 Vejle
Martin Christensen	Rollco, 7100 Vejle
Martin Petersen	Multivac, 7100 Vejle
Michael Bjerregaard	Bosch Rexroth, 2650 Hvidovre
Michael Rasmussen	BONDY LMT, 2765 Smørum
Michelangelo Giorgi	InnospeXion, 4330 Hvalsø
Mogens Lerche	GEA Food Solutions Denmark, 4200 Slagelse



Name	Company
Morten Pedersen	Teknologisk Institut, 2630 Taastrup
Ole Gert Johansen	A.Bold Partner, 2600 Glostrup
Rune Hilding-Nørkjær	Toms Gruppen, 2750 Ballerup
Søren Pedersen	Pharmaceutical Packagaging Systems, 3520 Farum
Thomas Sommer	Delta Elektronik, 2630 Taastrup
Tina Schou	Atria Danmark, 8700 Horsens
Tommy Guldborg Nielsen	Tulip Food Company, 8940 Randers SV
Wolfgang Voit	XaarJet, S-17526 Jarfalla

4 The Netherlands 26 and 27 May 2016



Figure 3 – Photos from registration in Holland

4.1 The overall plan



Figure 4 – Photos from the welcome by the coordinator

09:15 - 10:00 Registration

10:00 - 10:30 Welcome and overview of PicknPack Project (Erik Pekkeriet) in the big hall with reception

10:30 - 11:30 Session 1

11:30 - 12:30 Session 2

12:30 - 14:00 Lunch – Technotron next to booths

14:00 - 15:00 Session 3

15:00 - 16:00 Session 4

16:00 - 17:00 Closing session with soft drinks (Idoia)



4.2 Plan for 4 groups

Tour guides	Red group Fatima	Blue group Gert	Green group Fatima	Pink group Gert
10:30 - 11:30 Session 1	Presentation	Presentation	Booths	PnP Demo line
11:30 - 12:30 Session 2	Presentation	Presentation	PnP Demo line	Booths
14:00 - 15:00 Session 3	PnP Demo line	Booths	Presentation	Presentation
15:00 - 16:00 Session 4	Booths	PnP Demo line	Presentation	Presentation

4.3 Detailed plan for Workshop presentations

Group red and blue are together in the morning.

Group green and pink are together in the afternoon.

Place: The conference room next to the reception.

- Flexible Automation for Food Packaging, from Bin to Pack in One Step (Richard van de Linde of Lacquey)
- Software Architecture for Data Processing and Control of Modular Reconfigurable Automated Systems (Herman Bruyninx of KU Leuven)
- Non-destructive, in-line Assessment of Surface, Subsurface and Internal Quality of Food Products (Wouter Saeys of KU Leuven)
- RFID Enabled Traceability Systems in Food Manufacturing and Distribution (Zhipeng Wu of University of Manchester)
- PicknPack project Impact Analysis and routes to Exploitation (Idoia Olaberrieta of AZTI)
- SHORT EXTRA SHOW about Hygiene (Marc of Fraunhofer)

