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The First Specialized Monthly Magazine of Tray Sealer, Thermoforming and Vacuum Chamber Packaging Machinery Industry

# VORMEK

Vormek an Innovation-based Machinery Company, an Knowledge & Progress Center with Superior Technology and High Reputation in its Field

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## Mechanisms of Microbial Spoilage and Oxidation Control in Fresh Salads Using MAP Technology

**VORMEK.COM**  
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ISO 9001 Certificate in the Field of  
Packaging Machines Manufacturing



Achieving CE Certificate from European  
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SEMI-AUTOMATIC  
TRAY SEALER MACHINE

AUTOMATIC TRAY SEALER  
PACKAGING MACHINE

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#### **Dr. David Sterling**

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With warm regards and respect,

The specialized electronic monthly "VORMEK" has always strived to serve as a bridge between cutting-edge technologies and the real-world needs of domestic producers, with the aim of expanding technical knowledge and transferring practical experience in the field of tray sealing machinery for food packaging. In this nineteenth issue, we turn our focus to one of the most dynamic and rapidly growing segments of the food industry the salad and fresh produce sector. This market, evolving in tandem with shifting lifestyles, rising demand for healthy foods, and the expansion of retail chain stores, has secured an increasingly prominent place in the consumer basket.

Ready-to-eat salads, due to their high respiration rate, high susceptibility to microbial contamination, and rapid quality degradation, are among products whose success depends more than anything on the right packaging technology. Preserving freshness, controlling moisture, extending shelf life, complying with food safety requirements, and delivering an attractive appearance are challenges that cannot be adequately addressed without advanced packaging solutions.

In this issue, we have endeavoured to examine, from a technical and practical perspective, the role of tray sealers, Modified Atmosphere Packaging (MAP) technology, and other innovative solutions in enhancing quality, reducing waste, and improving productivity in salad production lines. By reviewing successful experiences and global as well as domestic trends, we have illustrated how packaging can evolve from a mere operational process into a powerful tool for market development, value addition, and competitive differentiation for producing brands.

If market expansion for fresh products, increased consumer satisfaction, and the attainment of higher production standards are part of your organisation's strategic agenda, we hope the content of this issue will serve as a valuable guide for selecting appropriate technologies and making informed decisions for the future.

It is our honour to continue enjoying the trust and support of managers, specialists, and food industry producers, alongside the extended VORMEK family.

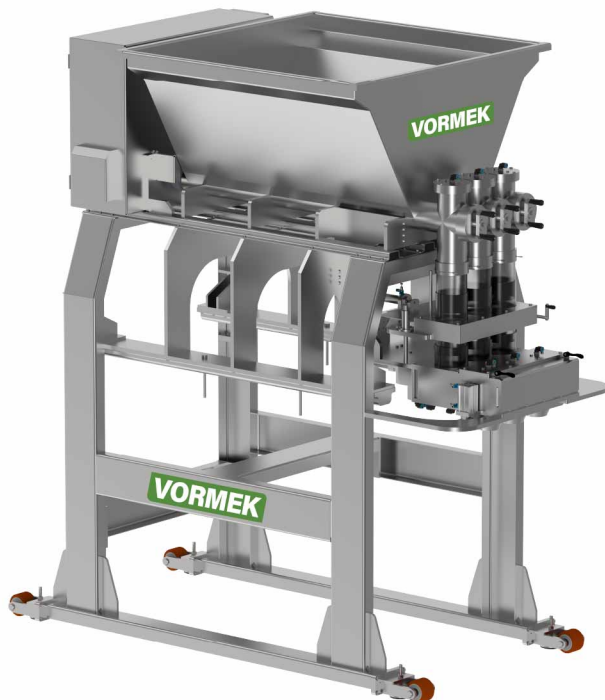


# VORMEK Volumetric Filler; A Professional Solution for Filling All Types of Salad

**Mr. Simon Füllenbach**  
(CEO of Vormek)

In the food packaging industry, there are always products that are difficult or even impossible to fill using conventional methods. These products typically do not fall into any of the classical fluid categories; they are neither thin liquids, nor thick homogeneous pastes, nor do they possess a uniform texture.

The presence of particulates with varying sizes, high moisture content, multi-component composition, and occasional relative adhesiveness introduces challenges in the filling process, such as line clogging, inconsistent weight or volume, and reduced production line speed. Under such circumstances, volumetric fillers emerge as a specialized and reliable solution.



## Volumetric Fillers: From Simple to Advanced

Volumetric fillers in the packaging industry can be designed and manufactured at various levels of sophistication. Some models feature a simple, basic structure, while others are developed as advanced, technologically refined systems in which all technical details, product behavior, and operational conditions have been meticulously analyzed.

Among these, the professional volumetric filler from the VORMEK brand falls into the category of advanced systems, engineered with the objective of enhancing accuracy, speed, and hygiene in the filling process.

