



HYDRO-CHROMATIC™

TECHNOLOGY

The Next Generation of
Smart Moisture Monitoring
for Wound Dressings



Scalable. Objective. Clinically Proven

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Introduction & Executive Summary

Wound care has long been recognized as a critical component of healthcare, addressing a range of conditions from minor injuries to chronic wounds that require specialized management. The complexity of wound healing stems from the delicate balance of conditions needed for optimal recovery.

Introduction

A moist wound environment, for instance, supports cellular migration and growth, while excessive moisture or dryness can disrupt these processes. Modern medicine continually seeks innovative solutions to overcome these challenges and enhance both patient outcomes and clinical efficiency.

Effective wound management relies on precise assessment and maintenance of the wound's moisture environment. Traditional evaluation methods such as visual inspection, odor detection, and clinician experience are inherently subjective and can lead to suboptimal decisions, including unnecessary dressing changes or unnoticed moisture-related complications. These inaccuracies can delay healing, increase infection risk, and elevate healthcare costs (Leaper et al., 2021; Li et al., 2022; Thomas et al., 2020).

Executive Summary

Enhancing wound care outcomes and operational efficiency, DrySee® introduces a groundbreaking moisture detection technology that seamlessly integrates into advanced wound dressings. Utilizing Hydro-Chromatic™ passive, color-changing indicators, DrySee provides clinicians with immediate, objective visual cues on moisture saturation, seal integrity, and external moisture ingress, addressing longstanding challenges associated with subjective wound assessment.

Designed for broad compatibility across various dressing substrates, including foam, transparent, composite, and other combinations, DrySee offers a cost-effective, scalable solution that significantly advances clinical decision-making. Its easy-to-implement design requires minimal modifications to existing manufacturing processes, enabling rapid adoption and differentiation in a highly competitive market.

Clinically, DrySee Hydro-Chromatic enhances healing by maintaining optimal moist environments, reducing unnecessary dressing changes, preventing infections, and enabling better hygiene practices such as safe showering. It also lowers healthcare costs by decreasing dressing material use, nursing time, and follow-up visits, particularly in home and outpatient care settings.

From a commercial perspective, DrySee's universal, passive platform supports product line extensions and innovations, providing a unique path to market penetration, strengthening brand loyalty, and supporting premium positioning. Overall, DrySee represents a substantial leap forward in wound management, combining clinical precision, operational simplicity, and economic benefits to elevate standards of care and set a new benchmark in wound dressing technology.

Current Challenges in Wound Care

Wound assessments based on visual inspection are often highly subjective and inconsistent. As a result, dressing changes may occur too early or too late, increasing the risk of complications.

Excess moisture that goes undetected can lead to maceration, infection, and prolonged healing times. While smart technologies do exist, many are expensive, overly complex, or limited to specific types of dressings, making broad implementation challenging (Carter et al., 2019).

Advances in wound care technology introduce solutions that provide real-time, objective data that clinicians need to support decision-making. DrySee is a novel moisture detection system integrated into advanced wound dressings, compatible with various substrate types such as foam, transparent, composite, and secondary dressings.

This white paper explores DrySee®'s operational principles, clinical utility, and benefits, emphasizing its potential to improve patient outcomes through enhanced monitoring and management.

Hydro-Chromatic™ Technology

A Breakthrough in Wound Care Innovation

Patented Technology

Hydro-Chromatic is a universal, visual sensor platform integrated into advanced wound & post-op dressings.

Market Opportunity

The U.S. advanced wound care market exceeds \$4 billion annually; global figures are nearing \$10 billion. Crowded with me too products, DrySee® products stand out.

Current Challenges

Current wound assessments are inconsistent and subjective; dressing changes are often premature or delayed; unchecked moisture can result in complications.

Vision

Transform traditional and advanced wound dressings into intelligent care tools with built-in color-changing zones that respond to moisture levels.

Technology Overview

Format-agnostic, passive & reliable, clinically intuitive. Low-cost technology adds pennies to manufacturing costs.

Clinical Benefits

Enables real-time visual feedback, reduces unnecessary dressing changes, and helps prevent periwound skin damage. Seal monitoring technology indicates seal failure.