4.4 Detailed plan for Demonstration

Place: Food Hall

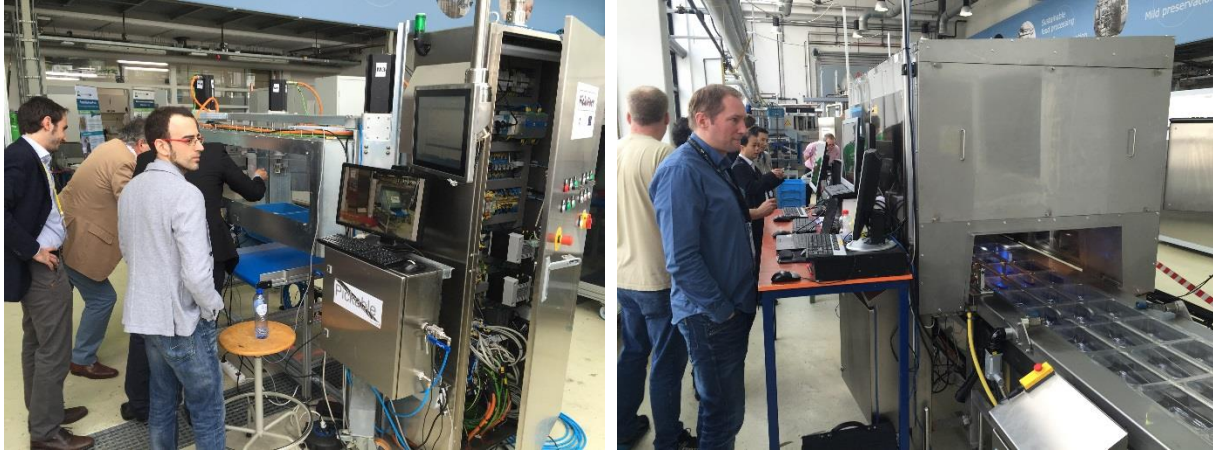


Figure 5 – Photos from demonstrations in Food Hall

session 1		26-27 May	
1	10:30	10:35 max 25 guests enter the foodhall	26-27 May Tour guide
2	10:35	10:45 short introduction	26-27 May Bart
3	10:45	11:04 explain what happens at the PnP line	26-27 May Bart
4	10:45	11:04 empty/roll-up web of trays at the @ of line;	26-27 May Toon / Francesco
5	10:45	10:52 place crate with chicken on conveyor belt	26-27 May Richard
6	10:45	10:52 remove crate with chicken on conveyor belt	26-27 May Freek
7	10:45	demo leader signals LC - go	26-27 May Ruud
8	10:45	Line runs; 5 empty batches (trays of chicken)	26-27 May Angelo / Gert Jan
9		Line runs; 5 batches with chicken (30 chick)	26-27 May Angelo / Gert Jan
10	10:52	Line runs; 45 empty batches	26-27 May Angelo / Gert Jan
11	10:52	demo leader signals LC - stop	26-27 May Ruud
12	10:52	LC sends hold to the line	26-27 May Angelo / Gert Jan
13	10:52	11:02 mold exchange to tomatoes	26-27 May Kiril
14	11:02	11:04 place crate with tomatoes on conveyor belt	26-27 May Richard
15	11:02	11:04 remove crate with tomatoes on conveyor belt	26-27 May Freek
16	11:02	demo leader signals LC - go	26-27 May Ruud
17	11:02	Line runs; 8 empty batches (trays of tomatoes)	26-27 May Angelo / Gert Jan
18	11:04	line runs; 5 batches of tomatoes (15 vine tomatoes)	26-27 May
19	11:04	demo leader signals LC - stop	26-27 May Ruud
20	11:04	Line Control stops the PnP line	26-27 May Angelo / Gert Jan
21	11:04	11:15 guests walk along the line	26-27 May
22	11:15	demo leader asks guests to go to Pickable demo	26-27 May Ruud
23	11:15	11:25 pickable demo + explanation	26-27 May Gorka Duro
24	11:25	11:30 guest leave foodhall	26-27 May Tour guide
			explain what will be done; how is the demo organised; explain what is seen on the video.
			chickens are stored in crates; the empty web is rolled up
			Marel does not place any chicken
			Marel places chicken
			Marel does not place any chicken
			maximum time needed for mould exchange is 10 minutes
			Marel does not place any tomatoes
			Marel places vine tomatoes
			in-depth discussions are at the booths not at the line

4.5 Detailed plan for Booths



Figure 6 – Photos from presentations in booths

Place: Technotron

The group will walk from booth to booth under the tour guides control. Each booth leader has about five minutes to make a short presentation of their booth.

Lay-out of booths:

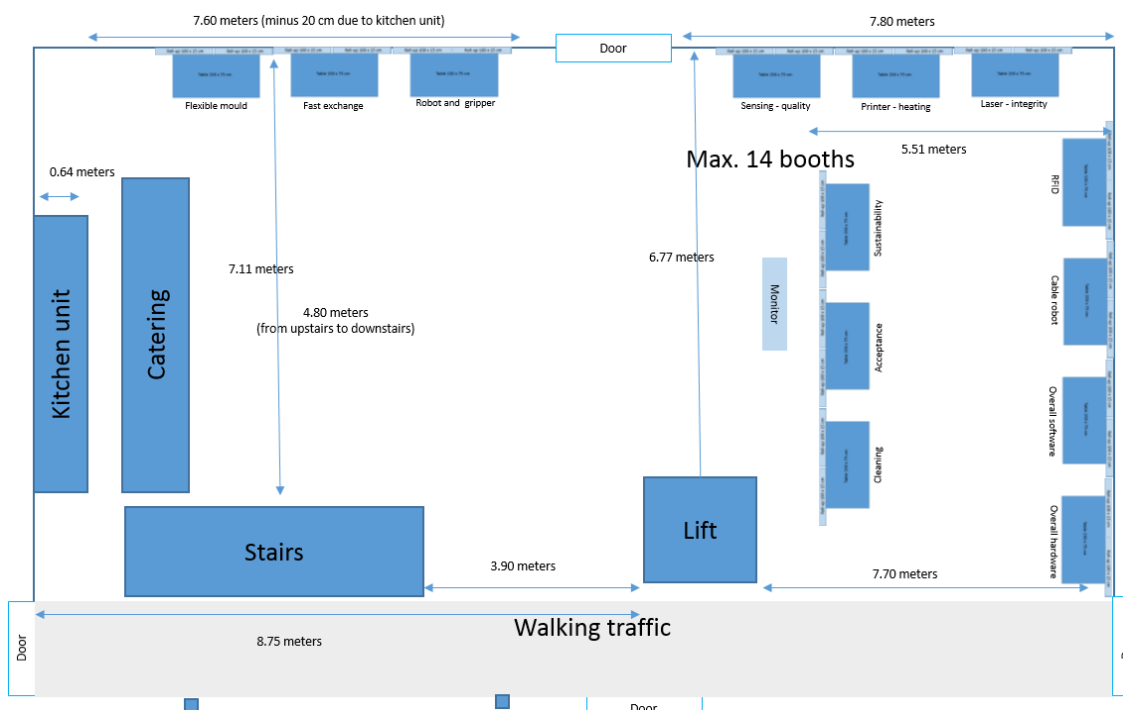


Figure 7 – Lay-out of booth presentations

1. Flexible mould
2. Fast exchange

3. Robot and gripper
4. Sensing-quality
5. Printer-heating
6. Laser-integrity
7. RFID
8. Cable robot
9. Overall software
10. Overall hardware
11. Cleaning
12. Acceptance
13. Sustainability

Please note that the booths need a person in the session with a short introduction and under lunch etc. to service participants.

Monitor control in:

- Technotron
- Food Hall

4.6 Tours to Laser and Integrity Audit



Figure 8 – Photos from the laser laboratory

The tour guides had all four groups on a visit to a special laser laboratory in order to study the laser and integrity audit equipment. Both made small special presentations of the functionality.



4.7 Participants in The Netherlands

4.7.1 26 May 2016

Name	Company
Hans Stam	Rolan Robotics BV
Jeannette Lankhaar	Marel Stork Poultry Processing B.V.
Harro Bosch	Omron Electronics B.V.
Jochen Hemming	Wageningen UR Greenhouse Horticulture
Ben Schut	HIH
Carlo Canter Visscher	Actemium
Ed Vermeeren	Taks Handling Systems BV
Jan Baars	Ammy Consultancy
Anton Boudewijn	Total Produce
Nienke Schuring	Nature's Pack
Pierre Hagenaaars	Het Packhuys BV
Hans Izeboud	Aris bv
Sven Rusch	Aris bv
Pavel Paclik	PR Sys Design
Bert Lodewijks	TOMRA Sorting Solutions
Eric van Wanrooij	Tomra Sorting BV
Erik Wanders	?
Vida Mohammadkhani	WUR Glastuinbouw
Egbert Bok	Modiform

Name	Company
Jesper Brødsgaard	SKY-LIGHT A/S (DK)
Preben Thomsen	SKY-LIGHT A/S (DK)
Haayo Terpstra	ABB b.v.
Patricia Hoogervorst	NFO
Shanghua Li	ABB - Corporate Research
Koenraad van de Veere	Phaer
Hugo Van Basten Batenburg	Haagse Hogeschool-Delft
Rick van Kesteren	Haagse Hogeschool-Delft
Coen Overvliet	Haagse Hogeschool-Delft
Sipke de Man	Haagse Hogeschool-Delft
Dennis van Heerwaarden	Haagse Hogeschool-Delft
Bertus Dunnewind	Marel
Sjors van Leuwen	WTS
Arjan Kok	Bosman Van Zaal
Erik Peterse	Holland Fyto U.A.
Eelke Mooij	PWR Pack International B.V.
Matthijs Tinholt	PWR Pack International BV
Ragnheidur Halldorsdottir	Marel
Willem Endhoven	HighTechNL
Arie Geluk	Jasa Packaging Systems

Name	Company
Sijmen Woutersen	Technolution B.V.
Cameron Weibel	Eindhoven University of Technology
Mark de Jong	University of Technology Eindhoven
Maarten Visscher	Eindhoven University of Technology
Erik INT Groen	Batenburg Data Vision
Jimence Jenenfer	Food and Biobased Research
Molina Gamez	Food and Biobased Research
Hugo Rygensberg	Food and Biobased Research
Rick van de Zedde	WUR

4.7.2 27 May 2016

Name	Company
Igor Jovanovic	Omron
Frans van der Steen	Marel Meat Processing BV
John van Hooijdonk	OMRON Europe
Leo Crezee	MOBA
Mark Swainson	National Centre for Food Manufacturing (UK)
Hanno Jan Bart	Budelpack
Stijn Leijdekkers	AgroTechnIQ
Sjef Loomans	Berg Hortimotive

