

MEAT PACKAGING: PAST, PRESENT AND FUTURE

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A Review of Fresh Meat Packaging

From the Beginnings of Meat
through Yesterday, Today,
and A vision of Tomorrow

The Future is an Extension of the
Present and the Past

An Historic Foundation to the Future

- ◆ For 5,000 Years...
 - ◆ Man hunted for meat, but did not preserve it. Meat was eaten fresh off the killed animal.

An Historic Foundation to the Future

- ◆ For 500 Years...

- ◆ Man raised animals, killed and dressed them, and dried the meat.

- ◆ And the buffalo

An Historic Foundation to the Future

- ◆ 125 Years Ago...
 - ◆ Man grazed animals, killed and dressed them, and either salted the meat or ate it fresh.

An Historic Foundation to the Future

- ◆ 100 Years Ago...
 - ◆ Man grazed animals, killed and dressed them, and refrigerated their carcasses
 - ◆ At retail level, the straw-hatted butcher wearing a bloodied apron converted carcasses into retail meat cuts in a shop strewn with sawdust.

Late 19th Century through Pre-World War II

- ◆ Carrier invented refrigeration
- ◆ Slaughter in Kansas City, Omaha Chicago
 - ◆ Carcass shipment on rail
 - ◆ Rail cars with ice bunkers
 - ◆ Carcasses to butcher shops
- ◆ Processed/cured meats

Pre-World War II through World War II

- ◆ Carcasses in butcher shops
 - ◆ Refrigerated storerooms
 - ◆ “Refrigerated” display cases
 - ◆ Sawdust on floors
 - ◆ Butcher cut to order
 - ◆ Paper wrap tied with string
 - ◆ Ice boxes in homes
- ◆ Delicatessens for cured meats

Post-World War II

- ◆ Advent of supermarkets
- ◆ ca 1947
 - ◆ DuPont—cellophane
 - ◆ Developed supermarket backroom cutting/packaging to inventory
 - ◆ Molded pulp trays
 - ◆ Cellophane wrap
 - ◆ Moisture resistant
 - ◆ Pass oxygen for color
 - ◆ Semi-automatic equipment

Fresh Meat Packaging—1950s

- ◆ Supermarkets expanded
- ◆ Corner /neighborhood butcher shops contracted
- ◆ DuPont continued to lead, grow and sell cellophane
 - ◆ As did its two competitors
- ◆ Problems
 - ◆ Short shelf life
 - ◆ Color
 - ◆ Leakage

Centralized Red Meat Packaging—1964

- ◆ U.S. Department of Agriculture study
- ◆ Transfer backroom cutting/packaging for several supermarkets to a single location
- ◆ Save \$0.01 per package
- ◆ Chub packaging for ground beef developed
- ◆ Barrier bag/boxed beef concept

Centralized Fresh Meat Packaging—1967

- ◆ Iowa Development Commission Report citing benefits
- ◆ Resistance from retailers, meat packers
- ◆ Boxed beef resisted by meat packers, retailers

Backroom Fresh Meat Packaging—1960s

- ◆ Development of polyvinyl chloride (PVC) film
 - ◆ Moisture barrier
 - ◆ Oxygen permeable
 - ◆ Stretch film
 - ◆ Transparent
- ◆ Development of new trays
 - ◆ Clear polystyrene
 - ◆ Expanded polystyrene
- ◆ Demise of cellophane

An Historic Foundation to the Future

- ◆ 40 Years Ago marked the beginning of vacuum packaging of...
 - ◆ Cured meats
 - ◆ Primal cuts of beef
- ◆ ...and poultry was "poor persons' food"



An Historic Foundation to the Future

- ◆ 30 Years Ago...
 - ◆ Vacuum-packaged, cured meats began their climb
 - ◆ Service delicatessens receded
 - ◆ Vacuum-packaged primal cuts were resisted by retailers
 - ◆ Visionaries conceived of fresh red meat centralized packaging
 - ◆ ...and poultry was “poor persons’ food”



