

Seminar Recent Development in MAP Technology



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Denmark

Hari : JUM'AT
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Waktu : Pk 14.00 – 16.00
Tempat : Ruang Salak;
SEAFast Center
Kampus IPB-DARMAGA



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 **PBI Dansensor**

 Fresh
Thinking

PBI-DANSENSOR FULL OF FRESH IDEAS



25 years with
MAP technology

World leader in
MAP equipment

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 Fresh
Thinking

PBI-Dansensor

Full of fresh ideas



Presented at
Seafast Center – IPB



Sept 30th, 2011



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Agenda



- Introduction
- PBI-Dansensor
- Why MAP packaging
- MAP equipment
- MAP applications
- Quality control (QC) versus quality assurance (QA)
- Questions



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FULL OF FRESH IDEAS

- Food safety
- Food quality
- Food standards (HACCP and ISO)
- Health of people

MAP technology



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PBI-Dansensor



- PBI-Dansensor is located in Ringsted, Denmark, and have 5 subsidiaries; in Germany, France, Spain, Italy and USA.
- PBI-Dansensor employs approximately 100 people in own organisation, and in total approximately 225 people globally inclusive distributors sales and technical staff.
- All PBI-Dansensor products are designed, manufactured and shipped at our premises in Ringsted, Denmark.



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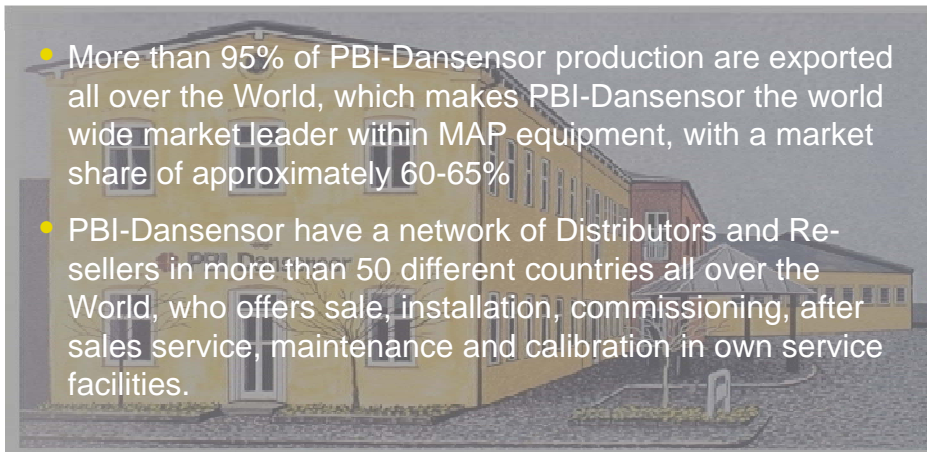


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PBI-Dansensor



- More than 95% of PBI-Dansensor production are exported all over the World, which makes PBI-Dansensor the world wide market leader within MAP equipment, with a market share of approximately 60-65%
- PBI-Dansensor have a network of Distributors and Re-sellers in more than 50 different countries all over the World, who offers sale, installation, commissioning, after sales service, maintenance and calibration in own service facilities.



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BACK TO BASIC

- **Atmospheric air**
20,9% Oxygen (O₂)
79,9% Nitrogen (N₂)
0,03% Carbondixoide (CO₂)
- **Modified atmosphere (MAP)**
100% Oxygen (O₂)
100% Nitrogen (N₂)
100% Carbondixoide (CO₂)

MAP technology



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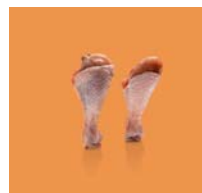
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Modified Atmosphere Packaging

What is MAP



- Food grade gasses are used in MAP instead of additives
- It keeps food fresh and prolong shelf life
- Food packed in MAP - it shall be visible to the consumers on the packages
- Carbon dioxide E 290
- Nitrogen E 941
- Oxygen E 948
- E-numbering is part of the EU food registration system



