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Gulf Poultry.

Connecting Poultry Excellence

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From the EIC

Welcome to Gulf Poultry Magazine, the region's dedicated platform for advancing knowledge, innovation, and collaboration within the poultry industry across the Gulf and wider MENA region. It is my pleasure to present this issue, crafted with the goal of connecting experts, researchers, producers, policymakers, and industry leaders who are shaping the future of poultry in our rapidly evolving world.

The Gulf poultry sector stands at a pivotal moment—driven by rising demand, visionary national food-security goals, and the accelerating shift toward modern, technologically advanced farming systems. As Editor-in-Chief, my mission is to ensure that this magazine becomes a trusted voice of the industry, offering high-quality content that reflects both the opportunities and challenges across broiler, layer, breeder, feed milling, genetics, animal health, processing, and emerging smart farming technologies.

In this issue, we highlight key developments such as precision farming, hatchery innovations, sustainable feed strategies, disease management updates, and success stories from leading producers across the GCC. We also bring global scientific insights closer to regional stakeholders, ensuring that our readers stay informed with the latest trends, research breakthroughs, and market intelligence shaping the sector.

Gulf Poultry Magazine is more than a publication—it is a platform for dialogue, professional growth, and regional unity. Our aim is to support national vision programs, encourage investment, showcase industry excellence, and promote knowledge-sharing to strengthen poultry production across the Gulf.

I extend my gratitude to our contributors, partners, and readers whose support makes this magazine possible. Together, we will continue to elevate the poultry industry and build a strong, sustainable future for the region.

Thank you for being part of our journey.

László Körösi

Editor-in-Chief



Gulf's Poultry Sector Development

Editorial

**From food security to future-ready farming—
GCC nations are redefining poultry production.**

The Gulf poultry sector is experiencing dynamic and accelerated growth, driven by national food security strategies, rising consumer demand, and the rapid adoption of advanced production technologies. Across the region—led by Saudi Arabia, the United Arab Emirates, Qatar, Kuwait, and Oman—significant investments are being made to strengthen local production capacity, reduce dependence on imports, and enhance long-term sector resilience.

Key Drivers and Emerging Trends

Food security remains a central priority for GCC governments. Saudi Arabia has set an ambitious target of achieving 80% self-sufficiency in poultry meat, while other Gulf countries are implementing parallel strategies to expand domestic production and diversify supply chains. These initiatives align closely with national visions and sustainability agendas.

Poultry continues to be the most consumed animal protein in the Gulf, valued for its affordability, halal compliance, and high consumer confidence. Kuwait, in particular, records

one of the highest per capita poultry consumption rates globally, reflecting strong and sustained market demand across the region.

Technological Advancement and Smart Farming

Poultry operations across the GCC are rapidly integrating modern technologies, including:

- Precision farming and automation systems
- Data-driven production monitoring and analytics
- Advanced feed formulation and nutrition management
- Enhanced biosecurity and animal welfare practices



These technologies enhance productivity, animal welfare, and biosecurity. Sustainability & Health-Focused Production, Consumer preference is shifting to organic, antibiotic-free, and premium-quality poultry products. Producers are adopting:

- Better waste management systems and High-level biosecurity models
- Alternative feed resources to offset high import costs

Country-Specific Developments

Saudi Arabia

The GCC's leading poultry producer with,

major companies such as Al-Watania, Almarai and Tanmiah. Heavy government investment under Vision 2030 supports expansion in hatcheries, processing plants, breeding programs, and workforce development.

United Arab Emirates (UAE)

A pioneer in premium, organic, and climate-smart poultry production, led by brands such as Al Rawdah and Al Ain Farms. The UAE also hosts the Gulf Poultry Science Conference, strengthening scientific collaboration and regional innovation.

“GCC Nations are Driving Sustainable, High-Tech Poultry Production to Secure the Region’s Future.”



Kuwait

Kuwait's consumption vastly exceeds local production, necessitating significant imports. Research organizations like KISR are focusing on developing heat-tolerant breeds, improving feed efficiency, and strengthening local farm performance.

Qatar

Qatar has achieved remarkable progress in poultry self-sufficiency since 2017, supported by large-scale national initiatives.

Key features include:

- Expansion of integrated poultry complexes
- Strong government backing through food security programs
- Companies like Baladna and Al Waha contributing to improved local production

Qatar is increasingly adopting precision farming tools, renewable energy systems, and high-efficiency cooling technologies to enhance sustainability.

Oman

Oman is steadily expanding its poultry footprint, focusing on domestic production and rural development.

Key developments include:

- Growth of major producers like A'Saffa Foods

- Investments in breeder farms, hatcheries, and processing facilities
- Emphasis on biosecurity, disease control, and better feed management.

Oman is also promoting small and medium-scale poultry enterprises, contributing to food security and economic diversification under Oman Vision 2040.

Challenges and Future Outlook

The Gulf poultry sector continues to face challenges such as high feed import costs, water scarcity, climate constraints, and disease risks. Despite these hurdles, the region's poultry industry is on a strong upward trajectory.

