The Science of World-Class packaging
History
Research & Development

• Founded in 1946
• Location: Epping, Cape Town
• Staff 51
  – Scientist 29
  – Engineer 2
  – Technologist 10
  – Technician 4
  – Support 6
• Laboratories: 10 in 2 units
• Business Information Unit
• Finite Element Analysis/CAD Facility
• Innovation Centre
• Annual budget: R31.3m (US$4.01m; £2.55m; €2.91m)
Management Team

Jacques Haarhoff

Johan Visser

Aneé Sieberhagen

Morongwa Themba
• **Scientific and Technical Expertise to:**
  – Development
  – Production
  – Use of packaging

• **To benefit, promote and add value for:**
  – Nampak’s Divisions
  – Divisions’ customers
Capabilities & Competencies

• Materials and Process Knowledge
• Product, Packaging and Market Knowledge
• Food Science, Microbiology and Hygiene
• Package Performance
• FEA and CAD Modelling
• Chemical Analysis
• Spoilage Investigations
• Packaging Technology
• Problem Solving
• Packaging and Environment
• Innovation
- Trained staff form multi-disciplinary idea generation teams
- Facilitation of idea generation sessions for Nampak’s divisions & customers
- Dedicated innovation venue
- Generation of 3D CAD concept models
- Work on products, processes & raw materials
- Business information resources used for global trends
Materials and Packaging Development

- Metallurgy
- Corrosion and surface studies
- Paper
- Plastics
- Coatings and Inks
- Container Development
- Finite Element Analysis & CAD
• Qualification of new materials
• Failure investigations (metal packaging, tooling & engineering components)
• Liaison with raw material suppliers
• In-plant troubleshooting
• Specifications for metals
• Coating performance; Enamel-rating, process resistance, flexibility, scuff-resistance etc.
• Qualification of new / modified coatings and inks
• Setting-up & evaluating Pack tests
• Problem investigations (Process, manufacturing, material-related)
• Supply of Electrolyte
Corrosion and Surface Studies: Tankiso Thamahane

- Scanning Electron Microscopy (SEM)
- X-ray Emission Spectroscopy
- Electrochemical Corrosion Tests (EPFSL / EIS)
Properties of paper and board
Characterisation of coated and laminated paper products
Performance of liquid packaging cartons, sacks and folding boxes
Performance of corrugated board and corrugated containers
Evaluation of tissue products
Trouble-shooting
- Identification and characterisation of plastic materials
- Plastic containers failure investigations
- Evaluation of plastic films and laminates
- Advising on permeability and chemical resistance of plastic packaging materials
- Trouble-shooting
- Physical testing of packaging materials
- Dimensioning / profiling
- Failure investigations
- Fatigue & Transport testing
- Qualification of new compounds
- Cap application / removal
- Double-seam evaluations
- Leak testing
- Evaluation of new / reformulated aerosol & general line products, packages and components
- Consultancy to aerosol sector
- Customer trouble-shooting and problem-solving
- Product development through computer simulation
- Prediction of packaging performance under realistic loads
- Computer Aided Drawing (CAD)
- Finite element analysis (FEA)
- Materials modelled mainly rigid plastics, metals & flexibles
Scientific Services

- Analytical Chemistry
- Microbiology
- Food & Beverage Technology
- Shelf-Life Studies
• **Material analysis**
  - Oxygen permeability / barrier evaluation
  - Polymer identification & characterisation
  - Contaminant analysis (iron pick-up)

• **Foodstuffs**
  - Elemental & nutrient analysis
  - Chemical composition, BADGE, Head space gas analysis

• **Other products**
  - Waxes / oils
  - Aerosols & household products
  - Foreign body identification with FTIR, DSC
Microbiology: Gail Hagemann

- Hygiene audits
- Sterility testing
- Container integrity evaluation
- Spoilage investigations
- Trouble-shooting
- Customer support
- Aseptic process validation
Food & Beverage Science: Susan Featherstone

- Food Preservation Consultancy
- Thermal process validation
- Process failure investigations
- Process parameters and container specifications
- Customer problem identification and resolution
- HACCP / BRC / ABI recommendations
Performance of the packaging as well as the product is evaluated.

Storage rooms at 4°C, 21°C, 37°C, 55°C and tropical conditions are used to accelerate, validate & evaluate the shelf-life of different products and packaging.

Food products are assessed organoleptically at different points over the period of the shelf-life test.

Spray efficiency of aerosols such as deodorants and anti-perspirants are evaluated over the product’s shelf-life.
Business Information: Aneé Sieberhagen

- Technical information service to R&D
- Market knowledge
- Co-operative projects
- News alerts
- Knowledge link via intranet
- Development of information tools & technologies
- Network of contacts
- Document centre
- Technical library
- Regulations/Legislation
THANK YOU