## Specialized Application in Filling All Types of Salad

One of the most significant applications of this system is the filling of various ready-to-eat salads, including:

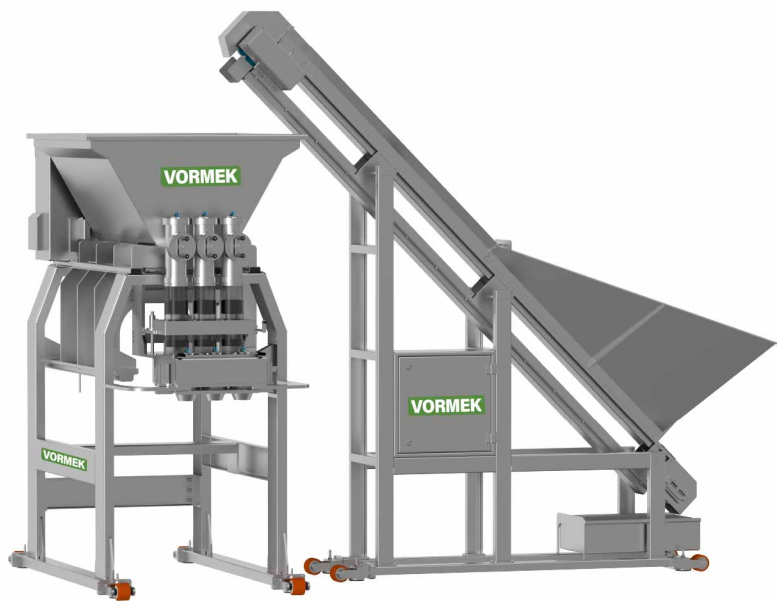
Seasonal salad (mixed vegetable salad)

Pasta salad

Coleslaw

And other similar composite salads

Pumping or weighing methods typically encounter difficulties when handling these products; however, the volumetric filler, with its specially engineered design, effectively manages this challenge.



## Functional Architecture of the VORMEK Volumetric Filler

The operational process of this machine is designed as an integrated, engineered system:

### 1. Feeding and Transfer to the Hopper

The product is conveyed to the machine hopper via an elevator and discharged into the main hopper.

### 2. Distribution and Homogenization

At the bottom of the hopper, three screw augers operate simultaneously to transfer and homogenize the product. This multi-path design enhances production capacity and enables simultaneous filling of multiple containers within a single cycle.

### 3. Guidance and Anti-Stick Prevention

The product is directed through guide paths into the transfer tubes. In this section, a controlled layer of compressed air is introduced along the inner surface of the tubes to prevent material adhesion to the walls and maintain a consistent product flow.

#### 4. Precise Volumetric Dosing

The product enters the volumetric dosing system, where a predetermined quantity is measured based on precisely calibrated volume settings, ready for discharge into containers.

#### 5. Discharge into Containers

In the subsequent cycle, the system discharges the product uniformly and accurately into the packaging containers.



#### Why the VORMEK Volumetric Filler is a Logical Choice

Specially engineered for salads and similar products

High precision with weight tolerance of less than 2 grams

Three simultaneous output paths for enhanced productivity

Compressed air system to prevent material adhesion

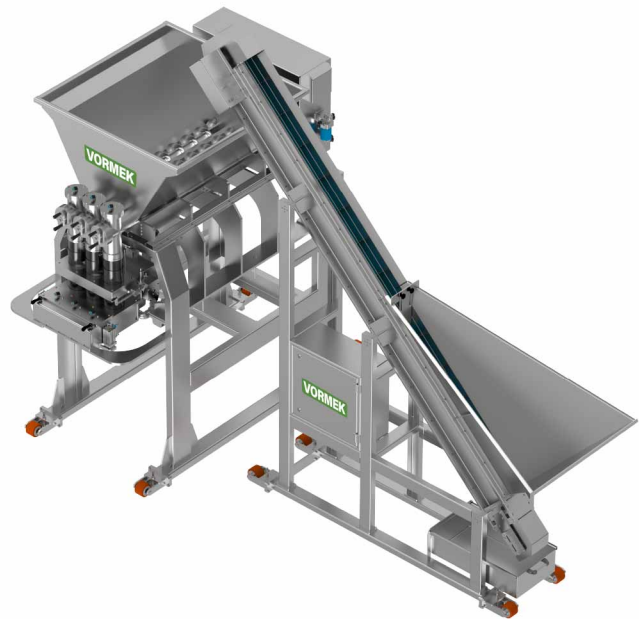
Fully stainless steel construction with full hygienic compliance

Persian-language touchscreen with user-friendly interface

Wide-range volume adjustability

Full compatibility with tray sealers

After-sales service and spare parts supply within the country



#### Advantages of Using the VORMEK Volumetric Filler

The implementation of this system in salad and similar product packaging lines offers numerous benefits:

- Increased production speed and seamless integration with industrial lines
- Reduction of human error in weight and volume measurements
- Enhanced hygiene throughout the packaging process
- Uniformity across every packaged unit
- Capability to handle difficult, non-homogeneous products
- Reduction of waste associated with manual filling
- Rapid return on investment

The professional volumetric filler from the VORMEK brand represents a logical response to one of the fundamental challenges in the food packaging industry. This machine has been specifically designed for filling products such as various salads products that, due to their diverse, non-uniform, and sensitive composition, demand a level of precision beyond that achievable with conventional filling methods.

Additionally, for enhanced mobility, the machine is available with an optional stainless steel mobile stand, making relocation effortless and significantly boosting operational flexibility.



# Siemens vs. Economy Brands

## Why Quality Is a Smart Investment



**Mr. Alexander Hoffmann**  
(Deputy CEO of Vormek)

In the world of industry and automation, choosing a central control system (PLC) is one of the most sensitive and impactful decisions a manufacturing unit faces. Many technical managers, when purchasing equipment, hesitate between globally renowned brands such as Siemens and cost-effective alternatives manufactured in China or other countries. In this article, we examine three key factors: reliability, software ecosystem, and global standards to demonstrate why investing in a reputable brand proves more cost-effective and dependable in the long run.