Significant investments in:

- Digitalization and automation
- Scientific R&D in genetics and nutrition
- Sustainable production models
- Regional collaboration

...are positioning the GCC as an increasingly significant player in global poultry production—competitive, resilient, and innovation-driven.



Uncovering the Latest Updates on UAE Poultry

Explore the innovations transforming poultry production in the UAE

BY DR. NASIR MUKHTAR | MANAGING EDITOR

The poultry industry in the United Arab Emirates (UAE) has undergone a remarkable transformation over the past decade, evolving from a traditionally import-dependent sector into a rapidly advancing, technology-driven agribusiness. Driven by national food security priorities, population growth, and increasing demand for high-quality protein, poultry production has become a strategic pillar within the UAE's agricultural landscape. Today, the sector stands as a model of innovation, sustainability, and efficiency, leveraging advanced technologies and global best practices to meet both domestic and regional demand.

One of the most significant drivers shaping the UAE poultry industry is the country's strong commitment to food security. Under the National Food Security Strategy 2051, poultry meat and eggs have been identified as essential commodities for achieving higher levels of self-sufficiency. This policy focus has accelerated investments in modern



poultry infrastructure, large-scale integrated operations, and innovation-led production systems. As a result, local poultry producers are now supplying a growing share of the domestic market, reducing reliance on imports while maintaining international quality standards. Technological innovation has become the backbone of modern poultry production in the UAE. Climate-controlled housing systems are now widely adopted, allowing producers to maintain optimal temperature, humidity, and ventilation despite extreme desert conditions.



“Poultry meat and eggs are key to self-sufficiency under the National Food Security Strategy 2051”

These environmentally controlled facilities significantly reduce heat stress, improve feed efficiency, and enhance bird welfare. Automated ventilation, cooling pads, and real-time environmental sensors ensure stable production performance throughout the year, even during peak summer months.

Precision farming technologies are increasingly reshaping how poultry farms operate. Advanced data-driven systems monitor key production parameters such as feed intake, water consumption, growth rates, mortality, and flock uniformity. These systems enable producers to identify performance deviations early and take corrective actions promptly. By integrating artificial intelligence (AI) and analytics platforms, poultry managers can optimize decision-making, improve predictability, and reduce production losses. This shift toward precision management has resulted in measurable improvements in feed conversion ratios, livability, and overall production efficiency. Feed and nutrition innovation represents another critical area of advancement in the UAE poultry sector. With feed accounting for the largest share of production costs, companies are increasingly investing in advanced feed formulation technologies. The adoption of standardized ileal digestible amino



acid concepts, precision nutrition models, and alternative raw materials has improved nutrient utilization while reducing waste. Enzyme technologies, functional additives, and gut health enhancers are widely used to improve digestion, enhance immunity, and support antibiotic-free production systems.

Sustainability has become a central theme in UAE poultry development. Producers are increasingly aligning their operations with environmental responsibility and resource efficiency. Water-saving technologies such as closed-loop drinking systems, water recycling, and precision water management have significantly reduced water consumption per kilogram of poultry produced. Renewable energy solutions, including solar-powered facilities and energy-efficient equipments, are also being integrated into poultry operations to reduce carbon footprints and operating costs.

Biosecurity and disease prevention remain top priorities in the UAE's poultry industry. The country has adopted some of the most stringent biosecurity protocols in the region, supported by strong regulatory frameworks and veterinary oversight. Modern farms operate under strict access controls, vehicle disinfection systems, and comprehensive health monitoring programs. Vaccination strategies are continuously updated based on global disease trends and local risk assessments. These measures have helped maintain high health standards and protect the industry from major disease outbreaks.

Animal welfare is increasingly recognized as both an ethical responsibility and a performance driver. The UAE poultry companies are investing in welfare-focused housing designs, improved lighting programs, optimized stocking densities, and stress-reduction practices. International welfare guidelines are being incorporated into local production standards, ensuring birds are raised in environments that support natural behaviors while maintaining productivity. Enhanced welfare practices have also strengthened consumer trust and brand reputation within the domestic market.

Processing and value addition have also seen significant innovation. Modern poultry processing plants in the UAE are equipped with high-speed automation, advanced food safety systems, and traceability technologies. These facilities meet international standards such as HACCP, ISO, and Halal certification requirements. Value-added products including marinated cuts, ready-to-cook items, and processed poultry foods are expanding rapidly, responding to changing consumer lifestyles and demand for convenience.

Digital transformation across the poultry value chain has further strengthened operational efficiency and transparency. Enterprise resource planning (ERP) systems, blockchain-based traceability tools, and integrated supply chain platforms enable real-time tracking from farm to fork. These systems improve inventory management, quality control,

and regulatory compliance while enhancing responsiveness to market fluctuations. Digital traceability has also become a powerful tool for reinforcing food safety and consumer confidence.