Commercial Differentiators	Embedded across the full dressing portfolio, seamless adoption provides welcome conformity to standardize care across dressing categories and treatments.
Economic Impact	Smarter use of dressings reduces waste and clinical burden.
Competitive Positioning	Hydro-Chromatic™ Technology stands apart with its passive, universally adaptable approach. Provides features clinicians want with low impact on the cost of production.
Market Strategy	<p>Phase 1: Launch high-demand SKUs.</p> <p>Phase 2: Expand to specialty dressing and market.</p> <p>Phase 3: Drive adoption in hospital, long-term care, and home care systems.</p>
Business Model	Embedded into standard SKUs, enabling tiered pricing or differentiation of product line in a crowded, competitive market. No infrastructure investment required for customers or producers.
Next Steps	Seek acquisition or strategic partner for integration of Hydro-Chromatic Technology into all dressing categories.

Moisture Management is Critical in Wound Healing

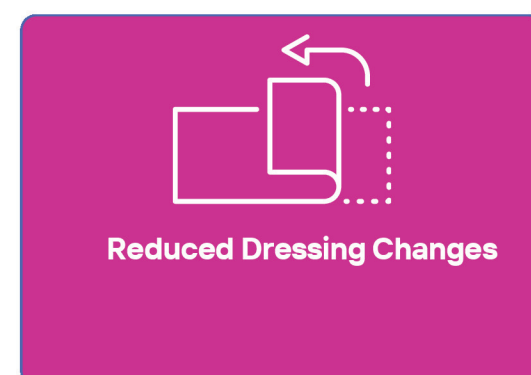
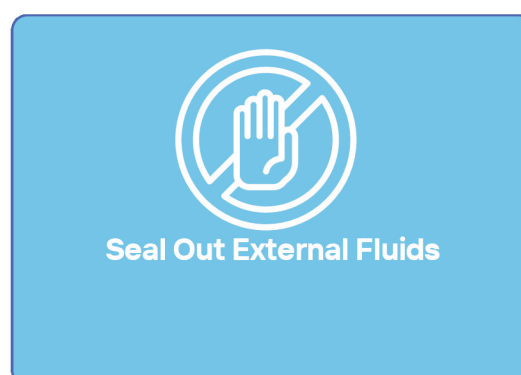
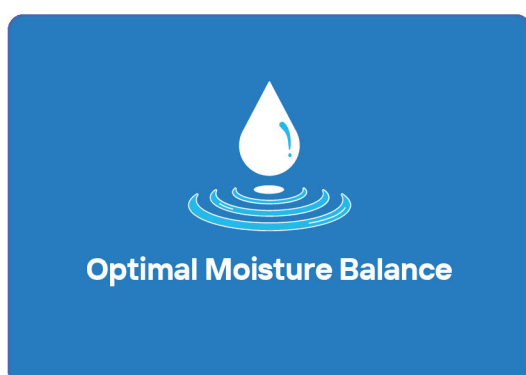
Fundamental to Effective Wound Healing

Maintaining optimal moisture balance, referred to as the "moist wound environment", is fundamental to effective wound healing. Excessive exudate impairs tissue regeneration, fosters bacterial colonization, infection, and causes maceration, while dryness can lead to desiccation, tissue necrosis, and delayed healing (Frykberg & Banks, 2017).

Disrupt Healing Process

Failure of the dressing to seal out external fluids provides channels for contamination and potential infection. Accurate assessment of exudate levels and seal integrity currently relies largely on visual cues and clinician experience, which varies between clinicians and treatment locations. External factors, such as bathing, incontinence, or accidental seal breaches, may introduce undetected moisture ingress, risking wound contamination or delayed healing (Vowden et al., 2018).

Repeated, unnecessary dressing changes disrupt (Peel and Peek, or when in doubt change it) the wound healing process, induce pain, promote infection and increase costs. Conversely, delayed changes when saturation or seal failure occur can lead to infection and deterioration of the wound bed and periwound tissue.



Hydro-Chromatic™ Technology

DrySee addresses these challenges by embedding a purpose-designed moisture-sensitive indicator within the dressing architecture. Its core functions include:



Real Time Visual Saturation Indicator

When the dressing's absorbent layer becomes saturated, DrySee's indicator visibly changes color, alerting clinicians that a dressing change is due. This prevents premature removal, preserves the moist wound environment, and reduces unnecessary interventions.