### **1. Reliability and Dependability – The Backbone of Uninterrupted Production**

In industrial environments, conditions are not always ideal. High temperatures, voltage fluctuations, dust, and mechanical vibrations are part of the daily reality in factories. Under such circumstances, equipment reliability determines the difference between a stable production line and frequent, costly downtime. Siemens PLCs are designed to operate under the harshest environmental conditions. By utilizing high-quality components and robust architectures, they minimize the likelihood of sudden failures such as hangs or unintended resets. In contrast, many economy brands primarily built for controlled, ideal laboratory settings show fragile performance when faced with real industrial conditions. Even a minor software or hardware glitch in these products can bring an entire production line to a halt and result in significant losses a risk no manager is willing to accept.

### **2. Software Ecosystem – Intelligent Integration**

One of Siemens' most significant advantages is its powerful and integrated software ecosystem. The TIA Portal (Totally Integrated Automation Portal), as one of the world's most advanced industrial programming environments, enables coordinated management of all equipment including PLCs, drives (inverters), HMIs (monitors), and networking devices within a single platform.

This integration not only drastically reduces setup and implementation time but also makes debugging and troubleshooting highly precise, transparent, and professional. Economy brands, on the other hand, often rely on simpler and sometimes non-integrated software solutions.



When connecting to peripheral equipment for instance, when trying to connect a Chinese drive to a Chinese PLC they frequently encounter communication challenges and incompatibilities. These inconsistencies not only waste time but also reduce overall system efficiency.

### **3. Global Standards and Unmatched Precision**

Scan time accuracy and proper management of timing intervals are among the most critical parameters in sensitive applications such as motion control and precision industrial processes. Siemens PLCs, in full compliance with stringent European and international standards, deliver exceptionally accurate and reliable performance.

On the flip side, economy brands especially in lower-priced models often use lower-quality internal components (such as relays and outputs), which negatively impacts timing accuracy and noticeably shortens the equipment's useful life. In projects where precision and repeatability are key, these differences become clearly evident.

### **Conclusion – A Smart Choice Is an Investment in the Future**

Although economy brands may entail lower short-term costs, technical assessments show that choosing Siemens is a smart, long-term investment. High reliability, an integrated software ecosystem, unparalleled precision, and adherence to global standards are all factors that reduce repair costs, downtime, and time waste over the equipment's lifecycle, while boosting overall production line efficiency.

**In today's competitive industrial world, reliability holds a value far beyond price.**



# Mechanisms of Microbial Spoilage and Oxidation Control in Fresh Salads Using MAP Technology

Sophia Brown

Fresh salads are among the most widely consumed products in the food industry, yet their inherently sensitive nature presents serious challenges in quality preservation and shelf-life extension. This report provides a scientific and practical examination of the role of Modified Atmosphere Packaging (MAP) technology in inhibiting microbial spoilage and oxidative deterioration.

## Challenges in Salad Production

Salads encompass a wide variety green, pasta, protein-based (chicken and tuna), legume, and fruit salads. Despite their popularity, manufacturers face persistent challenges:

- Microbial spoilage (bacteria, mould, and yeast)
- Oxidation and discolouration
- Loss of texture and crispness
- Dressing separation
- Mould growth on package lids

Due to high moisture content and near-neutral pH, salads provide an ideal environment for microbial proliferation.

## MAP: A Scientific and Effective Solution

Modified Atmosphere Packaging (MAP) addresses these challenges by evacuating the air inside the package and replacing it with inert and inhibitory gases:

- Nitrogen ( $N_2$ ) – displaces oxygen, preventing oxidation and discolouration.
- Carbon dioxide ( $CO_2$ ) – inhibits mould and yeast growth.

For fresh, cut salads, a small residual oxygen level is essential to prevent anaerobic respiration and off-odour development.

| Salad Type                 | Gas Requirements                              |
|----------------------------|-----------------------------------------------|
| Fresh, cut salads          | Low $O_2$ with $CO_2$ and $N_2$               |
| Salads with dressing/pasta | Higher $CO_2$ levels                          |
| Protein-based salads       | High $CO_2$ for stronger microbial inhibition |

## Packaging Film Requirements

Effective MAP requires films with:

- High oxygen barrier (multi-layer EVOH films recommended)
- Anti-fog properties
- High clarity
- Excellent heat-sealability

## Benefits of MAP:

- Extended shelf life
- Preserved texture and crispness
- Reduced waste
- Elimination of chemical preservatives
- Wider distribution capability
- Preserved nutritional value

## Key Principles for Success

- Maintain unbroken cold chain
- Ensure thorough washing and drying of vegetables
- Select correct gas mixture
- Minimise residual oxygen
- Use high-quality anti-fog films
- Ensure leak-proof sealing
- Provide sufficient gas-to-product volume ratio

## The Role of Advanced Equipment

Advanced tray sealing machines with precise gas and temperature control are pivotal to MAP success, enabling consistent quality and extended shelf life.

By adhering to these principles and using appropriate equipment, producers can deliver products of superior quality and extended shelf life, reducing waste and enhancing consumer satisfaction.



## Packaging Series

This Episode: Salad

1

## Salad and Its Nutritional Value

Salad is a food typically prepared by combining fresh and raw or cooked vegetables, fruits, nuts, seeds, meat, fish, or dairy products, along with various seasonings and dressings. Salads are usually served as appetizers, snacks, or side dishes with meals. Due to the variety of ingredients and their high nutritional value, they are considered a healthy and nutritious option for daily nutrition.