Human capital development plays a crucial role in sustaining innovation within the UAE poultry industry. Companies are investing heavily in training programs, leadership development, and technical capacity building. Collaboration with international experts, research institutions, and industry organizations has strengthened knowledge transfer and accelerated the adoption of global best practices. The emergence of highly skilled poultry professionals has positioned the UAE as a regional knowledge hub for poultry science and agribusiness management.

Research and development (R&D) initiatives are increasingly supporting long-term industry growth. Collaborative research projects focusing on nutrition, health, and sustainability are helping adapt global poultry technologies to local climatic and market conditions. The integration of industrial research with commercial production has enabled evidence-based decision-making and continuous improvement across the sector. Consumer preferences are also influencing innovation in UAE poultry production. Rising demand for antibiotic-free, organic, and locally produced poultry products has encouraged producers to adopt cleaner production systems and transparent labeling practices. Marketing strategies increasingly emphasize quality,

freshness, animal welfare, and sustainability, aligning production practices with evolving consumer expectations.

The role of government support and policy alignment cannot be overlooked. Strategic incentives, investment-friendly regulations, and strong public-private partnerships have created a conducive environment for poultry sector growth. Regulatory authorities continue to work closely with industry stakeholders to ensure food safety, biosecurity, and sustainability objectives are met without compromising competitiveness.

Looking ahead, the future of poultry production in the UAE appears highly promising. Emerging technologies such as artificial intelligence-driven farm management, and carbon-neutral production systems are expected to further reshape the industry. As the UAE continues to position itself as a global leader in food security and agribusiness innovation, the poultry sector will remain at the forefront of this transformation.

The UAE poultry industry represents a powerful example of how innovation, strategic vision, and sustainability can drive sectoral growth in challenging environments. Through advanced technologies, strong leadership, and a clear focus on food security, the UAE has built a resilient and future-ready poultry sector. These ongoing innovations not only enhance domestic self-sufficiency but also position the UAE as a benchmark for poultry production excellence across the Middle East and beyond.

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The UAE host the Gulf Poultry Science Conference

The conference promotes scientific collaboration and advances regional innovation

The 1st Gulf Poultry Science Conference, held alongside VIV MEA in Abu Dhabi, UAE, was successfully organized by the World's Poultry Science Association (WPSA) - UAE Branch. The conference brought together more than 300 participants and featured multiple scientific and technical sessions, including: Gulf Poultry Sector Development, Poultry Nutrition and Feed Technology, Artificial Intelligence and Poultry

Modernization, Diseases, Hygiene, and Immunity, Layer Management and Welfare and Open Session for Selected Abstract Presentations. A total of 40 renowned experts delivered 42 informative research and industry-focused presentations, representing leading international and GCC poultry specialists. One critical and skillful panel discussions were conducted to address major regional challenges and propose actionable solutions for the GCC poultry sector.



**The
Conference
was hosted
by the
World's
Poultry
Science
Association
UAE Branch**

The conference was held on 25-26 November, 2025 in Abu Dhabi, UAE. The conference emphasized a strong vision for sustainable poultry farming and regional food security. It provided a platform for leading scientists, academicians, and industry professionals to exchange knowledge and explore the future of innovation-driven poultry production. Beyond scientific insights, the event highlighted the value of networking, shared learning, and meaningful collaboration.

Eminent speakers included: Peter van Horne (Secretary General, WPSA - Global/Netherlands); Kevin Roepke (Executive Director, MENASA - USSEC); Dr. M. Reza Abdollahi (Professor, Massey University, New Zealand); Russel Sadati (La Meccanica, Italy); Jean-Paul Ruckebusch (France); Miriam Alberto-Tempra (Australia); Nan-Dirk Mulder (USA); Jörg Hurlin (Germany); Matthew Clerk (FeedGuys Resources, Malaysia);



Christelle Cordahi (USSEC - MENASA); and Shakeel Ahmed (Co-Founder & COO, Poulta Inc., USA). Prof. Dr. Nasir Mukhtar, Conference Secretary, highlighted the importance of integrating smart, data-driven technologies to enhance productivity, efficiency, and sustainability across the poultry value chain. Overall, the conference served as an excellent platform for knowledge sharing, learning global best practices, and strengthening



regional and international collaborations. A high-level panel discussion titled “Advancing Technological Innovation in Poultry Production” was held as part of the conference proceedings, focusing on how artificial intelligence (AI), big data, and Industry 4.0 technologies are reshaping the global poultry sector. Expert Moderation by Pouлта Inc. The session was expertly moderated by Ms. Atifa Asghar, Senior Advisor at Pouлта Inc., who guided the discussion with strategic insight and industry foresight. She emphasized the



urgent need for technology-driven solutions as the poultry industry continues to face significant losses due to operational inefficiencies, while simultaneously confronting increasing pressure to ensure global food security. The panel brought together an elite group of international experts from animal health, finance, and corporate strategy, including Ms. Marianna Andreopoulou, Poultry Business Director – EURAM at MSD Animal Health; Mr. Nan-Dirk Mulder, Senior Global Specialist for Animal Protein at Rabobank; and Mr. Abbas Khan, Chief Strategy Officer at Tanmiah Food Company. Panellists highlighted the integration of smart,

Global Experts Participate in Panel Discussion: Advancing Technological Innovation in Poultry Production

data-driven technologies across the poultry value chain, demonstrating how digital tools can enhance productivity, improve decision-making, and support sustainable production models. The discussion challenged conventional production approaches and outlined a clear pathway toward adopting precision farming, predictive analytics, and intelligent management systems, reinforcing the critical role of technological innovation in securing the future of poultry production—the world’s most consumed animal protein—and positioning the industry for long-term resilience and growth.