Seal Integrity Monitoring

The indicator detects moisture ingress through seal failures or external moisture sources. Breach detection alerts clinicians to the compromise, enabling prompt corrective action to prevent contamination or infection. DrySee seal integrity monitoring can be a significant advancement in wound dressings as well as ostomy adhesive appliances.



Environmental Exposure Confirmation

Hydro-Chromatic technology confirms whether external moisture exposure, from bathing, showering, or incontinence, has penetrated the dressing seal, triggering appropriate patient guidance and dressing management (Stewart et al., 2020).



Reduced Dressing Changes

The technology of DrySee indicates the presence of moisture; if there is no color change, the dressing can stay in place, reducing the need for checking or changing, and minimizing disturbances of the healing process (Zhang et al., 2021).

Hydro-Chromatic™ Technology enables clinicians to assess wound conditions in real time directly through the dressing. This facilitates timely dressing changes and helps prevent complications, such as periwound skin damage and excessive moisture exposure.

With clear, objective feedback, caregivers can standardize their approach to dressing change policy and deliver consistent, high-quality wound care across all levels of caregiver experience and treatment locations.

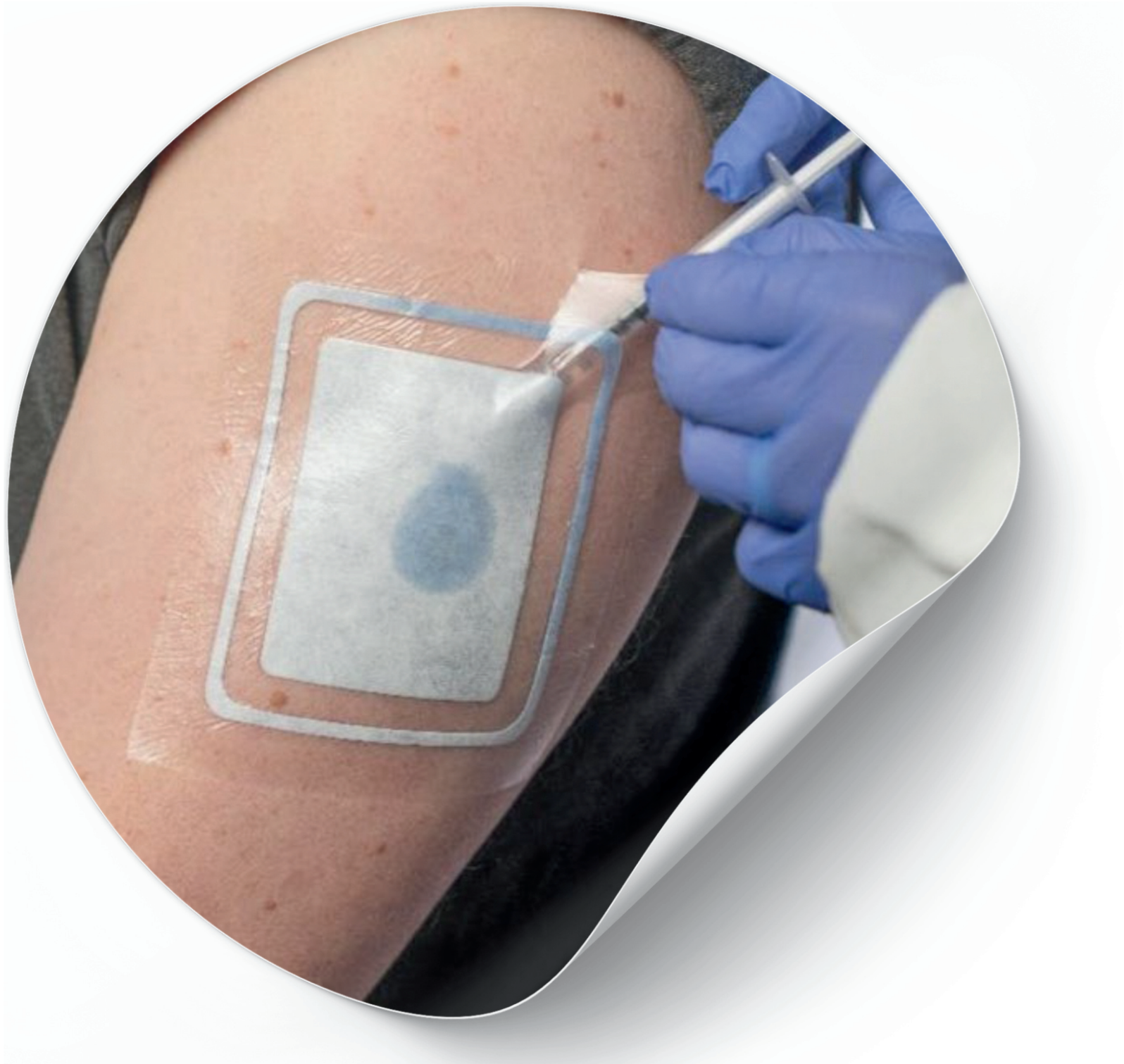









Figure 1 illustrates typical visual cues provided by DrySee® under different moisture conditions.



Clinical Benefits & Applications

The integration of DrySee® into wound dressings offers multiple advantages:

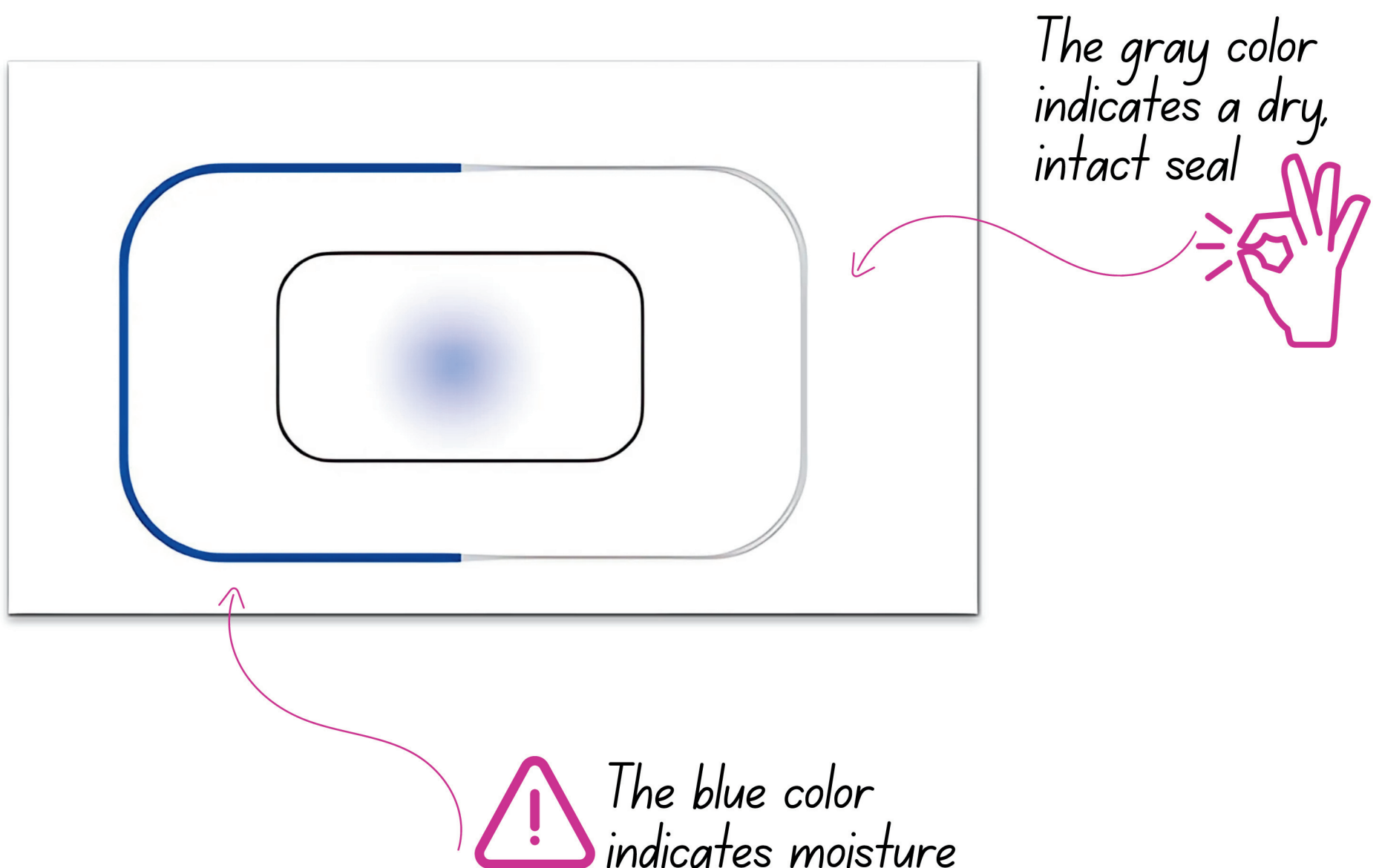