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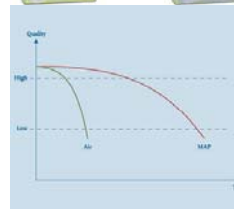
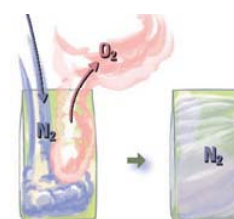


Modified Atmosphere Packaging

What is MAP



- MAP gasses, O_2 , N_2 and CO_2 are 100% clean gasses
- MAP gasses replaces the atmospheric air inside packages
- Reduces the use of artificial additives
- Less waste of product due to longer shelfe life
- Increased distribution possibilities
- Better visual appeal



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Modified Atmosphere Packaging

Why MAP



Modified Atmosphere Packing
can not make a poor product better ☹️

However.....

Modified Atmosphere Packing
Can make a poor product last longer 😊



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Modified Atmosphere Packaging

Gas mixtures



MAP Gas Mixtures – A Guide

	Bulk	Retail		Bulk	Retail		Bulk	Retail
Raw Red Meat			Cooked & Cured Meat			Hard Cheese		
Raw Offal			Cooked, Cured Fish & Seafood			Grated & Soft Cheese		
Raw Poultry & Game Birds			Cooked, Cured Poultry & Game			Dried Food Products		
Poultry, Dark Portions & Cuts			Cook- Chill & Ready Meals			Cooked Vegetables		
Raw Fish (Low Fat)			Combination Products			Liquid Food & Beverages		
Raw Fish (High Fat)			Fresh Pasta Products			Carbonated Soft Drinks		
Crustaceans & Molluscs			Bakery Products			Fresh Fruit & Vegetables		



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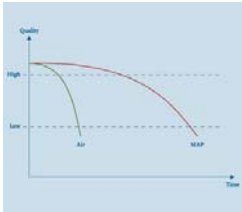


Modified Atmosphere Packaging

Shelf life



	Non MAP	In MAP
Raw red meat	2-4 days	5-8 days
Raw Poultry & game birds	4-7 days	10-21 days
Raw fish & seafood	2-3 days	4-6 days
Fresh pasta	1-2 weeks	3-4 weeks
Fresh fruit & vegetable	2-7 days	5-35 days
Bakery products	4-14 days	4-12 weeks
Dairy products	1-4 weeks	2-12 weeks
Cooked & ready meals	1-3 weeks	3-7 weeks
Cooked poultry & game birds	5-10 days	7-21 days
Cooked fish & seafood	5-10 days	7-21 days
Cooked vegetable	3-14 days	7-21 days
Dried food products	4-8 months	1-2 years



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Modified Atmosphere Packaging

Traceability



European and US Legislation

Correct Quality Control or Quality Assurance ensures that the manufacturer can comply with EU/FDA and local regulations.

Everything is implemented in order to secure people's health

- Traceability regulations according to EU Regulation No. EC178/2002
- Gasses are an additive according to EU Regulation 95/2/EC
- HACCP requirements according to FDA Food Code 2005

HACCP is also an EU requirement



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Modified Atmosphere Packaging Traceability



What is traceability?

FDA – Food Code 2005

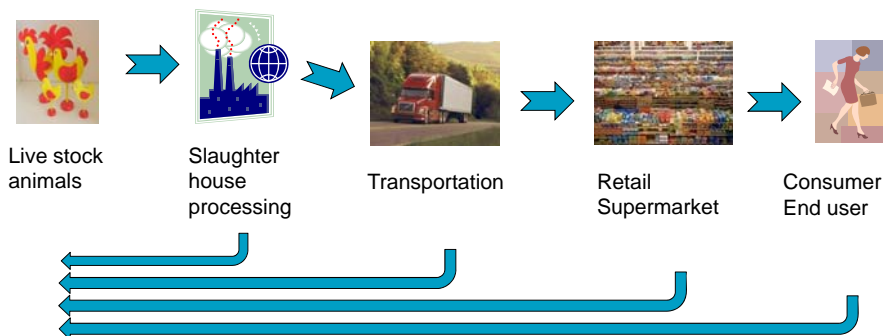
- *“a complete description of the processing, packaging, and storage procedures designated as critical control points, with attendant critical limits, corrective action plans, monitoring and verification schemes, and records required.”*
- **Hazard Analysis and Critical Control Point**
HACCP ↔ EU Regulation No. 178/2002



Modified Atmosphere Packaging Traceability



USA and EU are regulated by law



Modified Atmosphere Packaging Traceability



How do you perform traceability ?