Centralized Fresh Meat Packaging— 1960s

◆ Europe

◆ France

- ◆ Intact cuts fabricated and packaged in central location
- ◆ By law, ground beef was in presence of consumer
- ◆ Total system collapsed because of ground beef situation

Barrier Bag Concerns—1960s-1970s

- ◆ Eliminate retail butcher jobs
- ◆ Cost—higher than hanging beef
- ◆ Cost of package materials

Centralized Fresh Meat Packaging— 1960s

◆ Europe

◆ France

- ◆ Intact cuts fabricated and packaged in central location
- ◆ By law, ground beef was in presence of consumer
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Centralized Fresh Meat Packaging— Europe—1970s

- ◆ Coop Denmark
 - ◆ More than 1000 IRMA outlets
 - ◆ All small
 - ◆ No space for butchers
- ◆ Employed Kalle principles
 - ◆ Clean operations
 - ◆ Cold - <36°F
 - ◆ High 80% oxygen/20% carbon dioxide
 - ◆ 6-10 days shelf life

Centralized Meat Packaging—1960s

- ◆ Ralph's – Los Angeles
 - ◆ Conventional packaging
 - ◆ Central location
 - ◆ Limited shelf life
 - ◆ Rapid turnover
- ◆ Falley's – Topeka
 - ◆ Conventional packaging
 - ◆ 70-mile radius rapid delivery
- ◆ Liberal – Dayton, Ohio

Centralized Meat Packaging—1960s— Tray Ready

- ◆ Subprimal cuts fabricated into retail sizes
- ◆ Reassembled
- ◆ Packaged in barrier bag
- ◆ Distributed to retailer
- ◆ Repackaged as cuts in conventional packaging
- ◆ Cryovac/Kenosha Beef development
- ◆ Original Pic 'N' Save
- ◆ Recently Sam's Club from Packerland

An Historic Foundation to the Future

◆ 25 Years Ago...

- ◆ Feed lot operations for cattle
- ◆ Overcoming butcher resistance, vacuum-packaged primal cut beef began moving into supermarket backrooms
- ◆ Chub packaging of ground beef
- ◆ Keeper casing of coarsely ground beef
- ◆ Expanded and impact polystyrene and molded pulp trays and PVC film overwraps
- ◆ Vacuum-packaged cured meats increased
- ◆ A few centralized packaging trials in the United States

Centralized Fresh Meat Packaging—1970

- ◆ Kalle – West Germany
 - ◆ Plastic film producer
 - ◆ High oxygen/high carbon dioxide environment
 - ◆ Package produced on Multivac thermoform/vacuum gas flush/seal equipment
 - ◆ Shelf life
- ◆ Master pack

Environmental Concerns—1970s et seq.

- ◆ Too much package material
- ◆ Plasticizers in PVC film
 - ◆ No effective alternatives
- ◆ PVC incineration generates
 - ◆ Acid rain
 - ◆ Grate corrosion
- ◆ No visibility through expanded polystyrene trays
 - ◆ Legislate transparent polystyrene
 - ◆ Pulp with open grid
- ◆ Polystyrene does not degrade in landfills

Centralized Fresh Meat Packaging— Europe—1970s

- ◆ Marks & Spencer—United Kingdom
 - ◆ Primarily a clothing store
 - ◆ In every neighborhood in United Kingdom
 - ◆ Limited assortment of St. Michael's brand food to accommodate customers
 - ◆ No backroom
 - ◆ Fresh meat to accommodate customers
 - ◆ Originally imported from Coop Denmark
 - ◆ Transferred to British meat packers
 - ◆ PVC trays/heat-seal closures/Multivac equipment/high oxygen/high CO₂
 - ◆ So successful, copied by U.K. supermarkets