2

## Types of Salad Contamination

Because salads are often consumed raw, they are at risk of contamination with microorganisms such as E. coli, Salmonella, and Listeria monocytogenes. Additionally, metals may enter salads through various means. The heavy metals of concern include lead (Pb), cadmium (Cd), zinc (Zn), mercury (Hg), arsenic (As), silver (Ag), chromium (Cr), copper (Cu), iron (Fe), and platinum (Pt). These contaminants can originate from various sources, such as natural occurrences, agricultural practices, industrial activities, domestic wastewater, and atmospheric deposition.

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## What Factors Contaminate Different Types of Salad?

- Contamination during cultivation and harvesting: The use of contaminated water, human or animal manure, and polluted soil can introduce bacteria and parasites into vegetables.
- Inadequate washing and disinfection: Incomplete washing or failure to disinfect vegetables leaves behind disease-causing microorganisms such as Escherichia coli, Staphylococcus aureus, and yeasts on the salad.

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■ Contamination during preparation and packaging: Poor personal hygiene of staff, use of contaminated equipment, and improper storage in restaurants and fast-food environments can lead to microbial contamination.

■ Improper storage conditions: Storing at unsuitable temperatures or for extended periods causes rapid bacterial growth and salad spoilage.

■ Environmental contamination and transmission through hands or tools: Direct contact with contaminated hands or the use of unhygienic tools can contaminate the salad.



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## Consequences of Improper Salad Packaging

### ● Bruising/Crushing:

- Excessive pressure inside the package
- Rough handling during transportation
- Inappropriate volume of contents relative to the container
- Unsuitable temperature that weakens the vegetable texture

### ● Rusting/Discoloration:

- Direct contact of acidic salad ingredients with metal surfaces
- High humidity inside the packaging
- Exposure of lettuce to produce that releases ethylene gas

6



## ● Bloating(Package Swelling):

- Microbial growth and gas production
- Storage at temperatures above the recommended level
- Air infiltration due to leaks or non-standard sealing

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## Comparison of MAP Packaging vs. Conventional Packaging

Due to precise oxygen control and appropriate gas injection, intelligent pressure control, powerful vacuuming, etc., MAP extends the shelf life of salad several times over and prevents browning, crushing, and microbial growth. The hermetic seal and minimal hand contact ensure significantly higher hygiene and quality consistency compared to manual stretch wrapping.



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## Packaging with Tray Sealer Machines + MAP Method

Advantages:

Due to precise oxygen control and appropriate gas injection, intelligent pressure control, powerful vacuuming, etc., MAP extends the shelf life of salad several times over and prevents browning, crushing, and microbial growth. The hermetic seal and minimal hand contact ensure significantly higher hygiene and quality consistency compared to manual stretch wrapping.

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## Advantages:

- High hygiene due to hermetic sealing and less hand contact
- Multi-fold increase in shelf life due to oxygen control and proper gas flushing
- Better quality; less browning, weeping, and crushing
- Less waste in production and sales
- Professional and uniform appearance across all packages
- Lower labor requirements due to the automated process
- Higher profitability due to extended shelf life and added packaging value

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## Conventional Packaging vs. Manual Stretch Wrapping



Advantages:

- Low initial cost
- Quick setup with no special equipment required

Final Conclusion:

Packaging with Tray Sealer Machines + MAP Method significantly enhances quality, hygiene, shelf life, and profitability, whereas stretch wrapping is merely a cheap and simple option for starting out, but it results in greater waste, contamination, and quality loss.

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# Simplicity; The Smartest Choice

**Mr. Simon Füllenbach (CEO of Vormek)**

In the high-stakes, high-noise world of food packaging equipment, many production managers still operate under the assumption that the more complex and expensive a machine is, the better it must be. But those who have spent years on actual seafood and food production lines know better. They understand that sometimes, the best performance comes from machines that without unnecessary frills or flashy displays simply do their primary job better than anyone else.

The Packnixel VTS-400 Automatic Tray Sealer was built on precisely this philosophy. It is an ideal choice for small to medium-sized production units looking to boost efficiency, reduce costs, and maintain uncompromising quality without getting bogged down by overly complicated or prohibitively expensive equipment.

The engineering team at Vormek followed a straightforward principle in designing this machine: "Get the essential job done right no more, no less." Rather than piling on seldom-used options that only inflate the price tag, every ounce of development effort was directed toward three critical elements: optimal speed, packaging precision, and long-term reliability.

## **Genuine, Continuous Performance**

The VTS-400 is a continuous inline machine. It receives trays in a steady flow, carries out the sealing process, and delivers finished products without interruption. In three-tray mode, it achieves up to 21 packs per minute under conventional sealing and 18 packs per minute with Modified Atmosphere Packaging (MAP).

To put that into perspective: consider a small production line with a daily output of 2,000 packs. With the VTS-400, that entire day's production can be sealed in under two hours. The time saved can be redirected to other productive activities effectively increasing capacity without adding a single extra worker.



## **Real-World Flexibility**

One of the machine's standout strengths is its ability to perform three primary sealing methods on a single platform:

- Simple Sealing – Ideal for fast-turnover products with shorter shelf life.
- Vacuum Sealing – Removes air to significantly extend product freshness.
- MAP (Modified Atmosphere Packaging) – Injects protective gases to preserve color, flavor, texture, and nutritional value.

This flexibility allows producers to choose the most suitable method for each product type and target market without the need for multiple dedicated machines.

## **Hygiene and Safety as Priorities**

In the food industry, hygiene is non-negotiable. The VTS-400 is constructed with a full stainless-steel 304 body, featuring a dead-corner-free design and washable surfaces that guarantee compliance with strict sanitary standards. Key components can be disassembled without special tools, and the steel electrical panel meets IP66/IP67 standards—fully resistant to moisture and the harsh conditions of real production floors.