Over 300 participants took part in the conference



The Gulf Poultry Science Conference provided a comprehensive platform to address pressing issues of food security in the Gulf region, highlighting both current challenges and future strategies aligned with Vision 2030. With the GCC countries heavily reliant on food imports, ensuring a stable and sustainable supply of high-

quality poultry products has become a national priority. The conference brought together leading scientists, industry experts, and policymakers to explore innovative solutions across the poultry value chain—from breeding and nutrition to production efficiency, biosecurity, and supply chain management.

Forty Experts Deliver Insightful Presentations at the Conference



Discussions emphasized the critical role of technological innovation in overcoming production inefficiencies and boosting self-sufficiency. Key topics included precision farming, data-driven production monitoring, and advanced feed formulation systems, which are vital to meeting the growing demand for poultry meat and eggs. Experts also highlighted the importance of regional collaboration, knowledge sharing, and adoption of global best practices to enhance productivity while maintaining animal welfare and environmental sustainability. Aligned with Vision 2030 objectives, the conference underscored the need for i

ntegrated strategies that strengthen local production, reduce dependency on imports, and contribute to national food security goals. It also emphasized the role of human capital development, encouraging training and mentoring the next generation of poultry professionals to lead innovation and sustain growth.

The Gulf Poultry Science Conference served as a pivotal forum for shaping the future of poultry production in the Gulf, providing actionable insights, fostering regional partnerships, and reinforcing the commitment to achieving a resilient and self-sufficient food system in line with long-term strategic visions.

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Spotlight on Excellence

GCC Poultry Leader

BY MS. AFEEFA NAWAL | ART & SOCIAL MEDIA DIRECTOR

Dr. Mohammed Ezzat Elagamy, DVM, MVSc, PhD, MBA, is widely recognized as one of the most influential and visionary leaders in the Middle East's poultry industry. With an exceptional blend of scientific expertise, strategic leadership, and business management acumen, he currently serves as CEO of Al Ajban poultry & Al Ajban foddors and head of all poultry businesses and operations across Al Ain Farms Group, a subsidiary of Ghitha Holding, one of the region's rapidly expanding agribusiness enterprises. His leadership journey reflects a strong commitment to innovation, sustainability, and the advancement of poultry production across the GCC particularly in the United Arab Emirates (UAE) where he has played a pivotal role in driving industry transformation.

Dr. Elagamy's professional career is firmly rooted in academic excellence. After completing his Doctor of Veterinary Medicine (DVM) degree, he pursued a MVSc and later earned a PhD, specializing in disciplines that directly support scientific, health, and production advancements in modern poultry systems. This robust scientific foundation remains one of his greatest strengths, enabling him to effectively bridge the gap between research, field application, and strategic decision-making within large-scale integrated poultry operations.



*Dr. Ezzat Elagamy is
the Champions of
Poultry Growth and
Innovation in GCC*

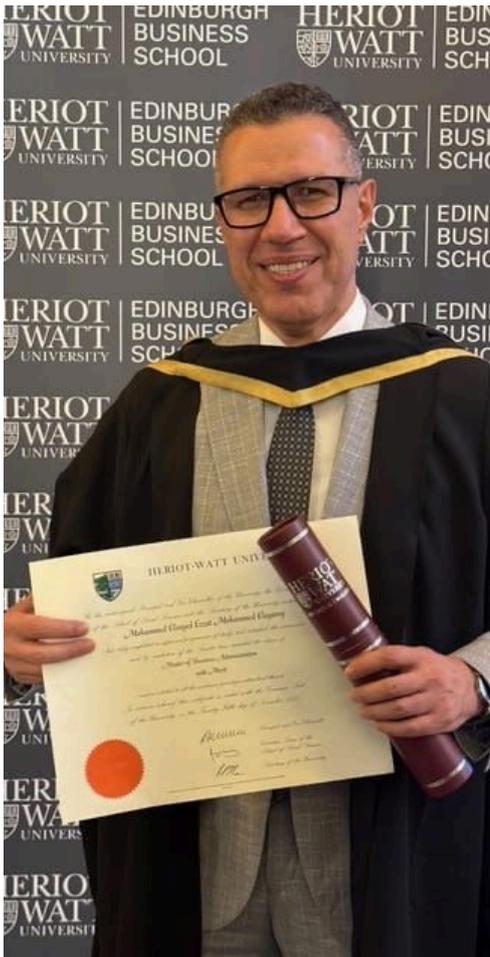


***Dr. Ezzat Elagamy
is the head of all
poultry businesses
and operations
across Al Ain
Farms Group, a
subsidiary of
Ghitha Holding***