Centralized Fresh Meat Packaging— 1970s

- ◆ Chub packaging
 - ◆ For retail grind
 - ◆ Reduced oxygen
 - ◆ Barrier package structure
 - ◆ Color
 - ◆ Purple myoglobin in package
 - ◆ Restored to oxymyoglobin after opening
- ◆ Applied to coarsely ground for distribution to supermarket backrooms
 - ◆ Retailer grinds
 - ◆ Retailer replaces on conventional tray
 - ◆ Double handling of microbiologically sensitive product
 - ◆ Still common practice



Bivac Program—1980

- ◆ Bivac—a William E. Young/DuPont development
 - ◆ Twin transparent web
 - ◆ Vacuum skin package fusing ionomer film
 - ◆ Purple myoglobin color
- ◆ Erdman's – Minnesota
 - ◆ Four stores
 - ◆ 21 days shelf life at 28-31°F
 - ◆ Operated until 1985

Kroger/St. Regis Test—Mid-1980s

- ◆ SuperFresh – St. Regis
 - ◆ High oxygen/high carbon dioxide
 - ◆ Coextruded barrier tray
 - ◆ Flexible barrier heat seal
 - ◆ Tiromat thermoform/vacuum/gas flush/seal
 - ◆ Large headspace for gas reservoir
- ◆ 10-day shelf life—intact cuts
- ◆ Tested in Kroger, Atlanta
- ◆ Similar to American Can Fresh Seal, Chatham Supermarkets, Detroit

An Historic Foundation to the Future

- ◆ 20 Years Ago...
 - ◆ Vacuum-packaged primal cuts moved into supermarket backrooms
 - ◆ Poultry began its move to central packaging
 - ◆ Cut parts
 - ◆ Branding
 - ◆ Europe: centralized packaging of beef and pork
 - ◆ High oxygen/CO₂ packaging
 - ◆ Sanitary cutting and packaging
 - ◆ Controlled-temperature distribution
 - ◆ United States: more centralized packaging trials
 - ◆ High oxygen/high CO₂: St. Regis/Kroger
 - ◆ Vacuum skin: Bivac/DuPont
 - ◆ American Can in Michigan





Centralized Fresh Meat Packaging Projections from 1970s

- ◆ Principles and practices of 1970s technology are common commercial practice in 2002
- ◆ "High Ox"
 - ◆ Sanitation
 - ◆ Low temperature control
 - ◆ High oxygen/high CO₂
 - ◆ Barrier trays
 - ◆ Heat-seal barrier flexible closures
- ◆ Master packs
- ◆ Chub package coarse grind

Kroger/Excel Vacuum Skin—Mid-1980s

- ◆ Kroger – Midwest/South
- ◆ Excel – Missouri
- ◆ Twin web barrier vacuum skin
- ◆ Multivac equipment
- ◆ 21-day claimed shelf life – intact cuts
- ◆ Color purple
- ◆ Too many leakers
- ◆ Discontinued 1989

Safeway/Cryovac Peelable Lid—1980s-1990s

- ◆ Safeway – Western Canada
- ◆ Vacuum skin package (VSP)
 - ◆ Base thermoformed
 - ◆ Top – two-ply flexible conforms to meat shape
- ◆ Vacuum package on Multivac equipment
- ◆ Purple color
- ◆ At retail, top ply removed
 - ◆ Inner ply – oxygen permeable
 - ◆ Meat returns to oxymyoglobin red
- ◆ Discontinued 2000
- ◆ New format: tray plus flat lid

An Historic Foundation to the Future

- ◆ 15 Years Ago...
 - ◆ Centralized packaging of meat strong in United Kingdom
 - ◆ Centralized packaging of poultry in North America
 - ◆ Branded
 - ◆ Controlled distribution
 - ◆ Master packaging
 - ◆ Modified atmosphere
 - ◆ Air
 - ◆ Rapidly increasing sales