#	Clinical Benefit	Application	
1.	Objective & Visual Monitoring	Provides clinicians with clear, actionable cues, reducing reliance on subjective assessment and supporting evidence-based decisions (Frykberg & Banks, 2017).	
2.	Optimized Dressing Change Frequency	By accurately identifying saturation points, clinicians reduce unnecessary dressing removal, maintaining a stable, moist environment conducive to faster healing (Guo & DiPietro, 2010). Reducing dressing changes equals cost savings on both materials and nursing time.	
3.	Early Detection of Seal Failures & Moisture Ingress	Immediate visual alerts of moisture infiltration help prevent wound and/or ostomy seal failure, contamination, bacterial colonization, and associated healing delays (Vowden et al., 2018).	
4.	Enhanced Patient Confidence & Engagement	Patients benefit from visual confirmation of dressing integrity and moisture status, fostering trust and adherence to wound care and hygiene protocols. The indicator confirms dressing seal integrity when showering.	
5.	Enhanced Documentation	At each dressing change, photographs of Hydro-Chromatic™ patterns can be added to documentation, including EMRs. Photo analysis (clinical or AI) can be used to document medical necessity and wound progress.	
6.	Cost Reduction	<ul style="list-style-type: none">• Reduce unnecessary dressing changes.• Decrease material costs and change-associated labor costs.• Reduced home care visits and associated costs.• Improve resource utilization without compromising wound healing efficacy (Leaper et al., 2021).	
7.	Versatility Across Wound Care Modalities	Compatible with all major substrate types, including foam, transparent films, composite, and secondary dressings. DrySee® technology seamlessly integrates into current clinical workflows (and manufacturing workflow).	