Name	Company
Antoon van de Ven	Westland Municipality
Toon Tielen	Wageningen UR Greenhouse Horticulture
Erik Fritsma	Moba B.V.
Martijn Dekker	RedStar
Karel van Hattum	JMF groep bv.
R Kling	RedStar
Chris Bevers	KOAT
Rene de Jonge	KOAT
Arjan van der Zanden	Alba Trading BV
Lalli Lopenen	Omron Europe B.V.
Peter Golz	VDMA Food Processing Machinery and Packaging Machinery
Florian Flossdorf	Bivano GmbH
Leo de Jong	Scherpenhuizen
Peet Koppes	Vezet
Andries van der Werf	Van Wees Waalwijk
René van Heijst	Van Wees Waalwijk
Harrie Spapens	Van Wees Waalwijk
Anne Bouman	Viscon
Arie Geluk	Jasa Packaging Systems BV
Hans Dekker	Sligro Food Group



Name	Company
René van der Wal	TEB
Xiomara Salas	Bakker Barendrecht
Paul Hendriks	Eosta BV
Angelique Christiaens	Christiaens Agro Systems BV
Marco Vissers	Christiaens Agro Systems BV
Shanghua Li	ABB - Corporate Research
Salvador Estevan	DULCESOL
Carlos Blanes	ai2 Institute
Marcel Smit	schneider-electric
Heico Sandee	Smart Robotics
Gerrit van Emous	Roboxis Packaging BV
Inge Jonkers en Kevin Vos	Vergeer holland
Gerard Brouwer	Brouwer Food Talent
Tim Huijben	Viscon Fresh Produce B.V.
Jack Simons	Schouten Sorting Equipment
Gerrit Polder	Wageningen UR
Martin Dekker	RedStar
Maurice van Esbroeck	Marel Stork Poultry Processing
Ivo Ploegsma	Food Tech Brainport
Tim Samhuijzen	Moba

Name	Company
Eric Schmitt	Protix
Joyce Schroot	Fresh Food Factory
Merijn Sinke	Viscon Group
Mari van Gool	Scherpenhuizen
Kevin Vos	Vergeer Holland
René van der Wal	TEB Industrial Projects

5 Spain June 2016

During June 2016 three demonstration events were carried out in one of the headquarters of Tecnia, the one in Mikeletegi 7, San Sebastian. The demonstrations were:

- RoboTT-net OpenLab 09th June
- Visitors from USA 10th June
- Visitors from Austria 15th June

5.1 RoboTT-net OpenLab

The PickandPack project was introduced to about 60 experts in robotics. Pickable was demonstrated as follows:

- Scope of the project:
 - <http://robott-net.eu/this-is-robott-net>
- Video of the project:
 - <https://www.youtube.com/watch?v=bNzTy7E5oLo>
- Video of the event:
 - <https://www.youtube.com/watch?v=mOX8KbhgjbQ&index=1&list=PLA0D61AEED6A4BEF3>



Figure 9 – Photos from presentation of Pickable to the Robott-net attendants

5.2 Visitors from USA

Students from four universities from the USA visited Tecnalia due to an initiative of ESPA agency of Navarra (Spain).

- Clemson University
- University of Alabama
- Auburn University
- University of Kentucky.



Figure 10 – Photos from presentation of Pickable to the North American visitors

5.3 Visitors from Australia

In the scope of the relation with the Austrian Cooperative Research, companies from Australia visited Tecnia:

- This cooperative lead a visit to Tecnia.
- About 30 Australian companies participated in this visit
- <http://www.acr.ac.at/news/acr-war-auf-studienreise-im-baskenland.html>



Figure 11 – Photos from presentation of Pickable to the Australian visitors

6 England 13 September 2016



Figure 12 – Photos from demonstrations in England (Marel and hygienic robots on sectional frame)

6.1 General description

It was decided in PicknPack to perform two different events in University of Lincoln, Holbeach as follows:

- 13 September 2016: Demonstration-workshop as a limited event
- 14 September 2016: Education event for students

Timeline

- Week 35-36 (29 August – 9 September): Arrival of demonstration equipment and demonstration booths to Holbeach.
- Week 36-37 (5 September-12 September): Installation of equipment and booths by the responsible partners. It was possible to install equipment in the weekend 10-11 September between 9 am. to 5pm.
- Monday 12 September: Audit of all functions.
- Tuesday 13 September 2016: Demonstration-workshop.
- Wednesday 14 September 2016: Education event for students from 9.45 – 12.30.
- Thursday 15 September 2016: University of Lincoln has a management event.
- 14-16 September packing of equipment to storage.
- 14-23 September shipment of equipment back to partners.