Centralized Fresh Meat Packaging— 1990s

- ◆ High oxygen/high carbon dioxide
- ◆ Preformed barrier expanded polystyrene trays
- ◆ Flexible closure heat-sealed to tray
- ◆ Large headspace
- ◆ Equipment
 - ◆ Ross-Reiser
 - ◆ Mondini
- ◆ Commercial practice today

Garwood Flavolok—1980s

- ◆ Australia
- ◆ Three-web/two-compartment
 - ◆ Top web/tray barrier
 - ◆ Intermediary web – gas permeable
 - ◆ In-line thermoform/gas flush/seal
 - ◆ Tested in Australia for offal meats

Garwood—1990s

- ◆ Two-compartment
 - ◆ Preformed tray
 - ◆ Holds meat
 - ◆ Closed with heat-seal flexible closure
 - ◆ Preformed over-closure
 - ◆ Remove top closure at retail
- ◆ Indiana Packers/Marsh Supermarkets for pork
- ◆ Discontinued 1993

Master Packs—1980s through Today

- ◆ Conventional primary packaging
- ◆ Barrier or non-barrier master bags
- ◆ High or low oxygen
- ◆ Coupled with
 - ◆ Sanitation
 - ◆ Low temperature control

An Historic Foundation to the Future

◆ 15 Years Ago...

- ◆ In-store delicatessens began to grow strongly
- ◆ More North American trials on centralized packaging of beef
 - ◆ High oxygen/high CO₂
 - ◆ Vacuum
- ◆ Vacuum packaging of pork primal cuts
- ◆ Consolidation of the beef industry
- ◆ Beef consumption declining



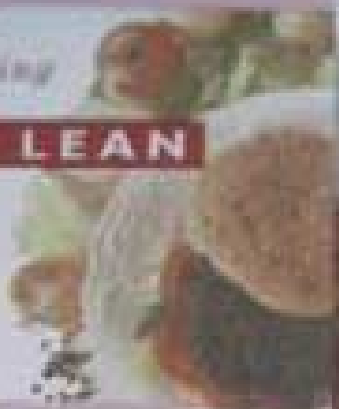
An Historic Foundation to the Future

- ◆ 10 Years Ago...
 - ◆ Centralized packaging of meat strong in United Kingdom
 - ◆ Centralized packaging of poultry in United States
 - ◆ Branded
 - ◆ Strong sales increase
 - ◆ Centralized packaging of pork
 - ◆ More trials on centralized packaging of beef
 - ◆ Nutritional labeling
 - ◆ Beef consumption declining



EXTRA LEAN

BEEF MINCE



1.75kg £2.18



MULTIBUY BUY 2 SAVE
£1

EXTRA LEAN BEEF MINCE

1.75kg £2.18

MULTIBUY BUY 2 SAVE
£1





Chronology of Meat Packaging— 1990s

- ◆ 1990s
 - ◆ Tesco in the United Kingdom converted
 - ◆ Barrier trays
 - ◆ High oxygen/CO₂
 - ◆ Poultry passed beef in per capita consumption in United States
 - ◆ Centralized packaging of pork
 - ◆ Ground poultry under modified atmosphere—high oxygen/CO₂ packaging
 - ◆ Precooked poultry under modified atmosphere packaging
 - ◆ Home meal solutions emerged as a force
 - ◆ More North American trials on centralized packaging of beef
 - ◆ Warehouse club stores
 - ◆ Beef consumption declining



And in the 1990s

- ◆ Mid-1990s...
 - ◆ Poultry consumption soaring
 - ◆ Pork consumption near that of beef—and growing
 - ◆ Home meal solutions growing exponentially
 - ◆ More in-store service delicatessens
 - ◆ Wal-Mart indicating conversion into all case-ready
 - ◆ Beef consumption declining



An Historic Foundation to the Future

- ◆ 1997...
 - ◆ Poultry is Number 1
 - ◆ More case-ready pork
 - ◆ Home meal solutions grew exponentially
 - ◆ Beef consumption static to declining
 - ◆ Dependent on price
 - ◆ More trials on case-ready beef, especially ground beef
 - ◆ More “value added” meats
 - ◆ Marinated
 - ◆ Seasoned
 - ◆ Skewered
 - ◆ With other ingredients

An Historic Foundation to the Future

◆ 1998...