Supporting Evidence and Case Application

Recent literature emphasizes that intelligent dressings capable of providing real-time moisture status significantly improve wound management outcomes. Vowden et al. (2018) demonstrated that dressings with integrated indicators reduced unnecessary changes and minimized dressing-related trauma. Additionally, economic analyses reveal that such technologies contribute to cost savings by reducing dressing change frequency and associated staffing costs (Leaper et al., 2021).

Case Application: Postoperative Wound Management

A notable example follows postoperative patients managed with foam dressings embedded with DrySee® Hydro-Chromatic™ Technology. The visual indicator signaled saturation before clinical suspicion, enabling a timely dressing change. The dressing maintained an optimal moist environment, which facilitated rapid tissue regeneration, minimized infection risk, and improved healing times. This proactive approach delivering enhanced patient comfort, reduced dressing change frequency, and overall better clinical outcomes (Thomas et al., 2020).



Purpose-Designed Indicator vs Current Practice

Some dressing manufacturers include “moisture indicating” claims in their literature. These claims rely solely on substrate-specific properties, such as swelling or darkening when moist, and do not allow for standardization across all wound care materials within a product line.

Unlike current moisture indicators that are often limited to specific dressing types or rely on costly digital components, Hydro-Chromatic™ Technology offers a universally compatible, passive solution. It stands out as the only moisture-sensing platform that can be integrated easily and economically across a manufacturer’s full range of dressings.

Purpose Designed Moisture-Sensitive Indicator

- ✓ Simple to incorporate into policies and procedures/treatment protocols.
- ✓ Simple to learn across the spectrum of caregiver credentials, experience and treatment locations (Hospital, LTC, Home Care).

Seal Integrity Confirmation

- ✓ Reduces fear of bathing or showering, encouraging hygiene.
- ✓ Alerts caregiver of moisture ingress, such as incontinence, breaching the dressing seal.

