



NOVEL COOLING SYSTEM FOR A CLIMATE-RESILIENT FUTURE





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MESSAGE FROM THE INNOVATOR

Cooling accounts for nearly 20% of the global electricity consumption, and in regions like the Middle East and North Africa (MENA), it can exceed significantly during the scorching summer months. When the temperature rises to unbearable heights, the need for cooling systems becomes a matter of survival. For a scenario without concrete action, the International Energy Agency has already painted a stark picture: a future where energy demands from air conditioners triple, a “Cold Crunch” looming on the horizon. The escalating climate crisis demands urgent action, and the energy sector stands at the forefront of this challenge.

This was the critical realization that spurred the development of SYNERGIA9n1, an ultraefficient, multimodal cooling system that not only addresses the needs of the present, but anticipates the challenges of the future. SYNERGIA9n1 can achieve 50% greater energy efficiency, which substantially lowers greenhouse gas emissions. It is adaptable, scalable, and the kind of innovation that our world desperately needs.

SYNERGIA9n1's development follows a decade of persistent efforts. From China and Germany, to UAE, and finally in Qatar, many prototypes were conceived and assembled, each iteration a step closer to our vision, each failure a valuable lesson. All this led to SYNERGIA9n1's final prototype securing patents from UK, USA, Mexico and the World Intellectual Property Organization in Switzerland.

As we roll out the commercial unit of SYNERGIA9n1, I want to express my deepest gratitude to the remarkable team behind this innovation, and for the invaluable support from leading entities, including the Qatar National Research Fund and the Supreme Committee for Delivery & Legacy. As proud as I am of what we have accomplished, I am even more inspired by the work still to be done. As we look toward the future, the need for innovation will only grow stronger, and SYNERGIA9n1 is just the beginning.

WHAT IS SYNERGIA?

SYNERGIA9n1 is a novel hybrid dedicated outdoor air system (DOAS) or also known as a condensing unit coupled with air handling unit designed to cool 100% fresh air. It can be used to cool and ventilate open and enclosed spaces with significantly lower carbon footprint compared to conventional fresh air conditioning units. Synergia is patented in numerous territories including USA, Mexico, China, Taiwan, Saudi Arabia, and WIPO. It has also received several awards including the International Energy Innovation of the Year Award by the Association of Energy Engineers (AEE), Best Patent in Energy Efficiency Award by the League of Arab States (LAS), the Golden Medal of the GCC General Secretariat, and the Golden Research and Development Award by Dubai Supreme Council of Energy, UAE.

APPLICATIONS

Offering great adaptability to meet the specific cooling needs, SYNERGIA9n1 can be installed in a wide range of buildings and facilities.

- Open areas for sports, leisure, and entertainment.
- Buildings of all types which are centrally air conditioned demanding fresh air ventilation.
- Hospitals, surgery suites, laboratories & clean rooms.
- Temporary and remote off-grid facilities.
- Greenhouses for humidity and temperature control.
- Barn climatization and air quality.



TRULY UNIQUE

What makes SYNERGIA9n1 truly unique is its ability to be operated in single, dual or triple modes based on the ambient weather conditions and the climatization requirements for the space to be cooled.



Energy Efficiency



Multimode Operations



Reduced Carbon Footprint



Diverse Applicability

SYNERGIA9n1 offers a wide range of benefits



Ease of Use



High Durability



Improved Air Quality



Cost Effectiveness



Climate Smart System

HOW IT WORKS?