- ◆ More trials—some commercial—on centralized packaging of beef
 - ◆ Cryovac VSP with peelable plies
 - ◆ High-oxygen: barrier polystyrene with heat-sealed flexible closures—ground beef
 - ◆ Master pack
 - ◆ High oxygen
 - ◆ High carbon dioxide
- ◆ *E-coli* O157:H7 pathogen issue
- ◆ Consumers perceive fresh and nearly fresh as better, more nutritional
- ◆ Fat trimming
- ◆ More added-value meat



Fresh Meat Packaging

◆ 2002 Issues

- ◆ Despite the significant declines, meat volume remains high
- ◆ Meat marketing is meager
- ◆ The “corner butcher” has returned—even in supermarkets
- ◆ Microbiological deterioration is key
- ◆ Pathogens
 - ◆ Especially *E. coli* O157:H7
 - ◆ And *Listeria*
- ◆ But red color perception is key to consumers

Fresh Meat Packaging

- ◆ 2002 Issues
 - ◆ HACCP programs mandated in plants
 - ◆ Economics of case-ready beef
 - ◆ Temperature control in distribution
 - ◆ Radiation pasteurization for beef approved
 - ◆ One electron beam pilot plant operating
 - ◆ One gamma ray plant

Meat Packaging

◆ 2002 Issues

- ◆ Except for *E. coli* O157:H7 and analogous pathogens, how does 2000 et seq. Differ from 1990, 1980, 1970?
 - ◆ More competitive products
 - ◆ More competitive protein
 - ◆ More technical alternatives
- ◆ Is 2002 the same as 1982 in a much more competitive macroenvironment?

Meat Packaging

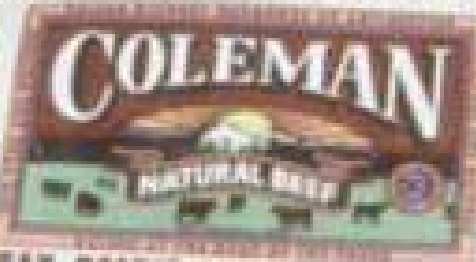
◆ 2002

◆ Case-ready beef alternative technologies

- ◆ Vacuum
- ◆ Vacuum skin
- ◆ Vacuum skin with peelable membrane
- ◆ Pressure stuffing (chub)
- ◆ Modified atmosphere
 - ◆ High oxygen
 - ◆ Low oxygen
- ◆ Peelable membrane

WHY OUR BEEF LOOKS DIFFERENT

Coleman Natural Beef is
brighter and
more tender than
other beef. That's
because it's from
young cattle that
are kept in a
clean, healthy
environment.



the color of the
meat. When you
open the package,
the air will turn
Coleman Beef as
red as
the freshness
will be intact.



COLEMAN BEEF
NATURAL BEEF

100% BEEF \$3.95

SEAL BEING BROKEN WITH IT.



Meat Packaging

◆ 2002

◆ Case-ready beef alternative technologies

- ◆ Oxygen scavenger

- ◆ High oxygen

 - ◆ Barrier

 - ◆ Barrier film

- ◆ Master packaging

 - ◆ Modified atmosphere

 - ◆ High oxygen

 - ◆ High carbon dioxide

 - ◆ Air

- ◆ Ultra-low oxygen

 - ◆ SecurFresh



**BARRIER
FILM**
From CRYOVAC

**BARRIER
FILM**
From CRYOVAC



Meat Packaging

◆ 2002

◆ Case-ready beef alternative technologies

◆ Master pack

- ◆ Preformed bag
- ◆ Film-based

◆ Low-oxygen reblooming

◆ Gas exchange

- ◆ Active
- ◆ Passive

◆ Irradiation

- ◆ Electron beam
- ◆ Gamma ray

Meat Packaging

◆ 2002

- ◆ Do we need more technologies for case-ready beef?
 - ◆ Regardless, they are coming.