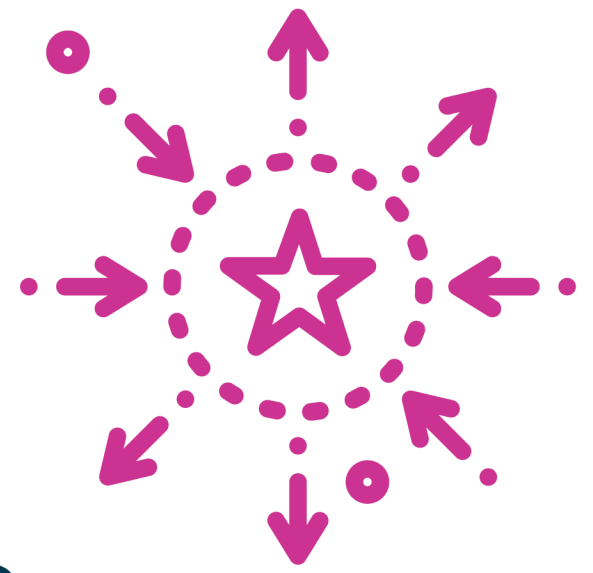
Real-Time Visual Saturation Indicator

- ✓ DrySee® indicator visibly changes color- alerting clinicians that a dressing change is or is not due.
- ✓ Prevents premature removal.
- ✓ Preserves a moist wound environment.
- ✓ Reduces unnecessary interventions (Peel and Peek).

Innovative DrySee®

Hydro-Chromatic™ Technology

Commercial Differentiators



- Is easily embedded across an entire product portfolio.
- Offers uniform and scalable product enhancement for current or new product innovation.
- Allows seamless adoption, requiring no change to clinician workflow or manufacturing equipment.
- Enhances product and portfolio value:
 - Stands out in competitive purchasing environments.
 - Creates brand loyalty.
 - Highlights performance improvements.
 - Provides features that clinicians want.



**Easily Embedded Across an
Entire Product Portfolio**



**Uniform & Scalable Product
Enhancement**



**Seamless Adoption with
Clinicians**

Alternative Substrate- Specific Options

Dressing	Substrate	Moisture Alert Mechanism
DrySee®	All Substrates	<ul style="list-style-type: none"> • Purpose-designed indicator changes color with presence of moisture. • Can be positioned anywhere on the dressing or border. • Allows use across entire lines of products.
Mepilex® Border Flex	Self-adherent foam only	<ul style="list-style-type: none"> • Moisture darkens foam with surface dots to estimate saturation.
Aquacel®Foam	Hydrofiber with foam top only	<ul style="list-style-type: none"> • Moisture darkens foam top.
ALLEVYN Life™	Multilayered foam only	<ul style="list-style-type: none"> • Only outer edge visible due to backing.
Exufiber®+ Mepilex® Combo	Gelling fiber plus foam only	<ul style="list-style-type: none"> • Foam dressing darkens when saturated.

	DrySee® Silicone Dressing	Aquacel® Foam	ALLEVYN Life™	Exufiber® Mepilex® Combo
Dressing				
Substrate	Any product substrate	Foam only	Foam only	Foam only
Features	Absorbent foam and superabsorber on silicone adhesive base	Hydrofiber core with foam top	Multilayer foam with backing	Gelling fiber plus foam
Indications	Moderate to heavily exuding chronic and acute/surgical wounds	Moderate to heavily exuding wounds	Chronic wounds. DFU, VLU	Moderate to heavily exuding wounds
Moisture Alert Mechanism	Visible color change upon moisture contact	Central pad darkens when wet	Outer edges of pad darken when wet	Foam border darkens when saturated

Hydro-Chromatic™ Technology

In Product Development

Enhanced Clinical Efficacy and Differentiation with Real-Time Feedback

- Enables immediate visual indication of dressing status.
- Enhances clinical decision-making and reduces unnecessary dressing changes, minimizing the chance of disturbance of wound healing and risk of infection. (Jones et al., 2024).
- Improves product reliability: Incorporating early saturation detection and seal failure alerts reduces the likelihood of product failure and associated complications (maceration and wound infection), reinforcing product efficacy.