- Random spot check analysing of the gas content in the packages (destructive test), and logging of the data
- On-line analysing of the gas content of the packages before sealing, and logging of the data
- Test packages for leakage after sealing and logging of the test results
- Making clear rules and regulations for your quality assurance management (QAM) at your production sites
- Keep all test data accessible as documentation for the quality of the products



Modified Atmosphere Packaging Traceability



What does traceability give you?

- Data with quality test results, to be presented to relevant authorities
- An important tool in your QM policy
- Certainty of the quality in the production
- A proof of quality control towards your customers
- One of the parameters which can help you secure your image



Modified Atmosphere Packaging Traceability



What does traceability give you?

- Proof that you are following the demand of quality control
- A homogenous quality of your products
- Ensures that heterogeneity in the production and in your products are detected immediately
- Saves you unnecessary losses in the production
- Ensures that products leaving your factory are of good quality



Quality Control or Quality Assurance Definitions



- Quality control of MAP = manual testing (headspace), e.g. testing of packages every 15 minutes
- Quality assurance of MAP = automatic testing (on-line) directly on the packaging machine
- There is an increasing QA trend in the market

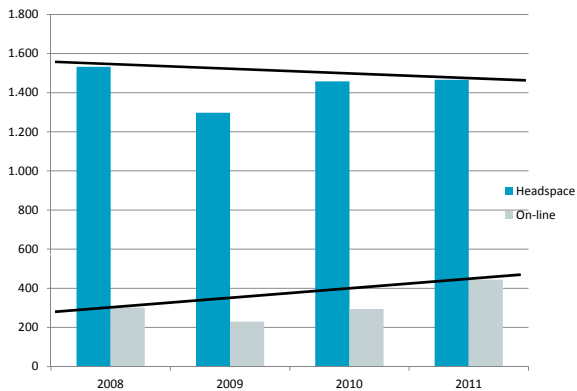


Quality Control or Quality Assurance

Moving towards on-line



Development in the use of on-line vs. off-line equipment



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Quality Control or Quality Assurance

25 years of experience



- Experts in equipment for Modified Atmosphere Packaging
- Off-line analysing (spot check)
- Quality control (QC)



25 years of experience



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Quality Control or Quality Assurance

18 years of experience



- Experts in Equipment for Modified Atmosphere Packaging
- Moving from off-line (spot check) to on-line analysing
- Moving from quality control (QC) to quality assurance (QA)



18 years of experience



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Quality Control or Quality Assurance

Understanding Quality Terms



Quality Control (QC)

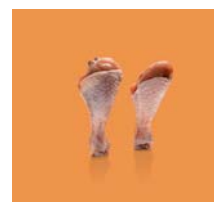
- Off-line analysing
- Random analysing
- Destructive testing
- Risk of making mistakes
- Loss of production
- Needs attention of operators

- CheckMate 3
- CheckPoint II
- CheckPoint
- LeakPointer

Quality Assurance (QA)

- On-line analysing
- 100% analysing
- Non-destructive testing
- 100% data logging for QA
- No loss of production
- Automatically operated

