

## Intellectual Property Right

### 1. SMART HYBRID BATTER DISPENSING UNIT (Design Patent)

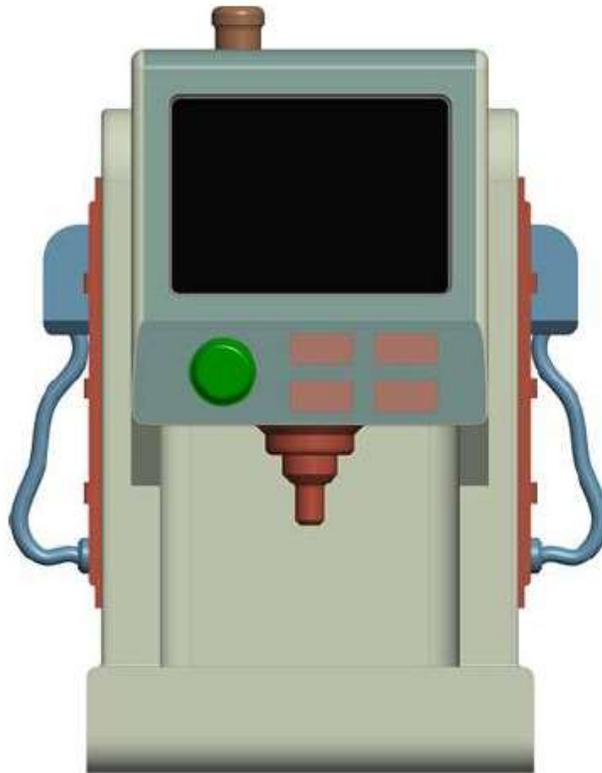
It consists of stainless-steel and food-grade polymer construction with a sealed outlet to prevent contamination. The system includes six refillable stainless-steel containers, each equipped with a slow-rotating spatula operating with variable speed as per the batter Consistency to prevent sedimentation and ensure batter uniformity. Integrated refrigeration maintains batter freshness over time. The system uses built-in sensors to continuously monitor temperature and viscosity, ensuring optimal batter consistency during dispensing. A smart valve mechanism allows portion-controlled release based on user input through a simple digital interface with indicator lights. Visible level indicators provide easy supply monitoring. The unit supports multi-source power options, including electricity, solar energy, and rechargeable batteries, enhancing usability in various environments. IoT connectivity enables real-time inventory tracking, usage analysis, and predictive refill alerts. The modular, easy-to-maintain design supports mobility and local micro-enterprises by using refillable containers that promote local batter sourcing. This system improves portion control, reduces waste, ensures product consistency, and supports hygienic food handling in small-scale kitchens, community setups, and vendor operations.





## 2. HYBRID MILK DISPENSING AND TESTING UNIT (Design Patent)

It consists of biosensors and light-based spectroscopy to assess key milk parameters—fat, protein, SNF, pH, temperature, and microbial content. It features a rugged, food-safe casing (25x15x10 cm), a 5-inch touchscreen, QR-code printer, USB-C port, and solar interface for off-grid use. Once analysed, the milk data is transmitted to the dispensing unit, which operates on solar, electric, or battery power. This unit keeps milk at 2–3°C in a stainless-steel cold chamber and dispenses it through a tamper-proof nozzle using a user-friendly digital interface. The system reduces spoilage, extends shelf life, and enables traceability through QR-coded tracking. Unsold milk can be processed into products like paneer, butter, or curd, minimizing waste and increasing value. IoT integration and a Circular Economy Dashboard support real-time monitoring of freshness, water use, waste tracking, and reuse options. Designed for rural and peri-urban deployment, this unit empowers micro-entrepreneurs and supports sustainable, closed-loop dairy practices through improved hygiene, quality control, and market connectivity.