Developmental and Operational Benefits

- Provides a competitive advantage without significantly impacting price points (Smith & Brown, 2023).
- Simplified User Interface: Enhances user experience by providing visual cues directly on the product, reducing the need for additional monitoring tools or procedures, and streamlining clinical workflows.
- Cost-Effective Innovation: Inclusion of DrySee technology adds value with minimal increase in manufacturing complexity or cost.

Integration with Current and New Products

Commercial Differentiators

DrySee® Hydro-Chromatic™ patented technology can be embedded into existing dressing SKUs across an entire product portfolio, offering a uniform and scalable innovation that supports premium-tier pricing and enhances contract competitiveness.

Because it requires no additional hardware or infrastructure, DrySee technology provides customers and manufacturers with a high-value, low-complexity innovation ideal for formulary inclusion and strategic procurement.

Adoption is seamless, requiring no change to clinician workflow or manufacturing equipment. Its ability to deliver highly visual added value provides significant product and portfolio differentiation in the competitive chronic and surgical dressing markets, while also building brand loyalty through demonstrable performance improvements.

These benefits provide products that stand out against the competition, encouraging discussion (finally something new for reps to talk about), adoption, and competitive advantages across all dressings in a product line.

Existing DrySee® Product Lines

- | | |
|---|--|
| 1. Foam Dressings/Silicone Foam Dressings | The Hydro-Chromatic Technology allows foam dressings to visually signal saturation or seal compromise, leading to timely interventions and appropriate wear time. The indicators are embedded above the foam layer during manufacturing with minimal modification costs. |
| 2. Transparent Dressings | The technology is integrated between the transparent film and the adhesive layer, providing continuous visual feedback while maintaining wound visibility. This enables non-intrusive monitoring for both clinicians and patients. |
| 3. Post-Operative Dressings | Critical for early complication detection, sensors are placed over the central absorbent pads and/or along sealing edges to detect leaks or excessive exudate early, aiding and encouraging prompt intervention, reducing complications. |

New Products and Product Line Extensions

1. Composite Dressings Multi-layer composite products can incorporate DrySee® Hydro-Chromatic™ Technology that changes color at different moisture thresholds, delivering multi-phase moisture monitoring.

2. Waterproof Dressings (Any substrate) These benefit from integration of DrySee Hydro-Chromatic Technology whereby breaches or leaks can be immediately identified during activities such as bathing or swimming, providing reassurance and safety.

Cost Consideration

Key advantage of DrySee Hydro-Chromatic Technology:

Adding a moisture-sensing feature involves:

- Extremely low integration cost
- Minimal adjustment to current manufacturing processes
- Scalability across different product types

Low-cost, high-value enhancements enable manufacturers to produce smarter and more reliable wound dressings and ostomy seals without requiring substantial investment.

These improvements not only enhance product performance but also offer the potential for a rapid return on investment.

Examples include:

- Growth of market share through promotion of a new standard in moisture detection
- Demonstrable improvement in clinical outcomes
- Reduction in materials, complications, and clinician time

Conclusion

In conclusion, the integration of DrySee® Hydro-Chromatic™ moisture detection technology marks a transformative leap forward in wound care product evolution. By providing real-time, objective visual cues on dressing saturation and seal integrity, this innovative solution addresses longstanding challenges associated with subjective assessments and inconsistent moisture management.

Seamless Integration

Seamless integration into diverse dressing types, including foam, transparent and other substrates waterproof products, allows for scalable, cost-effective enhancements to support both existing product lines and future innovations.

Clinical Benefits

The clinical benefits are substantial, including improved wound healing outcomes through optimal moisture balance, enhanced infection prevention by promptly detecting moisture ingress, and the reduction of unnecessary dressing changes or “peel and peek” practices that disrupt the healing process.