In addition to his strong scientific credentials, Dr. Elagamy recently completed his MBA from Edinburgh Business School, Heriot-Watt University, one of the world's leading institutions for executive leadership and global business education. This prestigious qualification has further strengthened his ability to develop long-term strategies, optimize organizational performance, and lead diverse teams through complex operational and market challenges. The powerful combination of advanced technical expertise and high-level business education places him among the elite leaders driving the region's food security and agribusiness vision.

Innovation requires continuous knowledge improvement. Dr. Ezzat recently completed his MBA from Edinburgh Business School, Heriot-Watt University.



One of Dr. Elagamy's most notable contributions has been his long-standing involvement with Al Ajban and Al Ain Farms in the UAE, one of the largest and most technologically advanced poultry companies not only in the Middle East but also globally. His work with regional government development agencies and the poultry sector has played a pivotal role in shaping the modern poultry industry across the GCC, particularly during periods of rapid expansion and modernization. Dr. Elagamy is widely regarded as a pioneer and strategic architect of regional poultry development. His leadership has facilitated the adoption of global best practices, strengthened biosecurity systems, enhanced production efficiency, and established sustainable production models aligned with national food-security objectives.

Today, as Head of Poultry Operations at Al Ain Farms Group, part of Ghitha Holding, Dr. Elagamy continues to lead major initiatives focused on enhancing productivity, ensuring animal welfare, and adopting advanced technologies such as precision farming, data-driven production monitoring, and modern feed formulation systems. Under his leadership, Al Ain Farms and Al Ajban have evolved into industry benchmarks for innovation, operational discipline, and high-quality product standards.

His progressive approach has also strengthened the company's alignment with the UAE's food security agenda, supporting national goals for self-sufficiency and sustainable agriculture. Beyond his corporate leadership, Dr. Elagamy is widely respected for mentoring the next generation of poultry professionals and for actively engaging in regional knowledge-sharing platforms. He regularly contributes to scientific forums, industry conferences, and strategic dialogues that help shape the future of poultry production in the Gulf and the wider Middle East. Colleagues and industry partners consistently value his vision, integrity, and unwavering commitment to continuous improvement. Dr. Mohammed Ezzat Elagamy's professional journey reflects the hallmarks of a transformational leader: deep scientific expertise, operational excellence, strategic foresight, and a strong commitment to national and regional development. His contributions to the poultry sectors of the UAE and the GCC stand as a testament to his dedication to advancing food security, industry resilience, and the adoption of world-class standards across the region.

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Gulf Poultry Magazine | December 2025



From Coop to Cloud: Industry 4.0 Revolution for Poultry in the MENA Region



DR HASSAN ZAHRAN |

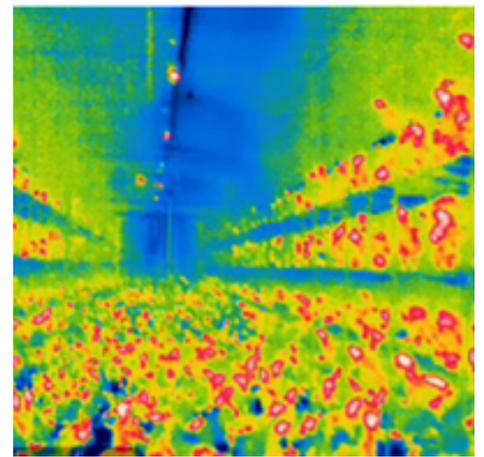
LEAD QUALITY POULTRY SEGMENT | AL AIN FARMS GROUP | UAE

Industry 5.0: Smarter farms where AI acts before challenges arise

The global poultry industry is undergoing a profound transformation driven by rapid population growth, rising demand for animal protein, and increasing pressure to operate sustainably. By 2050, global demand for poultry meat is expected to double, while egg demand is projected to increase by approximately 40 percent. As one of the most affordable and widely consumed sources of animal protein, poultry plays a central role in global food security, particularly in the Middle East and North Africa (MENA) region. Meeting this growing demand



requires not only scaling up production but also improving efficiency, animal welfare, disease prevention, and environmental stewardship. This transformation is encapsulated in the concept of Industry 4.0, often described as the journey “from coop to cloud.” The foundation of this vision aligns closely with the 17 United Nations Sustainable Development Goals (SDGs), adopted in 2015 to promote inclusive, resilient, and sustainable development worldwide. The philosophy of balance and pairing—deeply rooted in natural law and spiritual teachings is reflected in Quranic verses emphasizing that all creation exists in pairs. Symbolically, this principle mirrors modern poultry systems, where biological processes and digital technologies must operate in harmony to achieve sustainable progress. Historically, the poultry industry has evolved through several industrial phases. Industry 1.0, spanning the late 18th and 19th centuries, was characterized by manual labor. Poultry farming relied on basic tools, simple housing systems, hand-fed grain, and experiential knowledge passed down through generations. Production levels were low, quality was inconsistent, and farmers were highly vulnerable to disease outbreaks and climatic variations.