6.2 Equipment and cases demonstrated in Holbeach

Demonstrations and booths:	Demo in Holbeach
Mould and thermoformer	The demonstration used the special video produced in May-June and with the brick moulds placed on tables. The demonstration included samples of trays and produced packaging.
Robot and gripper	Marel robot was installed with grippers and sectional frames in order to demonstrate cleaning.
Quality module	Illustration using a simple camera setup with 2-3 sensors mounted over a translation stage to visualize the concept and sensing functionality.
Printer	Printer will be demonstrated with the cases from Wageningen.
Heating	Demonstration as in Wageningen with heating of UK ready meals in microwave ovens.
Laser	Demonstration as in Wageningen.
Integrity audit	Demonstration as in Wageningen.

T&T - RFID	Demonstration as in Wageningen.
Cable robot	Only Roll-ups and commercial video was presented in a booth.
MAP	A booth presentation with roll-ups.
Hygiene	Hygiene will be demonstrated with real washing on a sectional frame and the Marel robot.
Overall hardware	Demonstrated with a sectional frame together with robot and hygiene.
Overall software	Presentation and demonstration on computers.
Acceptance	Roll-ups as in Wageningen
Sustainability	Roll-ups as in Wageningen

6.3 Lay-out in Holbeach

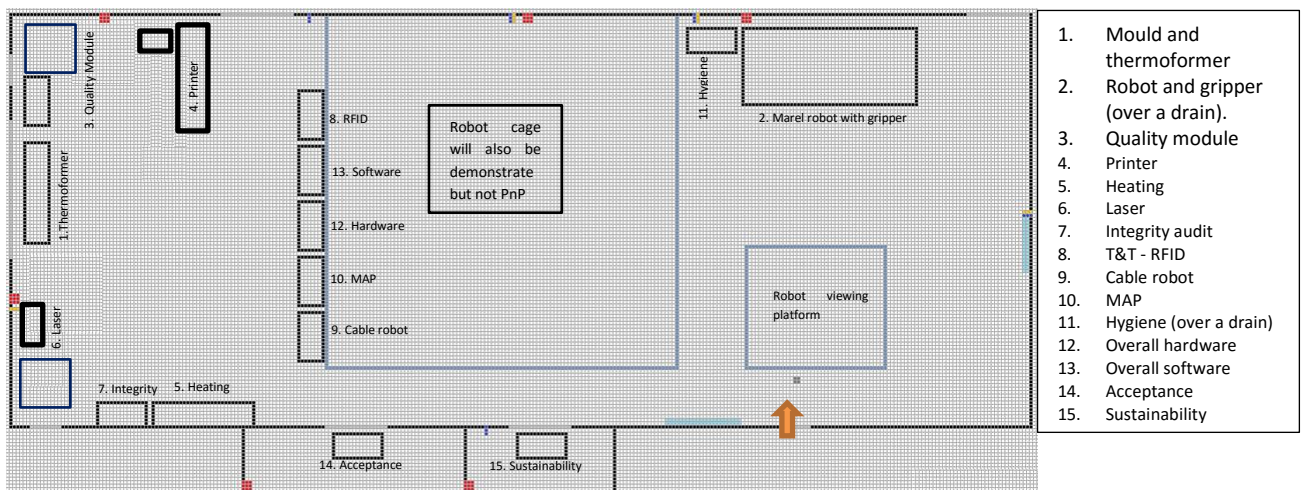


Figure 13 – Lay-out in Holbeach

6.4 Programme 13 September 2016



Figure 14 – Presentations in conference room in Holbeach

09:15 - 10:00 Registration

10:00 - 10:30 Welcome and overview of PicknPack Project (Erik Pekkeriet) in conference room

10:30 - 12:30 Presentations in conference room (approx. 24mins each)

- 10:30 – 10:50 Richard van de Linde Director Lacquey - to be confirmed - Automation of Food Packaging, from Bin to Pack in One Step
- 10:50 – 11:10 Professor Wouter Saeys KU Leuven - Non-destructive, in-line Assessment of Surface, Subsurface and Internal Quality of Food Products
- 11:10 – 11:30 Professor Herman Bruyninckx KU Leuven - Software Architecture for Data Processing and Control of Modular Reconfigurable Automated Systems
- 11:30 – 11:50 Professor Zhipeng Wu The University of Manchester - RFID Enabled Traceability Systems in Food Manufacturing and Distribution
- 11:50 – 12:10 Roman Murcek of Fraunhofer - Presentation of Roman Murcek Hygiene

12:30 - 13:30 Lunch

13:30 - 15:00 Demonstrations and booths incl. coffee served

- 13:30 – 14:50 Participants walk around the Hall
- 14:50 – 15:00 Special demonstration of Fraunhofer Hygiene Robot