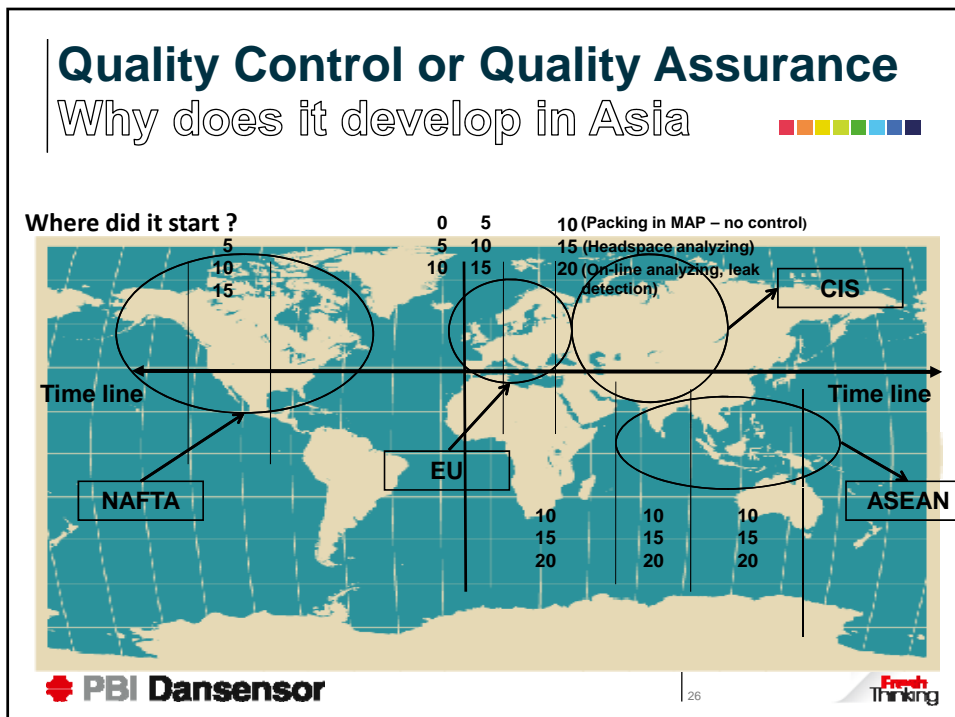
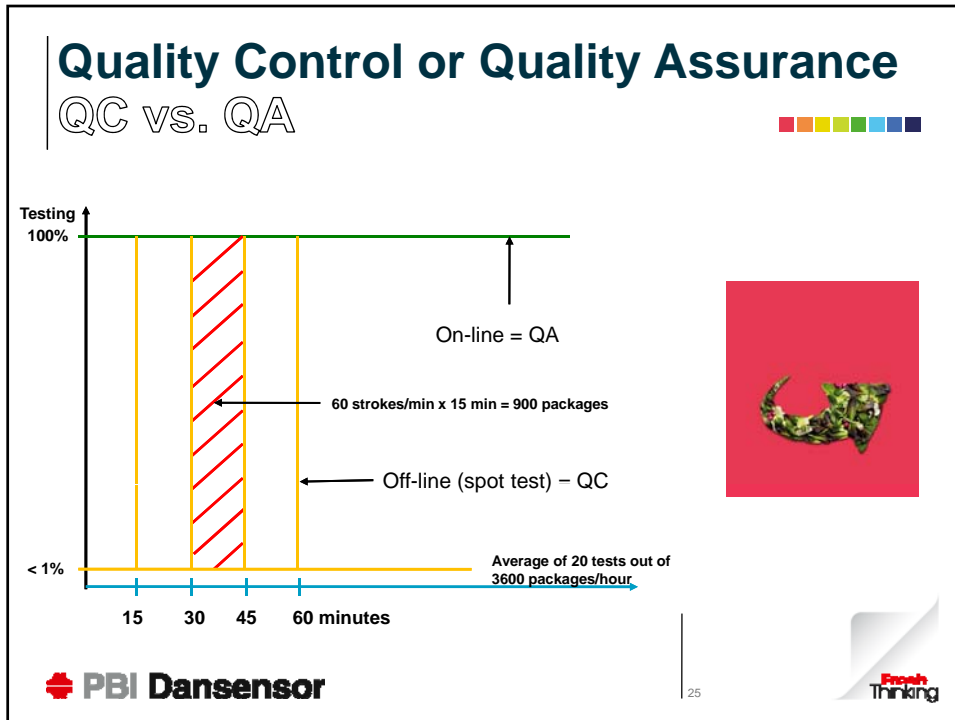
- MAP Check Combi (II)
- TGC-2
- CMV-2
- Gas mixers
- LeakMatic



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What is Off-line Quality Control?