Fresh Meat Packaging

◆ 2002 Issues

◆ Case-ready beef

◆ Who or what is driving?

- ◆ Consumers??
- ◆ Retailers?
 - ◆ Chains
 - ◆ Warehouse club stores
- ◆ Meat packagers
- ◆ Packaging suppliers
- ◆ Equipment
- ◆ Materials
- ◆ Microbiological safety; regulation
- ◆ Academia
- ◆ Inventors, entrepreneurs

Fresh Meat Packaging

◆ 2002 Issues

◆ Case-ready beef

- ◆ Can push marketing significantly change a massive industry?
- ◆ Where is consumer marketing of beef?
- ◆ Shelf life time required?
 - ◆ 1 week
 - ◆ 2 weeks
 - ◆ 10 weeks
 - ◆ 20 weeks (?)

Case-Ready Beef—2002

◆ United States

- ◆ 300+ million units of ground beef in retail chubs
- ◆ Up to one billion units of ground beef in trays, and growing
- ◆ 500 million units of beef cuts
- ◆ Less than 20% of total retail beef
- ◆ Less than 40% of retail ground beef

Fresh Meat Packaging

- ◆ Technical Issues
 - ◆ Initial microbiological load
 - ◆ Aerobic
 - ◆ Anaerobic (?)
 - ◆ Temperature control
 - ◆ Including fluctuation
 - ◆ Oxygen
 - ◆ Color
 - ◆ Myoglobin
 - ◆ Oxymyoglobin
 - ◆ Reversible reactions
 - ◆ Metmyoglobin
 - ◆ Package oxygen transmission

Vacuum Packaging

- ◆ Heat-shrinkable bag
- ◆ Thermoformed rollstock films
- ◆ Pouches
- ◆ Vacuum skin packaging



Vacuum Packaging

- ◆ Nozzle and clip
- ◆ Heat seal
- ◆ Thermoform in line
- ◆ Preformed trays



Modified Atmosphere

- ◆ High oxygen/high carbon dioxide
- ◆ High carbon dioxide/low oxygen
 - ◆ Barrier overwrap
 - ◆ Oxygen scavenger
 - ◆ Bloom from air
 - ◆ Bloom from oxygen
- ◆ And other gases



Case-Ready Beef

◆ Benefits

◆ Case management

- ◆ Product variety
- ◆ Reduced out-of-stock
- ◆ 24-hour case

◆ Improved sanitation

- ◆ Reduces cross contamination
- ◆ Reduces *E. coli* O157:H7 probability

◆ Reduced shrink and mark-downs

Case-Ready Beef

◆ Benefits

- ◆ Focus on merchandising versus production
- ◆ Leak-proof packages—reduced visible purge
- ◆ Cost?
 - ◆ Direct
 - ◆ Total system
- ◆ Potential for branding and consumer marketing
- ◆ Needed if meat is irradiated

Case-Ready Beef

- ◆ Disadvantages
 - ◆ Package material costs
 - ◆ Packaging equipment costs
 - ◆ Retail butcher resistance
 - ◆ Retailer knowledge of actual costs
 - ◆ Temperature control
 - ◆ Shelf life
 - ◆ What are the consumer benefits?



Case-Ready Beef

- ◆ Issues
 - ◆ Pathogenic microorganisms
 - ◆ Red color of beef
 - ◆ Shelf life time
 - ◆ Discoloration of pork
 - ◆ Cost
 - ◆ Inertia
 - ◆ Overt resistance
 - ◆ Driving forces?