15:00 – 15.20 Closing session: Impact Analysis and routes to Exploitation – delegate networking



Figure 14 – Photos from Holbeach

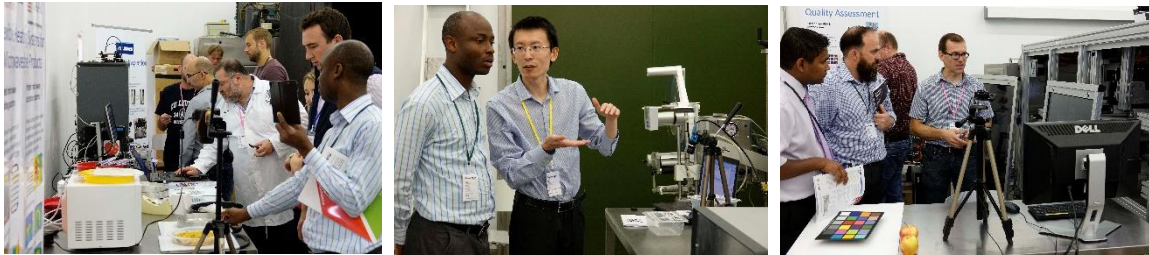


Figure 15 – More photos from Holbeach

6.5 Participants 13 September 2016

Name	Company
Iain McLean	Food Processing
Renata Bartekova	ABB
Robert Brooks	Omron Electronics
Bob Hinchcliffe	Stelram Engineering
Tony Dowling	KUKA Robotics UK
Stephen White	OAL Group
Richard Lindley	Bakkavor Desserts
Keith Thornhill	Siemens Digital factory
Mathew Campbell	Siemens
Colin Harris	Festo
Ian Houston	Festo
Andrew MacPherson	Festo
Rui Cardadeiro	Packaging Automation



Name	Company
Tom Collison	Produce World Group
Dave Woolrich	Packaging Automation
Peter Whitfield	Appetite for Engineering and Skills
Sam Le Rouse	Dalehead Foods
Eugene Kerklaan	Kitchen.blue
Tom Duckett	University of Lincoln
Angelo Alles	OCL Monte
Keith Brewood	University of Lincoln
Marta Pasieorne	Bakkavor
Val Braybrooks	University of Lincoln
Andy Bulley	Del Monte
Mark Edwards	FPE (Flamingo)
Jin Chu	University of Lincoln
Will Shields	Produce World
Colin Dowding	University of Lincoln
AK Normann	OAL
Simon Lusley	Marks & Spenser
Mark Swainson	NCFM
Oluseyi Moss Ajayi	UOL
Karen Witson	UOL

Name	Company
Ann Casey	UOL
Sharon Green	UOL
Mike Morntain	FMEG

7 Student's day in England 14 September 2014

7.1 Program for student's day

Time		Activity	Group	Comments																																																																													
Session 1 - NCFM		Schools arrive from 9.45 onwards (schools to bring list of students) (times allow for movement of student groups)	Suggested 8-12 per group	Split between groups A to J, target 50 young people am only (2 tables required in main reception for registrations (on 13 th)).																																																																													
Fro m	To																																																																																
10.00 to 10.15		Welcome and overview of PicknPack Project Wageningen UR, Erik Pekkeriet	All groups	Presentations to all students in conference room. Chairs to be set out conference style.																																																																													
10.15 to 10.30		Opportunities in Food Engineering University of Manchester, Mike Dudbridge	All groups	Presentations to all students in conference room. Chairs to be set out conference style.																																																																													
10.30 to 10.40		Organisation of 6 groups of 8-12 students	Move down to factory area (times allow for over run/movement of students)																																																																														
10.40 to 11.40		Guided tours between packaging machines etc. <table><tr><td>Event</td><td>Time in min.</td><td>Group A</td><td>Group B</td><td>Group C</td></tr><tr><td>2. Marel robot and gripper</td><td>10</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td></tr><tr><td>11 Hygeine robot</td><td>10</td></tr><tr><td>8 RFID T&T</td><td>5</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td></tr><tr><td>4 Printer</td><td>5</td></tr><tr><td>3 Quality Sensing</td><td>10</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td></tr><tr><td>1 Mould and thermoformer</td><td>10</td></tr><tr><td>6 Laser</td><td>5</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td></tr><tr><td>5 Heating</td><td>5</td></tr></table>	Event	Time in min.	Group A	Group B	Group C	2. Marel robot and gripper	10				11 Hygeine robot	10	8 RFID T&T	5				4 Printer	5	3 Quality Sensing	10				1 Mould and thermoformer	10	6 Laser	5				5 Heating	5	<table><tr><td>Event START</td><td>Time, min.</td><td>Group A</td><td>Group B</td><td>Group C</td></tr><tr><td>2. Marel robot and gripper</td><td>10</td><td>10.40</td><td>11.20</td><td>11.00</td></tr><tr><td>11 Hygeine robot</td><td>10</td><td>10.50</td><td>11.30</td><td>11.10</td></tr><tr><td>8 RFID T&T</td><td>5</td><td>11.00</td><td>10.40</td><td>11.20</td></tr><tr><td>4 Printer</td><td>5</td><td>11.05</td><td>10.45</td><td>11.25</td></tr><tr><td>3 Quality Sensing</td><td>10</td><td>11.10</td><td>10.50</td><td>11.30</td></tr><tr><td>1 Mould and thermoformer</td><td>10</td><td>11.20</td><td>11.00</td><td>10.40</td></tr><tr><td>6 Laser</td><td>5</td><td>11.30</td><td>11.10</td><td>10.50</td></tr><tr><td>5 Heating</td><td>5</td><td>11.35</td><td>11.15</td><td>10.55</td></tr></table>	Event START	Time, min.	Group A	Group B	Group C	2. Marel robot and gripper	10	10.40	11.20	11.00	11 Hygeine robot	10	10.50	11.30	11.10	8 RFID T&T	5	11.00	10.40	11.20	4 Printer	5	11.05	10.45	11.25	3 Quality Sensing	10	11.10	10.50	11.30	1 Mould and thermoformer	10	11.20	11.00	10.40	6 Laser	5	11.30	11.10	10.50	5 Heating	5	11.35	11.15	10.55
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11.40 to 11.50		Demonstration of hygiene robot with water spray	All groups together																																																																														
11.50		Q+A with Mike Dudbridge	All groups	Groups move back into conference room																																																																													
12.30		Departure																																																																															
		Lunch for PicknPack team only																																																																															