Operator safety is also ensured through the elimination of sharp edges and the integration of intelligent alarm systems.

## **User-Friendly for Real-World Operators**

One of the persistent headaches for production managers is the time and cost required to train staff on new machinery. The VTS-400 largely eliminates this concern with its 7-inch touchscreen interface, complete with fully Persian (and visually intuitive) menus. Even operators with intermediate experience can get up to speed quickly. This not only reduces training costs but also minimizes the risk of human error on the line.

## **Maintenance and Durability**

The designers know all too well how costly unplanned downtime can be. That's why the VTS-400 is engineered for easy access to all critical points, uses only standard and reputable components, and features a robust structure built for continuous, long-term operation.

## Technical Specifications at a Glance

| Specification              | Value                |
|----------------------------|----------------------|
| Machine Dimensions (L×W×H) | 1800 × 850 × 1400 mm |
| Machine Weight             | Approx. 380 kg       |
| Power Consumption          | 3 kW                 |
| Air Pressure Requirement   | 6 bar                |
| Input Voltage              | 380 V, three-phase   |
| Sealing Temperature Range  | 50 – 250 °C          |
| Maximum Tray Size          | Up to 400 × 300 mm   |

### Why the VTS-400 Is a Rational Investment:

- One machine, three sealing methods
- Competitive pricing backed by defensible quality
- Local after-sales support and spare parts supply
- Simple, localized user interface
- Reliable sealing precision, including for MAP applications
- Low depreciation and high durability
- Accurate sealing with PID temperature control
- Short payback period
- Backed by a team with real, hands-on industry experience



In today's economic climate, choosing equipment that strikes an intelligent balance between cost, performance, and longevity is more important than ever. The Packnixel VTS-400 was designed precisely for this purpose: a practical, economical, and trustworthy solution for producers aiming for sustainable growth.

If you are currently evaluating packaging options, this machine deserves a prominent place on your shortlist. The VTS-400 is not just a machine it is a smart decision for the future of your production.



# Seven Marketing Signals That Tell You It's Time to Upgrade Your Salad Packaging

**Dr. David Sterling**

In the fresh salad industry, packaging is far more than a protective container it is a powerful marketing tool that directly shapes consumers' perceptions of freshness, health, quality, and overall product value. Before tasting the product, customers evaluate the visual appeal of the vegetables, the clarity of the tray, the presence of condensation, and the quality of the seal. Consequently, upgrading packaging should not be viewed merely as an operational improvement, but as a strategic branding and market-growth decision.

## **1. Your Product Is Losing Shelf Appeal**

The first warning sign is declining visual impact at the point of sale. Fresh salads must appear vibrant, crisp, and appetizing. Fogged films, condensation droplets, discoloration of leafy greens, or poor product presentation can create an immediate impression of inferior quality even when the product remains perfectly safe to consume. Premium trays, crystal-clear anti-fog films, and consistent sealing significantly enhance product presentation and improve first impressions.

## **2. Your Packaging No Longer Reflects Your Brand Positioning**

Packaging should reinforce the promise your brand makes to consumers. If your brand stands for freshness, health, premium quality, or convenience, the packaging must communicate those values instantly. Weak trays, low-quality films, outdated designs, or inconsistent sealing reduce perceived value, making it more difficult to justify premium pricing and build consumer trust.

## **3. Consumer Lifestyles Have Changed**

Today's consumers demand convenience without compromising quality. Single-serve portions, family-size packs, grab-and-go solutions, and meal options suitable for offices, travel, and busy lifestyles are becoming market expectations rather than premium features. Tray dimensions, ease of opening, leak resistance, resealability, and overall user experience have become integral components of product value.

## **4. Competitors Showcase Freshness More Effectively**

In many salad categories, consumers struggle to distinguish product quality based solely on ingredients. Packaging therefore becomes a key differentiator. Superior transparency, attractive ingredient arrangement, visible freshness, compartmentalized components, and premium tray design can significantly influence purchasing decisions and help brands stand out on crowded retail shelves.

## **5. Shelf Life Is Limited and Product Waste Is Increasing**

Fresh salads are highly perishable products characterized by high respiration rates and moisture activity.



Inappropriate packaging materials, inadequate gas exchange, poor moisture management, or uncontrolled internal atmosphere can accelerate wilting, condensation, off-odors, and quality deterioration. Upgrading to optimized packaging systems particularly Modified Atmosphere Packaging (MAP) helps preserve freshness, reduce product returns, minimize food waste, and extend distribution reach.

## **6. Your Business Is Expanding into New Sales Channels**

Growth through supermarket chains, e-commerce platforms, food-service distribution, or export markets requires packaging that performs consistently throughout the supply chain. Durable trays, uniform appearance, efficient stackability, clear product information, and resistance to transportation stresses are essential for maintaining product integrity and customer satisfaction. Inadequate packaging can become a significant barrier to market expansion.

## **7. Your Packaging No Longer Creates Added Value**

The strongest signal is when packaging ceases to differentiate your product. Modern packaging should deliver more than protection it should communicate freshness, hygiene, safety, convenience, and premium quality. Features such as separate compartments for dressings, cheese, nuts, croutons, or other toppings enhance the consumer experience while creating meaningful differentiation from conventional market offerings. Well-designed packaging strengthens perceived value and increases consumers' willingness to pay a premium.

## **Packaging Is Part of the Product Experience**

In today's competitive salad market, consumers are not simply purchasing vegetables in a tray they are buying freshness, convenience, hygiene, confidence, and quality. When packaging is redesigned based on product characteristics and evolving market demands, it becomes a strategic investment that reduces waste, extends shelf life, strengthens brand positioning, improves customer satisfaction, and supports sustainable business growth.