Case-Ready Beef

◆ Issues

- ◆ All require sanitary handling
- ◆ All require distribution temperature control
- ◆ Modified atmosphere
 - ◆ High oxygen/high carbon dioxide
 - ◆ High carbon dioxide/low oxygen
 - ◆ Color
 - ◆ Some fat deterioration
 - ◆ Shelf life limited

Case-Ready Beef

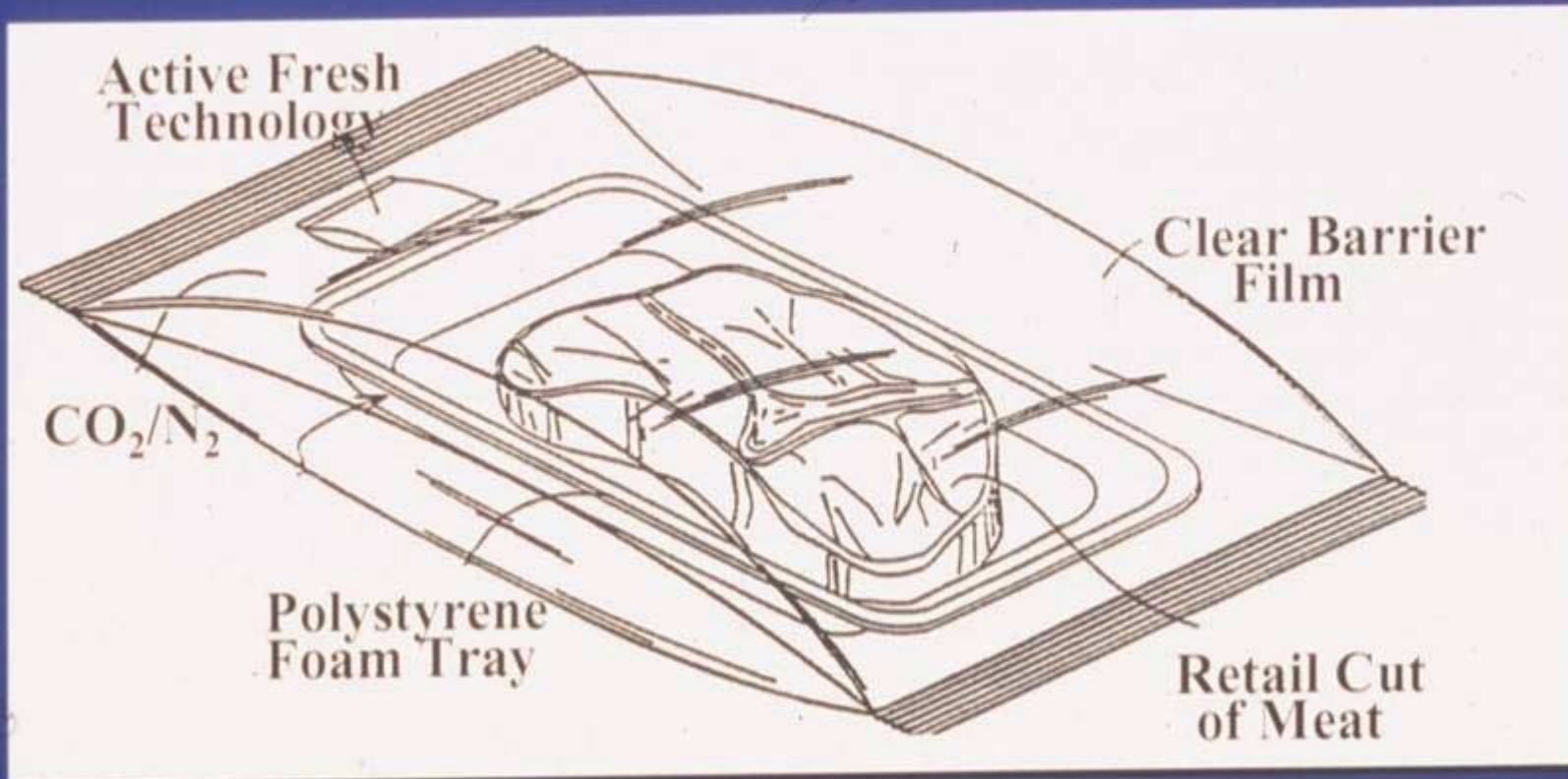
- ◆ Modified Atmosphere Packaging
 - ◆ Thermoform/vacuum/gas flush
 - ◆ Preformed tray/vacuum/gas flush
 - ◆ Heat sealed
 - ◆ PVC/PVDC tray
 - ◆ HDPE tray
 - ◆ PP/EVOH tray
 - ◆ Barrier (EVOH) expanded polystyrene tray
 - ◆ Ross Reiser
 - ◆ Tray plus dome
 - ◆ Wrapped tray
 - ◆ Cryovac BDF shrink barrier film
 - ◆ Flex/tray/flex: exterior barrier; product not visible