7.2 Lay-out and guided tour

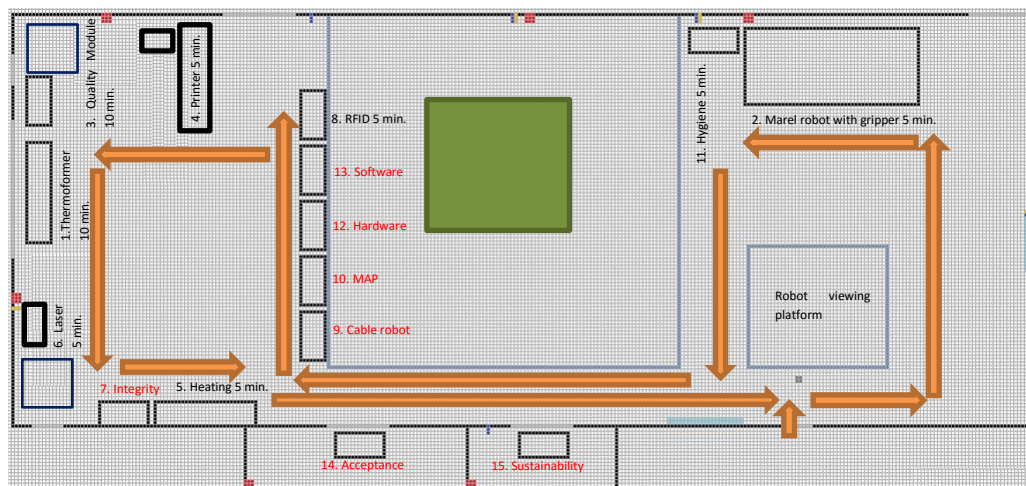


Figure 16 – Guided tours for students in Holbeach

7.3 Participants on student's day 14 September 2016

No	Name	Company	Group
1	Will Shields	Produce World	13/09/16
2	Tom Collison	Produce World	13/09/16
3	Sam La Rouse	Dalehead	13/09/16
4	Jessica Aram	Bakkavor	A – Adv App
5	Catherine Hutchinson	Bakkavor	A – Adv App
6	Karl Sargent	Bakkavor	A – Adv App
7	Jack Howard	Bakkavor	A – Adv App
8	Ella Wilmot	Bakkavor	A – Adv App
9	Annie Lawrence	Nestle Purina	C – Adv App
10	Jack Smith	Nestle Purnia	C – Adv App
11	Tamzyn Jones	Nestle Purina	C – Adv App
12	Katarzyna Maszczyńska	Nestle	C – Adv App