For salad manufacturers seeking long-term competitiveness, packaging innovation is no longer optional it is a critical driver of commercial success.

# The Secret to Fresh Salad Shelf Life; A Look at MAP Packaging Technology

Throughout my years working in the food production and packaging industry, one of the primary challenges we consistently faced was preserving the quality and freshness of ready-to-eat products particularly fresh salads. Products such as lettuce, tomatoes, cabbage, carrots, and other vegetables are inherently sensitive. Once prepared, they rapidly deteriorate under environmental influences. Even the slightest variation in storage conditions can significantly affect appearance, texture, flavor, and overall shelf life.

Over the years, the implementation of vacuum sealing machines equipped with gas flushing systems commonly known as Modified Atmosphere Packaging (MAP) has proven to be one of the most impactful technologies I have personally observed in terms of final product quality. This system, by creating a controlled atmosphere within the packaging, establishes optimal conditions for slowing down spoilage mechanisms while preserving the primary sensory and nutritional characteristics of the product.

One of the most notable benefits of applying MAP to salad products is the preservation of freshness and extension of shelf life, all without relying on chemical preservatives. For sensitive items like lettuce which quickly undergo wilting, loss of crispness, and discoloration the precise control of oxygen and carbon dioxide levels within the package is critical. Practical experience has demonstrated that when packaging parameters are accurately calibrated, the desirable freshness and visual appeal of the product can be maintained for significantly extended periods.

When it comes to tomatoes and other high-moisture vegetables, however, the approach requires more nuance. These products not only are susceptible to microbial spoilage but also face challenges such as excessive moisture accumulation inside the package and subsequent texture degradation. In such cases, the performance of the packaging machinery alone is insufficient. The quality of raw materials, the washing process, adequate drying prior to packaging, appropriate film selection, and strict adherence to the cold chain all of these factors collectively determine the final outcome.

One critical insight I have gained through years of hands-on experience in this field is that MAP is not a standalone solution for shelf-life extension. Rather, it is an integral component of a comprehensive quality control system. Only when the entire production process including sanitation protocols, storage temperatures, and packaging operations is holistically managed can this technology deliver its maximum effectiveness.

From my perspective as a food industry engineer, vacuum sealers equipped with MAP capabilities offer benefits that extend well beyond shelf-life extension. They contribute to waste reduction, decreased return rates, enhanced customer satisfaction, and greater consistency in product quality across production lots. In industrial salad production lines, these advantages are particularly significant, as maintaining the quality of a fresh product until it reaches the end consumer is one of the most critical success factors in today's highly competitive market.

Given the accelerating trend toward ready-to-eat products especially fresh salads I firmly believe that technologies like MAP will play an increasingly prominent role in the future of the food industry. The integration of precision packaging equipment with sound food engineering knowledge can pave the way for products that offer superior quality, prolonged freshness, and minimized waste a combination that benefits producers, retailers, and consumers alike.



## Challenges in Fresh Salad Packaging; An Engineering Perspective on a Growing Industry

Eleanor Ashford

Today, pre-packaged, ready-to-eat salads are recognized as one of the most widely consumed food categories in developed countries. These products referred to in the industry as the Fourth Range (IV Range) address the modern society's demand for healthy, convenient, and accessible nutrition. However, from a food engineering standpoint, the packaging of these products presents unique and complex challenges, which can be examined across three primary axes: physiological, technical-engineering, and sustainability.

The most critical challenge lies in the living nature of plant tissue. Fresh vegetables, even after harvest and cutting, continue cellular respiration and in leafy greens, the respiration rate is particularly high. If the packaging film fails to establish an appropriate balance between gas permeability and respiration intensity, oxygen depletion leads to ethanol production and off-odors, while the accumulation of carbon dioxide and moisture promotes microbial spoilage and tissue softening. Thus, salad packaging functions as a dynamic respiratory system, not merely a passive containment vessel.

From an engineering perspective, the most significant challenge is the inherent trade-off between plastic consumption and food waste reduction. Research indicates that extending shelf life by just one day through improved packaging can reduce the product's overall carbon footprint by up to 62%. This implies that food waste imposes a more severe environmental burden than plastic packaging itself. The Four R strategy reducing packaging volume, replacing with bio-based films, and designing mono-material structures for recyclability is currently being implemented across the industry.

Ultimately, successful salad packaging demands a systems-level approach, encompassing film selection based on respiration rate, adoption of emerging technologies, and consumer education. A proposed direction for future research is the development of intelligent films with self-regulating permeability in response to temperature fluctuations along the cold chain. This industry, after all, sits at the intersection of post-harvest physiology and polymer engineering, continually challenging the boundaries between the two disciplines.



## **Novus FoodTech;** **A Pioneer in Food Processing Technology**

Novus FoodTech Engineering & Design Company, under the management of Mr. James R. Thornton, has been active in the design and manufacturing of food industry machinery since 1998 (1376 in the Iranian calendar). Prior to that, for 11 years (from 1986 to 1998), specializing in the production of lines for Canned Goods, Tomato Paste, and Jams. Taking this prior experience into account, the company boasts over three decades of hands-on expertise in the domestic food machinery manufacturing sector and has now become one of the most recognized and reputable names in this field.

### **Area of Specialization**

The company's current area of specialization is focused on the design and construction of Continuous Production Lines for Potato Products, Vegetables and Fruits, Snacks and Nuts. This emphasis on Continuous Production reflects the company's industrial and Scalable approach, tailored to meet the demands of modern production lines.