- QC is the easiest possible process control for modified atmosphere packages
- Off-line destructive testing
- Indirect measurement of the gas content in the packages
- Random indexes is measured
- Both oxygen and carbon dioxide can be measured



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What is On-line Quality Assurance?

- QA is the best possible process control for modified atmosphere packages
- Direct measurement of the gas content on the packaging machine
- Every index is measured
- Both oxygen and carbon dioxide can be measured
- Completely integrated with the packing machines




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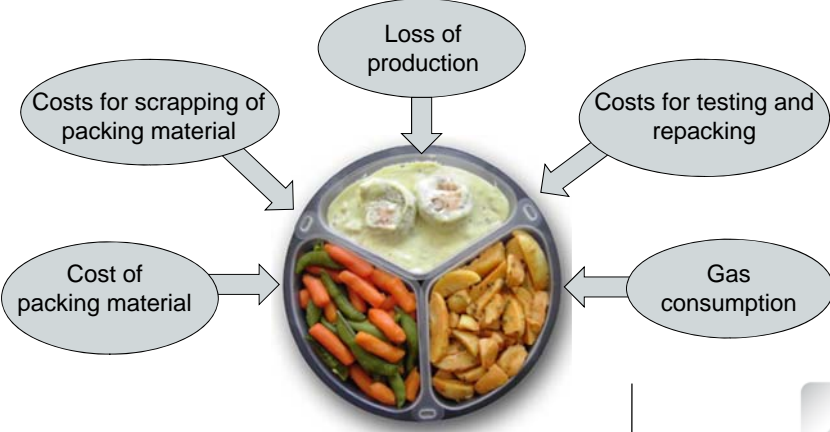


Quality Control or Quality Assurance

Costs for QC vs. QA




5 important focus areas in a MAP Audit:



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Quality Control or Quality Assurance

Benefits for the Customers



- Reduction in the use of artificial additives
- Less product waste
- Less packaging material waste
- Better process control
- Better traceability
- One-touch operation
- Increased throughput
- Less re-packaging




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Quality Control or Quality Assurance

Methods of testing

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Quality Control or Quality Assurance

Impact on your employees

- The gas accumulates in the body
- Headache after a short while
- Hard to keep concentrated
- Lower efficiency

Which means:

- Lower profit for the company
- Less committed workers
- Risk of work-related injury
- Perhaps a green profile

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Quality Assurance Questions



Questions



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PBI-Dansensor Where do you find us



- Our Web site
www.pbi-dansensor.com
- Find interesting news at
www.modifiedatmospherepackaging.com

Thank you for your attention.



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Quality Assurance

Key Issues for QA



5 important focus areas in a MAP Audit:

Cost of packing material

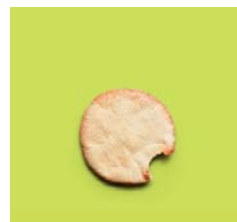
- Cost of first packing (will be scrapped after testing)
- Cost of repacking

Cost of scrapping packing material

- Scrapping costs per metric ton
- Cost of transporting the waste

Loss of production

- Number of tested packages
- In case of failure between two manual tests



Quality Assurance

Key Issues for QA



5 important focus areas in a MAP Audit:

Cost of testing and repacking

- Approximately 1 minute per manual test including registration of test results
- Approximately 1 minute for opening the tested package, separating the product from the packing material and putting the product back on the packaging machine
- Handling of the scrapped packing material

Cost of gas consumption

- Extra costs for repacking
- No control of gas consumption when no on-line analyser with PFC is installed



Quality Control or Quality Assurance

Basic Factors for Calculation



- Flow packaging machine
- Size of package 20x12x10 cm = 2.4 litre per package
- Flush factor 3 = 7.2 litre per package
- 60 strokes per minute = 3600 packages per hour
- 8 production hours per day
- 240 production days per year



Quality Control or Quality Assurance

Basic Factors for Calculation



- 5 packages tested every 15 minutes = 20 per hour
- Testing takes 1 minute per package
- Repacking takes 1 minute per package
- Salary for employees €25.00 per hour
- Packing material 0.0015 kg per package
- Scrapping costs €200.00 per metric tons
- Cost of gas €3.00 per m³ from batteries