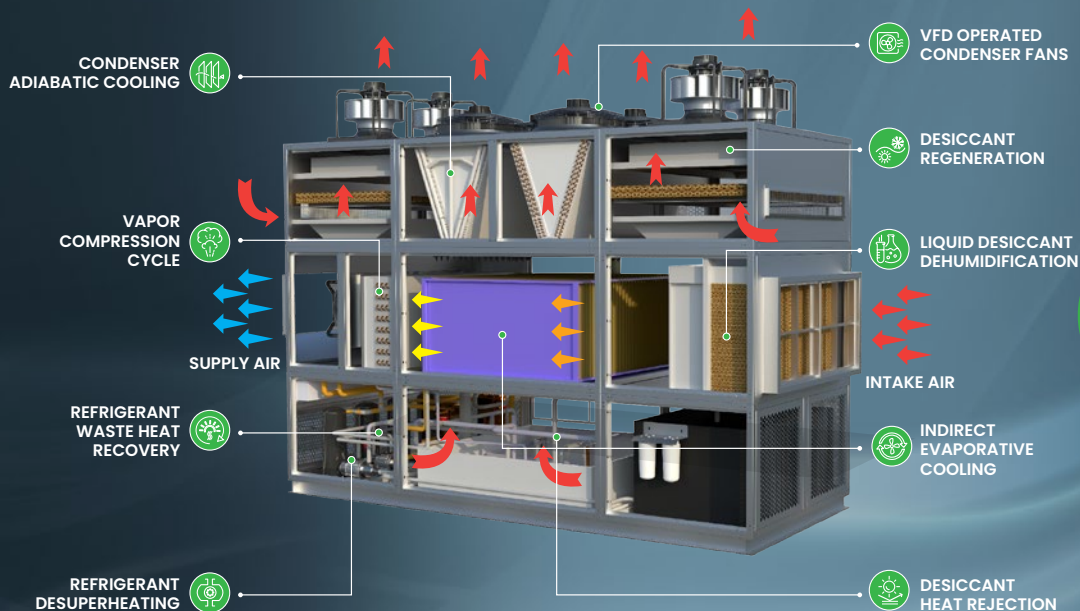
Consolidating nine distinct solutions, SYNERGIA9n1 through its **multicore** configuration cools down fresh air, making it a sustainable cooling alternative for all kinds of outdoor or indoor mechanically ventilated spaces.

Stage (I): As the fresh air enters the desiccator and eliminator section comprising of purposely designed filling pads, it meets an ecofriendly pre-cooled strong liquid desiccant that removes its moisture content, thereby reducing its latent air heat load.

Stage (II): The dehumidified, yet warm, air then flows through the indirect evaporative cooler where it is cooled down as it makes its way through the cross-flow plate type heat exchanger, thereby reducing its sensible heat load.

Stage (III): lastly, the pre-treated air is further cooled as it enters the evaporator coil holding chilled refrigerant circulated by the compressors to the required setpoint temperature and humidity ratio.

Moreover, during the these processes several efficiency boosting techniques are employed including, but not limited to use of EC fans, VFD condenser fans, condensate water harvesting, adiabatic cooling and refrigerant desuperheating.



The term 'SYNERGIA9n1' is inspired from the system's unique ability to harmonize nine solutions.

AWARDS RECEIVED



Energy Innovation of the Year 2022 award by the Association of Energy Engineers (AEE), USA

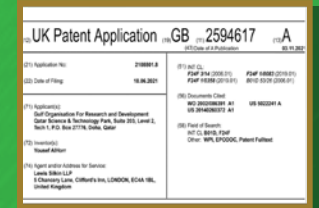
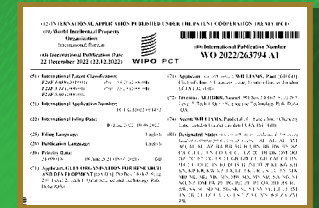
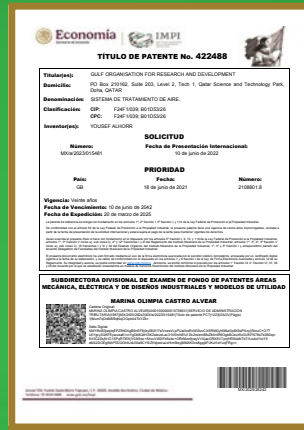


Best Patent in Energy Efficiency Award in 2024 by the League of Arab States (LAS).