### **Collaboration with Leading Food Industry Brands**

Over the years of its activity, Nia Machine Pegah has had the privilege of collaborating with some of the most prestigious and well-known brands in the country's food industry. The list of these collaborations includes the following groups and companies:

- Kraft Heinz
- Smithfield Foods
- General Mills
- Tyson Foods
- Conagra Brands
- PepsiCo (Frito-Lay)
- Cargill Food
- Hormel Foods
- TreeTop
- Mondelez International
- B&G Foods
- Campbell Soup Company

These partnerships stand as a testament to the Market Trust in the Quality, Engineering Precision, and Operational Capabilities of this company's products.

### **Leveraging International Expertise**

Novus FoodTech has elevated its Technical Knowledge to International Standards by drawing on the engineering expertise of globally recognized brands. These include:

- USA: Heat and Control, Herbert
- Netherlands: Florigo, Kiremko
- Germany: Sormac, PKS
- France: Strefi, Lagarde, CLEXTRAL
- Italy: Pagnini
- Sweden: Rosenqvist

Through Reverse Engineering of advanced production lines from these companies in areas such as French Fries, Chips, Corn and Green Peas, Snacks and Chunky, and Autoclave Sterilization Novus FoodTech has successfully expanded its operational scope to a level comparable with reputable international brands.

### **Presence in International Markets**

The company's activities have not been confined to domestic borders. Novus FoodTech has extended its international collaborations and successfully designed and launched production lines in Iraq and the Kurdistan Region of Iraq. This cross-border presence demonstrates the competitive capability of German Engineering Expertise at a regional level and represents a meaningful step toward expanding the Export of Engineering Services.

### **Vision and Commitment**

Relying on over three decades of practical experience, Novus FoodTech remains committed to delivering the highest quality food processing machinery. With a deep understanding of the needs of Germany's food industry, the company has consistently stood alongside domestic producers and will continue on its path of Growth, Innovation, and Self-Sufficiency.



**HEI**  
D-8 HALAL EXPO  
INDONESIA 2026



**Islamic  
Economy**

## "Strengthening D-8 Halal Economy Through International Collaboration"

**8-12 July 2026**

Senayan Tennis Indoor Complex, Jakarta

Strategic Partners:



MINISTRY OF FOREIGN AFFAIRS  
REPUBLIC OF INDONESIA

**KNEKS**  
National Association of Islamic Economy and Finance



# Strategic Presence of Vormek at the Heart of Asia's Halal Economy

### A Strategic Turn in Packaging Machinery Exports

Vormek, a leading manufacturer with over a decade of expertise in advanced packaging machinery, made a decisive move in its export development strategy by participating in the Halal Expo Indonesia 2026, held from July 8 to 12 in Jakarta. This appearance was far more than a routine trade show presence; it embodied a vision of economic diplomacy, technology transfer, and integration into the global halal value chain

a vision that distinguishes Vormek from conventional machinery exporters.

### Why Indonesia? A Market of Strategic Depth

Indonesia, with a population of nearly 300 million, is the world's largest Muslim-majority nation. Yet its strategic appeal extends beyond consumer numbers. The country has laid out a clear roadmap to become a global halal industry hub, supported by a fully government-regulated halal certification system that ensures rigorous compliance, traceability, and consumer trust. Additionally, as a member of the D-8 group, Indonesia offers Vormek a gateway to a broader network of developing economies including Malaysia, Turkey, and Pakistan with shared priorities in food security and industrial modernisation.

### Technology, Networking, and Diplomatic Engagement

At Booth No. 69, Hall 1, Vormek showcased its comprehensive portfolio: thermoforming machines, vacuum chamber sealers, tray sealers, and Modified Atmosphere Packaging (MAP) systems all engineered for the stringent demands of halal food and pharmaceutical supply chains. The booth attracted steady interest from local producers, regional distributors, and industry decision-makers.

The first day proved exceptionally promising. Pre-established contacts from earlier missions facilitated several productive meetings, and multiple technical sessions were scheduled with Indonesian manufacturers for the coming days laying the groundwork for what both sides hope will become long-term partnerships.



#### High-Level Engagements and Embassy Support

A defining moment was the visit of senior Indonesian officials to the Vormek booth, including the Minister of Economy, the Deputy Minister of Foreign Affairs, and the Head of the Halal Certification Authority (BPJPH). Discussions centred on bilateral industrial cooperation in halal food technologies and pharmaceutical packaging. The Minister expressed keen interest in continuing dialogue through a dedicated expert-level meeting.

The presence of the Ambassador of Iran to Indonesia at the booth further reinforced the mission's diplomatic significance, facilitating high-level networking and signalling full governmental backing.

#### Key Achievements (Day One)

- Signing of MoUs with Indonesian and Malaysian distribution partners.
- Scheduling of technical follow-up meetings with regional producers.
- Successful introduction of MAP technology for halal product preservation.
- Collection of market intelligence on halal packaging requirements in Southeast Asia.
- Strong interest in Vormek's engineering capabilities and customisation flexibility.