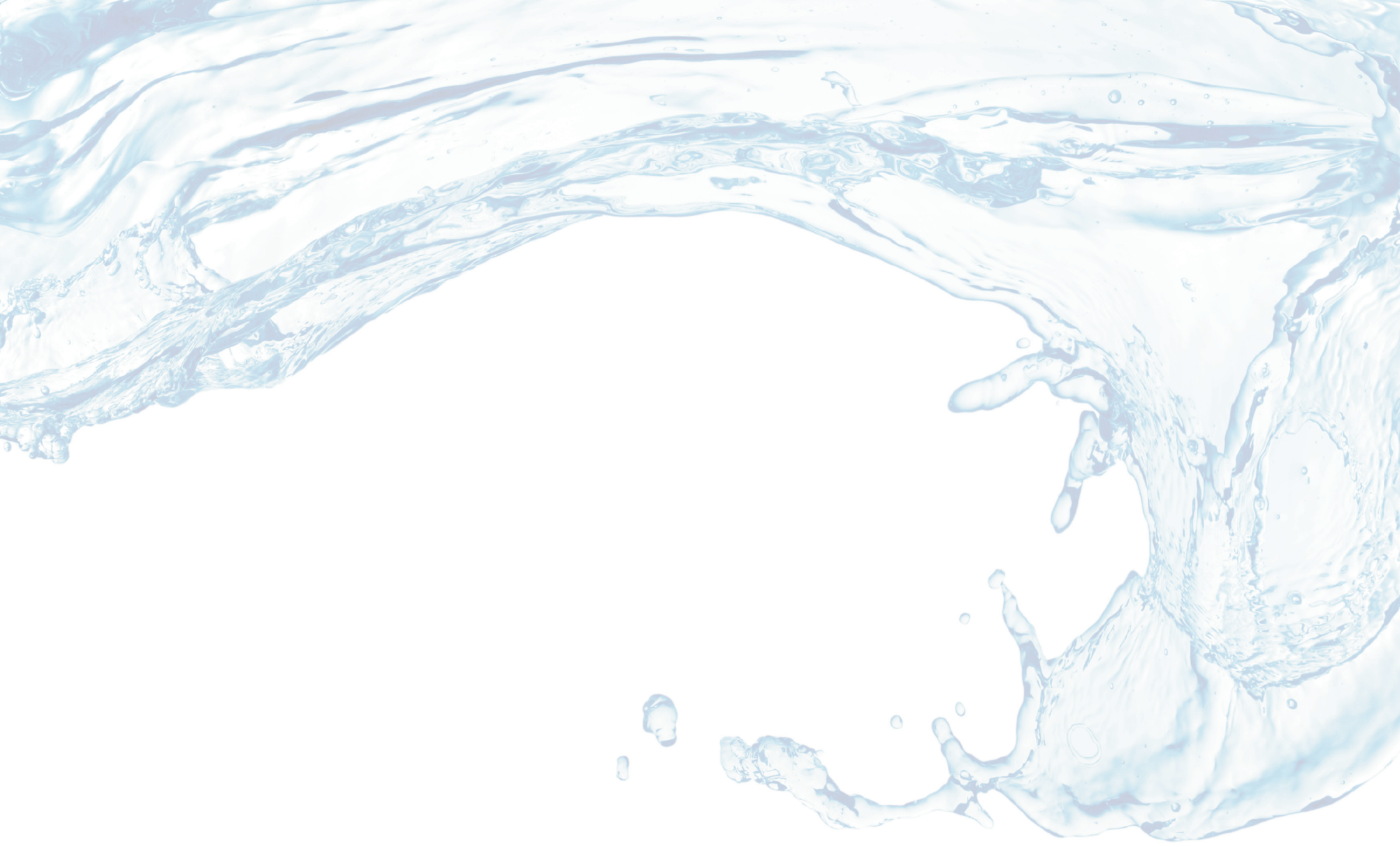
DrySee Hydro-Chromatic Technology supports better hygiene practices in homecare and LTC, enabling patients to shower with confidence and safely, reducing the frequency of homecare visits, leading to decreased healthcare costs and fewer setbacks in outpatient settings.

Ultimately, Hydro-Chromatic Technology embodies a forward-thinking approach that aligns with healthcare’s shift toward personalized, efficient, and outcome-driven wound management. Embracing this innovation enables product developers and healthcare providers alike to deliver superior patient care, reduce costs, and set new industry standards for moisture management in wound healing and beyond.

DrySee isn’t just a novel invention; it’s a versatile, scalable, practical shift in how we approach wound care addressing a recognized need in the marketplace. The technology is here. The need is urgent. The market is ready.

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