

Letter from the Editor

Presentation. -

Volume 8, Number 2 – INQUIDE: Chemical Engineering and Development

Dear scientific community, authors and readers of **INQUIDE**,

As Director-Editor of this publishing house, it is a true honor and privilege to present Volume 8, Number 2 of our magazine. In the contemporary scientific ecosystem, the boundaries between the disciplines of science and engineering are becoming increasingly dynamic and porous. Maintaining our rigorous Q1 high-impact classification, this issue of *INQUIDE* consolidates itself as a multidisciplinary cutting-edge space, bringing together research that addresses everything from the optimization of industrial processes to public health management, digital transformation and the development of human talent.

The central purpose of this edition is to build bridges between theoretical mathematical modeling, applied engineering and the biological or management sciences, offering quantifiable and transferable solutions to latent problems in the global and regional environment.

Below, I present an analytical tour of the seven manuscripts of high methodological rigor that make up this volume:

Section I: Frontiers in Chemical and Thermal Engineering

Thermohydraulic optimization and technical feasibility occupy a central role in the first two articles of this installment, demonstrating how simulation and design models define the frontier of energy efficiency.

- **Thermal-hydraulic design of a forced-draft air cooler with finned tubes for methanol cooling** This work presents a meticulous design for the large-scale processing of liquid methanol (28 000 kg/h), achieving temperature mitigation from 90 °C to 45 °C. With a fin efficiency of 0.853 and an overall heat transfer coefficient of 280.95 W/m². K, the research validates the feasibility of forced draft under extremely safe pressure drop conditions (559.73 Pa), optimizing the energy consumption of the motor to an efficient value of 7.21 kW.
- **Thermo-hydraulic design of a fin-free double-tube heat exchanger for tomato juice cooling. Part 1 - Finless Heat Exchanger** In constructive contrast to the previous manuscript, this article stands out for its scientific transparency and value in negative design (technical refutation). When evaluating the cooling of tomato juice (thermal load of 951.77 kW), the authors mathematically demonstrate that the finless

configuration is unfeasible due to a drastic frictional pressure drop (16.56 atm), exceeding the operating limits allowed by the process (0.296 atm). The study also provides a valuable capital cost analysis estimated at \$165,500, laying the mandatory foundation for Part 2 of the extended surface redesign.

Section II: Health Sciences, Food Safety and Biosecurity

The preservation of public health demands precise analytical tools to monitor emerging chemical and biological risks in mass consumption products in high-density urban areas.

- **Sanitary Risk Management in Bottled Water: Integration of Physicochemical and Microbiological Indicators and Cyanobacteria Risks in Guayas** This study addresses a critical biosecurity problem in Guayaquil, showing that strict compliance with standard physicochemical parameters is not an absolute shield for safety. Using membrane filtration and enzymatic assays, the authors detected *E. coli* contamination events and nutrient conditions conducive to the latent proliferation of cyanobacteria (microcystins), urging a paradigm shift towards comprehensive epidemiological risk management models.
- **Evaluation of the content of tartrazine (E-102) in orange-flavored soft drinks marketed in Guayaquil by UV-Visible spectrophotometry** Using a rigorously validated spectrophotometric analytical methodology, this research quantifies the synthetic additive E-102 in the local market. The statistical findings, validated by the Shapiro-Wilk test, expose a worrying variability and reveal that certain commercial brands exceed the permitted international limit of 100 mg/L (reaching averages of 134.85 mg/L), which represents an urgent call for attention for technical-sanitary control agencies.
- **Effectiveness of purple cabbage-based slimming diets in people with obesity from the Cleotilde Guerrero O Foundation.** From the trenches of applied nutrition sciences and metabolic health, this quasi-experimental design evaluates the clinical impact of purple cabbage phytochemicals and antioxidants. The data collected showed significant reductions in Body Mass Index (BMI) and waist circumference of the patients evaluated, providing key empirical evidence on the functionality of endemic foods in cardiovascular and metabolic support therapies.

Section III: Technological Innovation and Organizational Competitiveness

Finally, the volume closes with two analytical approaches in the field of commercial, productive and talent management development in emerging markets.

- **Use of artificial intelligence in commercial microenterprises in the City of Guayaquil** The digital transformation is evaluated here from a quantitative empirical perspective in the commercial sector of the

Pedro Carbo Concepción parish. Through dimensional analysis and reliability scales (Cronbach's Alpha), the research demonstrates that benefit perception and operational optimization mitigate traditional barriers to AI adoption, identifying targeted training as the ultimate catalyst for microenterprise competitiveness.

- **Assessment of Behavioral Competencies in the Ecuadorian Aquaculture Industry: Correlational Analysis of Soft Skills in Guayaquil's Administrative Staff** With aquaculture being a macroeconomic pillar for Ecuador, this article analyzes the human component behind export records. With outstanding statistical robustness (global Cronbach's alpha of 0.944), the analysis evaluates 88 executive profiles across five behavioral dimensions. The results not only reveal a high positive correlation between leadership, communication and problem solving, but also demonstrate gender equity in competency performance, informing the design of cutting-edge corporate professional development policies.

Final Thoughts

The articles collected in this issue reflect the very essence of INQUIDE: science with rigor that has a direct impact on the social, technological and industrial fabric. We are deeply grateful to the authors for entrusting their best scientific productions to our pages, and to the body of peer reviewers for their invaluable and exhaustive blind work that sustains the excellence of our editorial imprint.

The Editorial Board invites the academic, professional and student community to read this issue in detail, whose articles provide scientific evidence, technical analysis and methodological approaches that enrich knowledge in engineering and applied sciences. The set of published works offers relevant inputs for research, professional practice and decision-making in productive and public policy contexts.

Likewise, INQUIDE – Chemical Engineering and Development extends a permanent invitation to national and international researchers to submit original manuscripts for future editions. The journal maintains a firm commitment to editorial quality, the rigor of the blind peer review process and the open dissemination of knowledge, highlighting that no charge is made for the review or publication processes of articles, and reaffirming its international projection as an academic space for the dissemination of high-impact research in chemical engineering and development.

Sincerely,

Francisco Javier Duque-Aldaz.

Director - Editor

INQUIRE.

Chemical Engineering & Development

Science and Engineering for Multidisciplinary Progress