13	Marcus Little	Freshtime	E – Adv App
14	Ross Turnley	Greenvale	E - App
15	Marcelo Seabra	Greenvale	E - App
16	Luke Cannon	Greenvale	E – Adv App
17	Matthew Roberts	Greenvale	E – Adv App
18	Carolyn Evans	Lincs Government	
19	William Mainwaring	Lincs Government	A – under 19
20	Ben Randall	Lincs Government	A – under 19
21	Suzanne Murray	Foldhill Foods	E
22	Zac Walton	Bakkavor Highbridge	C – Adv App
23	Michael Andrew	Dalehead	C – Adv App
24	Robbie Cato	Dalehead	C – Adv App
25	Emma Wood	Addo Food Group	B - HA
26	Andy Foster	Addo Food Group	B
27	Lewis Simmonds	Bakkavor	B - HA
28	Maria Clarke	Bakkavor	B - FD
29	Jean Ward	NCFM	E – Adv App
30	Ann Casey	NCFM	B - Ass
31	Karen Wilson	NCFM	C - FD
32	Lisa Wright	NCFM	E – Adv App
33	Gabbie Smith	NCFM	A - BSc
34	Oliver Horne	NCFM	B - FD
53	UAH construction (19)	University Academy Holbeach	F – under 18 x18
58	UAH C+G Electrics (5)	University Academy Holbeach	F – under 18 x5
81	UAH Car mechanics (23)	University Academy Holbeach	F – under 18 x23

App/Adv App – already in industry 17 to 23 years old
 HA/FD/BSc/Ass – more work based experience over 19
 Under 18 – car mechanics still in school
 Under 19 – still in full time education

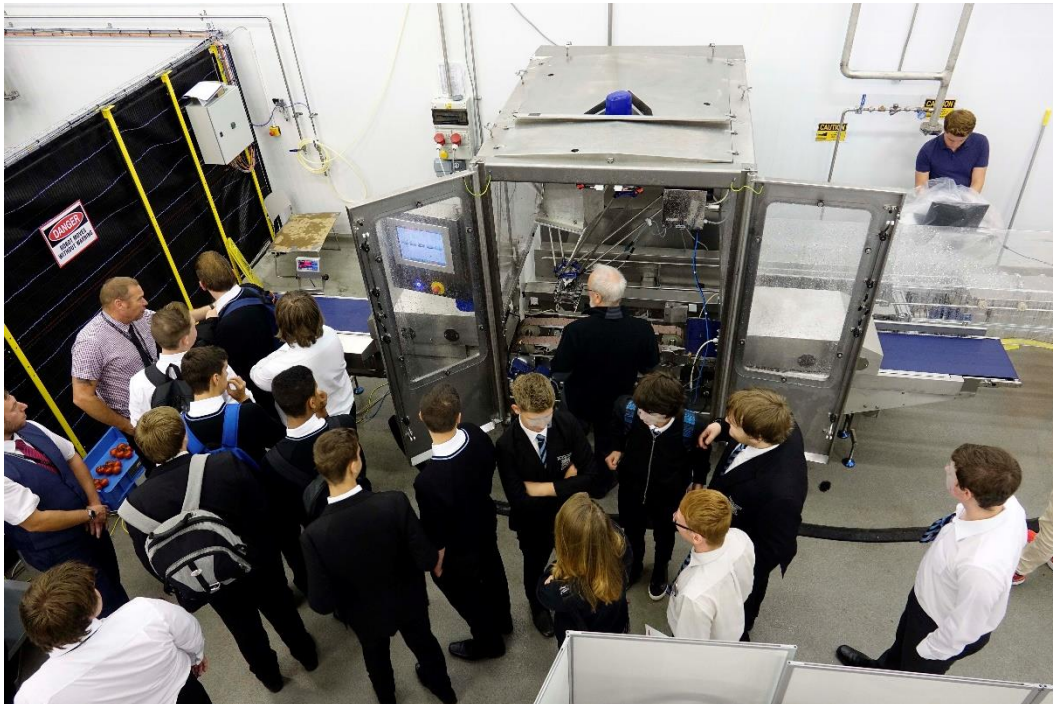


Figure 17 – Photo from Student's day in Holbeach

8 Conclusion

PicknPack already made a first demonstration of the project in Denmark on 23 February 2015 presenting the equipment under production. In The Netherlands on 26 and 27 May 2016 the full PicknPack line was demonstrated on two separate days. The cable robot was demonstrated to three different groups in Bilbao, Spain. Finally, in Holbeach, England PicknPack was demonstrated on the 13 September to the food industry and to students on the 14 September 2016.

These events had following participants:

	Place:	Date:	Participants
1	Denmark	23 February 2015	40
2	The Netherlands	26 May 2016	48
3	The Netherlands	27 May 2016	54
4	Spain	June 2016	90
5	England	13. september 2016	36
6	England	14. september 2016	81
	TOTAL		349

PicknPack was presented and demonstrated to 349 persons from companies and students.