***Industry 4.0
Revolution:
Where sensors,
data, and AI
transform
poultry farms
into intelligent,
predictive, and
sustainable
production
systems.***

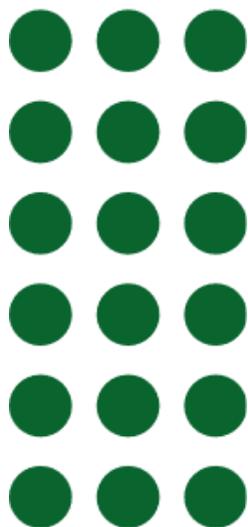
The transition to Industry 2.0, often referred to as the factory farm era, marked the emergence of commercial poultry production. Key innovations included large-scale confinement housing, mechanized feeding systems, automated egg conveyors, mechanical ventilation, standardized feed formulations, and controlled lighting programs. These advancements significantly increased production efficiency and scale, transforming poultry farming into a global commercial enterprise.

Industry 3.0, known as the automated coop era, introduced programmable logic controllers (PLCs) that automated feeding, watering, and climate control systems. Early sensor technologies

enabled monitoring of temperature and humidity, while computer-based systems facilitated basic data collection on growth performance and feed conversion. Although this phase substantially reduced labor requirements and improved environmental consistency, it was limited by “islands of automation,” where systems operated independently without integration or centralized intelligence.

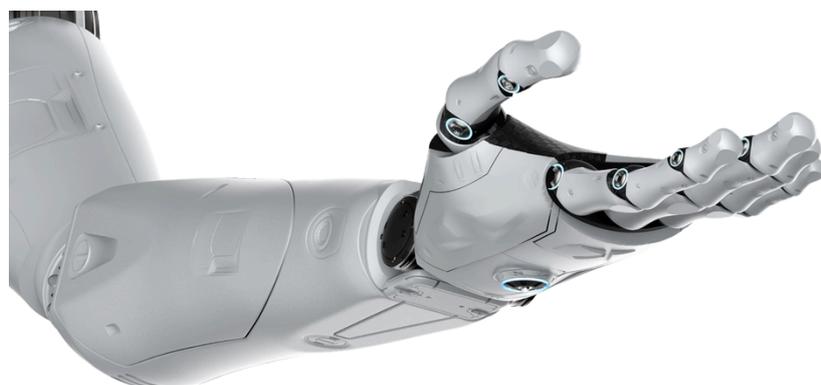
The current phase, Industry 4.0, represents a paradigm shift toward the cyber-physical poultry farm. This revolution integrates the Internet of Things (IoT), big data, artificial intelligence, cloud computing, and advanced analytics into a single, interconnected ecosystem. Unlike previous stages, Industry 4.0 is not merely about automation, but about intelligent systems that communicate, learn, and self-optimize in real time. The need for Industry 4.0 is reinforced by global consumption and production trends. Poultry has become the most consumed meat per capita worldwide. Meanwhile, global

**Industry 4.0
Revolution:
Where IoT, big
data, and AI
turn poultry
farms into
smart, self-
optimizing
production
systems.**



poultry bird numbers continue to rise, imports of poultry meat remain significant in many regions, and productivity indicators such as meat yield per bird vary widely across countries. These realities necessitate smarter, data-driven production systems capable of maximizing output while minimizing waste, disease incidence, and environmental impact. At the core of Poultry 4.0 are IoT sensors, which form the backbone of precision poultry farming. Thousands of sensors deployed throughout poultry houses continuously monitor environmental parameters such as temperature, humidity, air quality, ammonia concentration, carbon dioxide levels, and light intensity. Livestock-related

parameters—including bird weight, activity patterns, feed and water intake, and even vocalizations indicative of stress—are also captured. Simultaneously, equipment performance and system health are monitored, providing real-time, granular visibility into every aspect of farm operations. Building upon this data layer, artificial intelligence and advanced analytics serve as the cognitive engine of Poultry 4.0. Sensor data are aggregated in cloud-based platforms, where machine learning algorithms convert raw data into actionable insights. Predictive analytics forecast optimal harvest times and identify disease risks before clinical symptoms become visible. Prescriptive analytics recommend precise feed formulations and automatically adjust environmental conditions to support optimal growth. Computer vision systems continuously assess bird size, health, and behavior, enabling proactive management rather than reactive intervention.