Case-Ready Beef

- ◆ Modified Atmosphere Packaging
 - ◆ Active Tech barrier outer film with scavenger
 - ◆ Master pack
 - ◆ From preformed bags
 - ◆ From roll stock

ActiveTech Package Concept





Case-Ready Beef

- ◆ Vacuum Packaging
 - ◆ Tray ready
 - ◆ Vacuum skin package

Case-Ready Beef

- ◆ Gas exchange
 - ◆ Passive
 - ◆ Peelable closure
 - ◆ Peelable vacuum skin package
 - ◆ Shelf life of vacuum
 - ◆ Bloom
 - ◆ Flavolok—two compartment
 - ◆ Film closure
 - ◆ Semi-rigid closure
 - ◆ Master packaging
 - ◆ Active Tech



Case-Ready Beef

- ◆ Gas exchange
 - ◆ Active
 - ◆ Windjammer
 - ◆ MA packaging in distribution
 - ◆ Add oxygen at retail level
 - ◆ Requires oxygen tank in retail operation

Case-Ready Beef

- ◆ Technical foundation is in...
 - ◆ Sanitation
 - ◆ Temperature control
- ◆ ...to deliver shelf life

Meat Packaging

◆ Future Perspectives

◆ Case-ready beef

- ◆ Is it here?
- ◆ Will it significantly penetrate the retail scene?
- ◆ If so, which format?
- ◆ Will/can beef transfer package structure/graphics from poultry?
- ◆ Credibility

Meat Packaging

◆ Future Perspectives

◆ Added value

- ◆ Fully cooked for reheating
- ◆ Partially cooked for finish cooking
- ◆ Prepared for cooking
- ◆ Ready-for-preparation with all ingredients

Meat Packaging

- ◆ Future Perspectives
 - ◆ Enhanced refrigeration
 - ◆ Integrated technologies
 - ◆ Aseptic and clean
 - ◆ Modified atmosphere/reduced oxygen
 - ◆ Pasteurized
 - ◆ The Center-of-the-Plate home meal replacement

Meat Packaging

◆ Future Perspectives

- ◆ Ready-to-eat (ready-to-heat-and-eat)
- ◆ Package is integrated protection + heating + serving
- ◆ Graphics illustrate product as eaten
- ◆ Graphics deliver complete cooking/heating instructions
- ◆ A key element of tomorrow's home meal solutions

Meat Packaging

- ◆ Does the future lie in case-ready fresh?
 - ◆ ...or is this a vestige?
- ◆ Does the future lie in precooked?
 - ◆ Can the quality equal or surpass freshly cooked?
- ◆ Is this a packaging issue OR is it a total system issue?



Packaging/Brody, Inc.



**THE FUTURE IS PURCHASED
BY THE PRESENT**

SAMUEL JOHNSON

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Meat Packaging

◆ Future Perspectives

- ◆ The aroma of freshly grilled beef is highly desirable—
 - ◆ Incorporate into retail merchandising
 - ◆ Incorporate into the retail package
- ◆ Microwave susceptor package for meat?
- ◆ Microwave susceptor package with sensing link to microwave oven controls