#### Conclusion: The Journey Has Just Begun

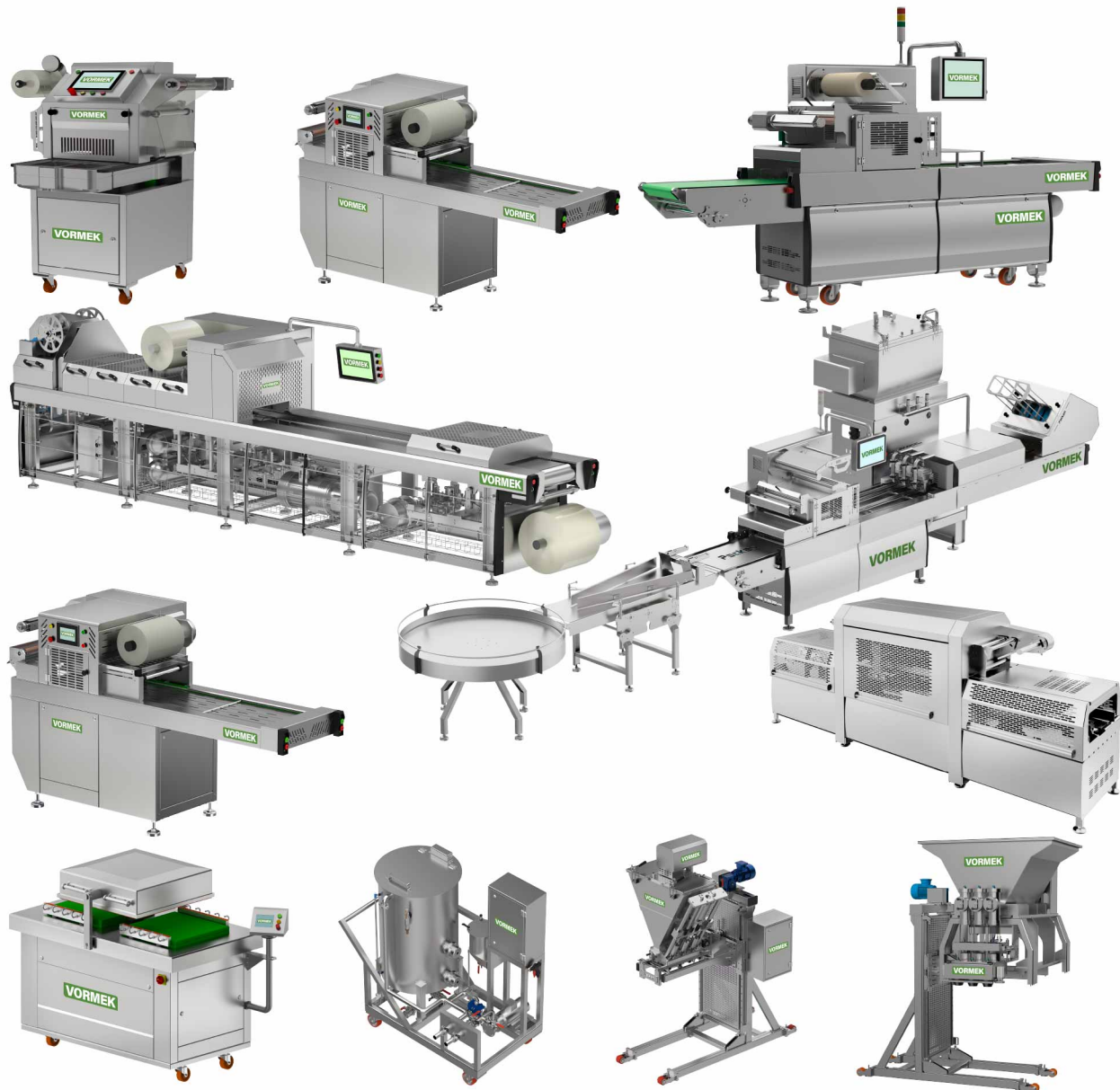
Vormek's participation in Halal Expo Indonesia 2026 represents a calculated step toward export diversification and brand strengthening in international markets. This experience reaffirms that success requires more than product quality it demands regulatory insight, sustained dialogue with decision-makers, and a long-term strategic horizon. As the expo continues, Vormek remains optimistic about translating this momentum into lasting commercial outcomes for both the company and the broader industrial engineering sector.

# The Importance of Using Tray Sealer, Thermoforming, and Vacuum Chamber Machines in Today's Packaging Industries

Not too long ago, food packaging was simple and inefficient. Products were placed in a container, covered with a layer of film, and it was hoped they would remain safe until consumption. Reality, however, was different: short shelf life, inconsistent quality, an unprofessional appearance, and contamination risks that often went unnoticed by operators. Today, expectations have changed. Consumers no longer buy food based solely on taste and freshness; they also value attractive packaging, hygiene, and extended shelf life. Manufacturers who still rely on traditional packaging methods find themselves at a disadvantage when competing with industries that embrace modern technologies.

Fortunately, today's innovations have addressed these challenges. Tray sealers offer easy operation and simple maintenance while enabling the packaging of a wide range of food products. They help extend shelf life and give products a professional, appealing appearance. Thermoforming machines go a step further by forming containers, filling, and packaging products within a single integrated process. Vacuum chamber systems remove air completely, preserving freshness, enhancing food safety, and significantly extending product shelf life. In addition, packaging lines equipped with these machines and a variety of optional features make the packaging process more efficient, hygienic, and faster.

This technological integration elevates product packaging, modernizes production processes, and positions your brand as a trustworthy and forward thinking business in the minds of customers. Packaging is not merely the final step in production; it is a window through which customers perceive your expertise, commitment to quality, and reliability.



We warmly invite you, our dear audience, to share your topics of interest with us. Your opinions and suggestions not only help enrich our content but also guide us in providing more practical material to meet your needs. **Would you like to read a report about a specific industry or a special technology in the field of packaging?**

**Share your thoughts with us so we can cover them in upcoming editions.**