Robotics and automation further enhance the Industry 4.0 ecosystem. Autonomous robots operate within poultry houses to manage litter, improving footpad health and hygiene, and to perform disinfection tasks. Robotic egg collection systems ensure gentle and efficient handling, while drones support perimeter monitoring and disinfection during downtime. These technologies help address labor shortages, reduce human exposure to hazardous environments, and ensure consistent operational performance. One of the most transformative impacts of Industry 4.0 is the shift from reactive to predictive disease management. Traditionally, disease control depended on the observation of visible symptoms such as lethargy, respiratory distress, or increased mortality often detected too late and at high economic cost. In contrast, Poultry 4.0 leverages thermal imaging, computer vision, and behavioral analytics to identify subtle changes in body temperature, movement, and activity at the individual bird level. Health dashboards provide early warnings, quantify risk levels, and prescribe corrective actions such as ventilation adjustments, nutritional interventions, or biosecurity measures. This data-driven approach significantly enhances flock health and biosecurity. Looking ahead, the Industry 4.0 framework paves the way for advanced innovations, including AI-driven

precision breeding, remote farm management via mobile applications, sustainable poultry waste management systems, CRISPR-based genetic technologies, digital twins that simulate entire farm operations, and real-time carbon footprint monitoring. Together, these innovations strengthen sustainability, transparency, and resilience across the poultry value chain. The journey from Industry 1.0 to Industry 4.0 represents a transition from physical labor to intellectual leverage. Industry 4.0 is not about replacing farmers, but about empowering them with unprecedented insight, control, and decision-making capability. The ultimate objective extends beyond efficiency to encompass resilience, sustainability, and ethical responsibility. The future of poultry production lies at the intersection of biology and technology where data, intelligence, and human expertise converge to feed a growing world. While Industry 4.0 provides real-time visibility into on-ground operations, Industry 5.0 moves one step further by enabling predictive and proactive action.

In Industry 5.0, artificial intelligence anticipates potential challenges before they occur, alerts operators in advance, and initiates preventive measures. As a result, issues are addressed before they manifest, ensuring smoother, safer, and more efficient farm operations.

What is the Industry 4.0 Revolution

Industry 4.0 revolution refers to the fourth industrial revolution, which is transforming manufacturing and production through digital technologies, automation, and data-driven decision-making. Unlike earlier industrial revolutions, which focused on mechanization, electricity, or automation, Industry 4.0 emphasizes smart, interconnected systems that can communicate, analyze, and optimize themselves in real time.

Key Features of Industry 4.0:

- Internet of Things (IoT): Machines, sensors, and devices are connected and share data continuously.
- Big Data & Analytics: Massive amounts of operational data are collected and analyzed to improve efficiency and predict outcomes.
- Artificial Intelligence (AI) & Machine Learning: Systems can learn from data, make decisions, and optimize processes automatically.
- Cyber-Physical Systems: Physical operations (like machines or robots) are integrated with digital computing systems.
- Cloud Computing: Data and applications are centralized for real-time access and coordination.
- Robotics & Automation: Smart robots handle repetitive tasks, monitor conditions, and maintain precision.
- Predictive Maintenance: Systems anticipate problems before they happen, reducing downtime and costs.



The Potential of the Industry 4.0 Revolution

Global Market Size: The Industry 4.0 market is projected to reach \$214 billion by 2030 (approx. USD) globally.

- IoT Devices: Over 14 billion connected IoT devices are expected to be in operation by 2025.
- Big Data Growth: By 2025, the world will generate 175 zettabytes of data, much of it from industrial and manufacturing systems.
- Robotics: The global industrial robot market is forecast to exceed \$75 billion by 2026, with annual installations surpassing 500,000 units.
- AI Adoption: 70% of manufacturers globally are expected to implement AI-driven predictive maintenance and automation by 2026.
- Automation Efficiency: Companies adopting Industry 4.0 technologies report up to 20-30% increase in productivity and 10-15% reduction in operational costs.
- Cyber-Physical Integration: Around 40% of manufacturing plants will be fully connected through IoT and smart sensors by 2027.
- Energy & Sustainability Impact: Smart factories using Industry 4.0 solutions can reduce energy consumption by 10-25% through optimized operations.



Dr. Takehiko Hayakawa is Manager of Regional Strategic Product Management at DSM Nutritional Products Asia Pacific and a Precision Nutrition Layer Consultant who works hands-on with commercial layer operations to turn on-farm challenges into practical nutritional solutions and measurable outcomes. Since 2025 he has also served as Technical Advisor to Z-LABO, Japan's first commercial-style layer trial farm, helping design decision-ready trials and translate results into daily practice. He holds a Ph.D. in Applied Life Science and has spent more than two decades in poultry nutrition with a focus on layers. His work centers on vitamin D metabolism, carotenoid deposition, and targeted feeding strategies that improve egg quality, skeletal integrity, flock robustness, and brand consistency.

Across Japan, Korea, Taiwan, and Southeast Asia, he has supported value-added egg programs with defined yolk color, micronutrient enrichment, and shelf stability, building advantage through differentiation, animal welfare, and consumer trust.