### **3. Copyright**

## **FOUNDATIONS OF CIRCULAR ECONOMY AND SUSTAINABILITY "WASTE TO WEALTH"- THE POWER OF CIRCULAR THINKING**

The world today stands at a defining crossroads. The linear model of "take, make, dispose," which fuelled decades of industrial and economic growth, is no longer sustainable in the face of mounting waste, resource depletion, and climate change. A new paradigm is urgently needed, one that not only addresses the ecological crises of our time but also unlocks fresh opportunities for innovation, business, and human well-being. This book, *Foundations of Circular Economy and Sustainability*, is written with that vision in mind: to guide readers through the principles, practices, and possibilities of a circular future. Across its ten chapters, the book journeys from diagnosis to solution. It begins with a clear-eyed look at the flaws of the linear economy before introducing the circular model and its close relationship with sustainability. Building on this foundation, it explores concepts like cradle-to-cradle thinking and the "R's" of circularity, practical business models that turn waste into wealth, and the importance of material choices, energy, and emissions in shaping sustainable systems. Later chapters dive into the regulatory and policy landscape, examine the barriers that often hinder adoption, and present pathways to overcome them. Life Cycle Assessment (LCA) and Extended Producer Responsibility (EPR) are given special attention as vital tools for accountability and systemic change. This book is designed for students, professionals, policymakers, entrepreneurs, and anyone interested in reimagining the way we design, consume, and live. While it draws upon global frameworks and success stories, it also emphasizes context-specific adaptation, particularly for rapidly developing nations like India, where circular economy principles can address pressing challenges of urbanization, resource stress, and social equity. My hope is that readers will not only understand the theory of circularity but also feel inspired to translate these insights into action, whether that means rethinking everyday choices, shaping organizational strategies, or contributing to larger policy and societal shifts. The circular economy is not just an environmental necessity; it is an invitation to build a more resilient, inclusive, and innovative future.



# Foundations of Circular Economy and Sustainability

"WASTE TO WEALTH"

THE POWER OF CIRCULAR THINKING



Dr. D. Abraham Pradeep  
Dr. M. Subramanian  
Dr. S. Pugalanthi



## ABOUT AUTHORS



**Dr. D. Abraham Pradeep** is a seasoned academician with 12 years of experience and currently serving as Associate Professor at the R.L. Institute of Management Studies. Dr. DAP is an Associate Chartered Banker (Chartered Banker Institute, United Kingdom). He holds a Ph.D. in Business Administration from Madurai Kamaraj University, MBA (Finance) from Karunya University, and B.Com (B&I) from Subbalakshmi Lakshminipathy College of Science. Certified in multiple areas of banking and finance from the Indian Institute of Banking and Finance (IIBF), including JIBF, AMI & KIC, Digital Banking, Strategic Management & Innovations in Banking, Ethics in Banking, Climate Risk & Sustainable Finance, and Project Finance. He is also an Associate Member of the Insurance Institute of India. He has filed 2 Patents in the area of Circular Economy. Authored a textbook on the title "Fundamentals of Insurance". His publications include four Research Papers in SCOPUS / UGC Care and 14 referred Journals, as well as Chapters in Edited Volumes. He has also participated in 10 FDPs and 14 Conferences. His areas of teaching are Circular Economy, Sustainable Finance and Banking.



**Dr. M. Subramanian** stands as one of India's leading Business Coaches/Consultants and most in-demand Leadership Development Trainers, with an illustrious career spanning over 27 years that seamlessly blends academic excellence with practical industry expertise. An esteemed alumnus of IIM Ahmedabad, Dr. Subramanian currently serves as Director of the MBA Program at R.L. Institute of Management Studies, where he spearheads program design, faculty management, initiatives. His academic credentials include a Ph.D. in Finance and multiple Master's degrees. He is a recognized Ph.D. Supervisor at Lincoln University College, Malaysia. His research contributions are exceptional, with over 60 publications, including 40 conference presentations, 25 refereed journal articles, 6 UGC Care/SCOPUS publications, 2 books, and a Patent for Digital Relationship Marketing Innovation. His expertise in financial analytics is further validated through certifications as an ESG Specialist by NSE, SEBI Certified Research Analyst, NSE Certified Enterprise Risk Management Specialist and Investment Management specialist. He is a Certified Specialist in FinTech & Blockchain Specialist. As a consultant, Dr. Subramanian has delivered transformative training programs for prestigious organizations including NTPC, the Indian Army, SJVN Ltd, India Post, Power Grid Corporation, IIBF and various corporate entities. His specializations span financial management for non-finance professionals, Enterprise Risk Management, and Leadership Development. He has trained more than 5000 young graduates through his Student Development Programs on the topics of Career Guidance, Possibility Thinking, How to Face Interviews and Building Resume. He is an accredited trainer/faculty member for Professional Bodies like ICSI, ICMAI and ICAI. He is one of India's very few ACCION, USA-accredited Leadership Trainers. His administrative prowess is evident in his successful tenures at prestigious institutions like Amity University, Noida | IIM, New Delhi | TSM, Madurai, where he consistently elevated academic standards while building industry connections. Dr. Subramanian's commitment to academic excellence combined with his industry insights makes him a transformative force in management education and corporate training across India.



**Dr. S. Pugalanthi** is a seasoned academician with 39 years of industry and Academic experience. Presently serving as Professor at R L Institute of Management Studies, Madurai for the past 25 years. Previously associated with PSNA College of Engineering and Technology and Thiagarajar School of Management. He holds a PhD in Business Administration from Madurai Kamaraj University, MBA from Anna University and B.Tech from Karnataka Regional Engineering College. He has published more than 10 research publications. Presented more than 20 papers at International and National Conferences. Organized conferences and conducted FDP programs for faculty members. Domain Expertise is in the field of Strategy, Marketing and Human Behaviour.

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