Best Research and Development Award of 2025 by Dubai Supreme Council of Energy.

PATENTS SECURED



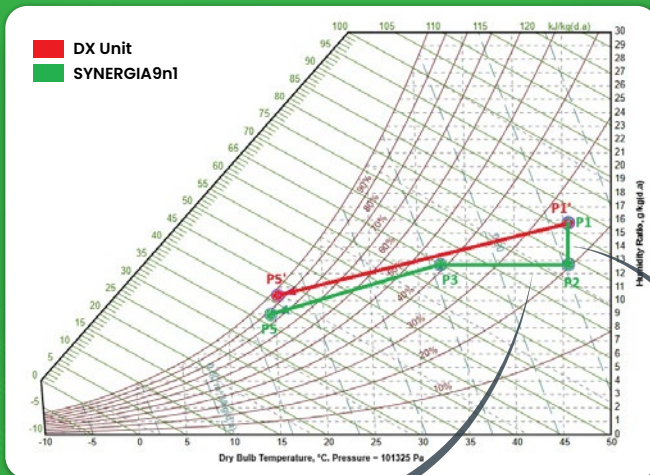
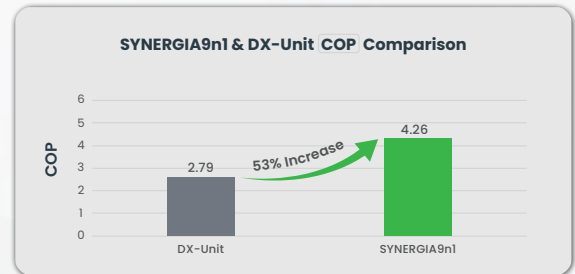
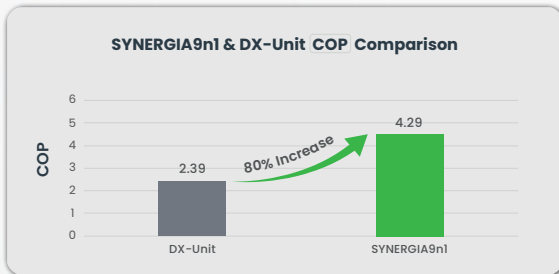
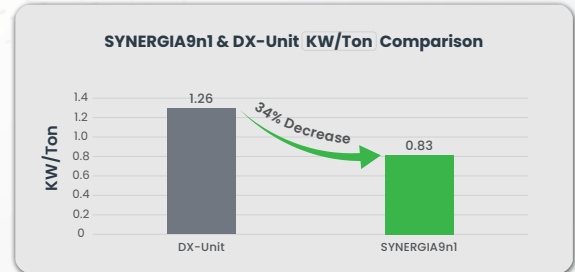
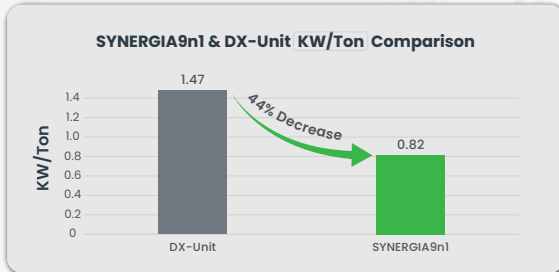
SYNERGIA9n1 VS DX CONDENSING UNIT PERFORMANCE COMPARISON

- **Dry-Hot Summer Weather Condition:**

Date :9/9/2025 Time: 12:00 noon
 DBT: 45.8 °C WBT: 25.8 °C

- **Humid-Hot Summer Weather Condition:**

Date: 25/8/2025 Time: 12:00 noon
 DBT: 41.5 °C WBT :31.2 °C



Desiccant
Dehumidification

Sensible Cooling
(Desiccant + Indirect)



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