Dr. Takehiko Hayakawa | Japan

Member Editorial Team
Gulf Poultry Magazine

Within DSM he leads regional product strategy, aligning R&D, technical service, sustainability positioning, and commercial rollout for key nutritional technologies. He also partners with customers to design and interpret field trials, implement objective quality scoring, and set nutritional standards that can be communicated from farm and veterinary teams to retailers and regulators. Dr. Hayakawa has authored more than twenty publications across industry magazines, trade journals, and peer-reviewed papers. In 2025 he authored Chapter 9 of *Advances in Improving the Safety and Quality of Eggs* (Burleigh Dodds, UK). He served as technical editor of the *Illustrated Egg Handbook* (CONTEXT, UK) and played a central role in developing DSM's YolkFan tools, including the 16-blade fan and the digital YolkFan Pro. He regularly speaks at international conferences on egg quality, precision nutrition, and sustainable layer production.



Tanmiah Foods Company Rising High with New Projects

Tanmiah Introduces a New Frozen Breaded Fresh Chicken Range



Tanmiah Foods Company has launched a new frozen breaded chicken range made entirely from 100% fresh Saudi chicken. This new range sets a high standard for innovation, value addition, and excellent quality and taste in the frozen processed meat category. This launch shows Tanmiah's strong commitment to using locally sourced ingredients. The frozen chicken market has long depended on imported raw materials, but this

initiative supports the Kingdom's food security goals by strengthening local production, increasing self-sufficiency, and building a more resilient food system.

The new range was officially introduced at the Ministry of Environment, Water and Agriculture (MEWA) in Riyadh. The event was attended by Dr. Ali Mohammed Al-Shaikhi, Assistant Deputy Minister for Livestock and Fisheries, along

From nuggets to burgers, Tanmiah introduces a fresh Saudi-made frozen chicken range

TANMIAH LAUNCHES A NEW FROZEN BREADED CHICKEN RANGE MADE FROM 100% FRESH SAUDI CHICKEN.



*Fresh, local,
and innovative
—Tanmiah’s
new frozen
breaded
chicken range
raises the bar*

with other Ministry officials. Visitors had the opportunity to see and taste the products. The products were developed through a strong consumer-focused approach, based on a deep understanding of consumer habits and preferences. The range meets the growing demand for food products with clear and transparent ingredients. It also supports Tanmiah’s strategy to diversify its portfolio by using its vertically integrated model and focusing on value-added innovation.

The range includes nuggets, strips, fillets, and burgers, available in several flavors. A key innovation is the PLUS line, which features a vegetable-enriched coating that provides the equivalent of two-thirds of a cup of vegetables per pack. The range also includes a product inspired by bold and popular Korean flavors.

Top Poultry Science Article of 2025 – #3

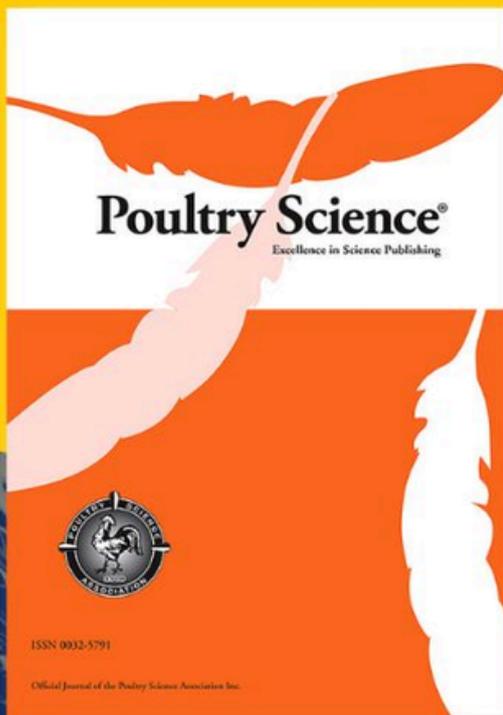
This comprehensive review explores how protein and amino acid nutrition continues to shape performance, health, welfare, and production economics in poultry systems.

Recent advances in protein and amino acid nutritional dynamics in relation to performance, health, welfare, and cost of production

 Authors: Roshan Adhikari, Sam J. Rochell, Ruben Kriseldic, Marcelo Silva, Laura Greiner, Chance Williams, Bart Matton, Annalise Anderson, Gisela F. Erf, Eunyoung Park, Keith Haydon, Jason Lee

From formulation strategies to biological efficiency, this article highlights how nutrition remains one of the most powerful tools in modern poultry production.

 Read the article: <https://lnkd.in/gXzR4RuQ>



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Spotlight

Recent advances in protein and amino acid nutritional dynamics in relation to performance, health, welfare, and cost of production

Authors: Roshan Adhikari, Sam J. Rochell, Ruben Kriseldic, Marcelo Silva, Laura Greiner, Chance Williams, Bart Matton, Annalise Anderson, Gisela F. Erf, Eunyoung Park, Keith Haydon, Jason Lee

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