





INNOVATIVE PROJECT

THIS FEASIBILITY STUDY HAVE BEEN DEVELOPED BY THE PROMOTER & CONSULTANT PHARMA1HUMANITAS HOLDINGS LTD & - FUNDACIÓN DEMOCRÁTICA ITALO AMERICANA, FDIA - REPRESENTAÇÃO PERMANENTE REPRESENTED BY PRESIDENT LAWYER VINCENZO CORTEGIANI, GENERAL DIRECTOR DR. FABIO ROSATI WOULD LIKE TO CONSTRUCTION MAYBE IN FUTURE A PHOTOVOLTAIC FACTORY FOR A RENEWABLE ENERGY COMMUNITY IN EUROPEAN OR AFRICAN AREA. THE TRANSFORMATIONS OF VALUE CHAIN WILL BE IN A AFRICAN COUNTRY TO BE DEFINED WITH A ROBOTIC AND FULLY AUTOMATED LINE CAPABLE OF PRODUCING FROM 100 MW TO 2 GW OF PANELS PER YEAR .MAYBE WE WILL PRODUCE MORE THAN 8000 PANELS PER DAY THANKS OUR HOLDING CONSULTING SERVICE.

FURTHERMORE, THE HUMANITARIAN PLAN ENVISAGES THE CONSTRUCTION OF PEROVSKITE VOLTAGE PARKS IN THE MAYBE FUTURE AVAILABLE AREAS THAT WE WILL IDENTIFY.

Infrastructure & Facility Requirements

- Total Area Required: 12,700 sqm**
- Energy Consumption: 3000 kW/h**
- Compressed Air Requirements: 6 bar, 20,600 NL/min**

Integrated Systems & Features

- Smart Manufacturing Compatibility**
- Full Traceability System**
- Integrated Logistics Solutions**
- Advanced Production Line Automation**

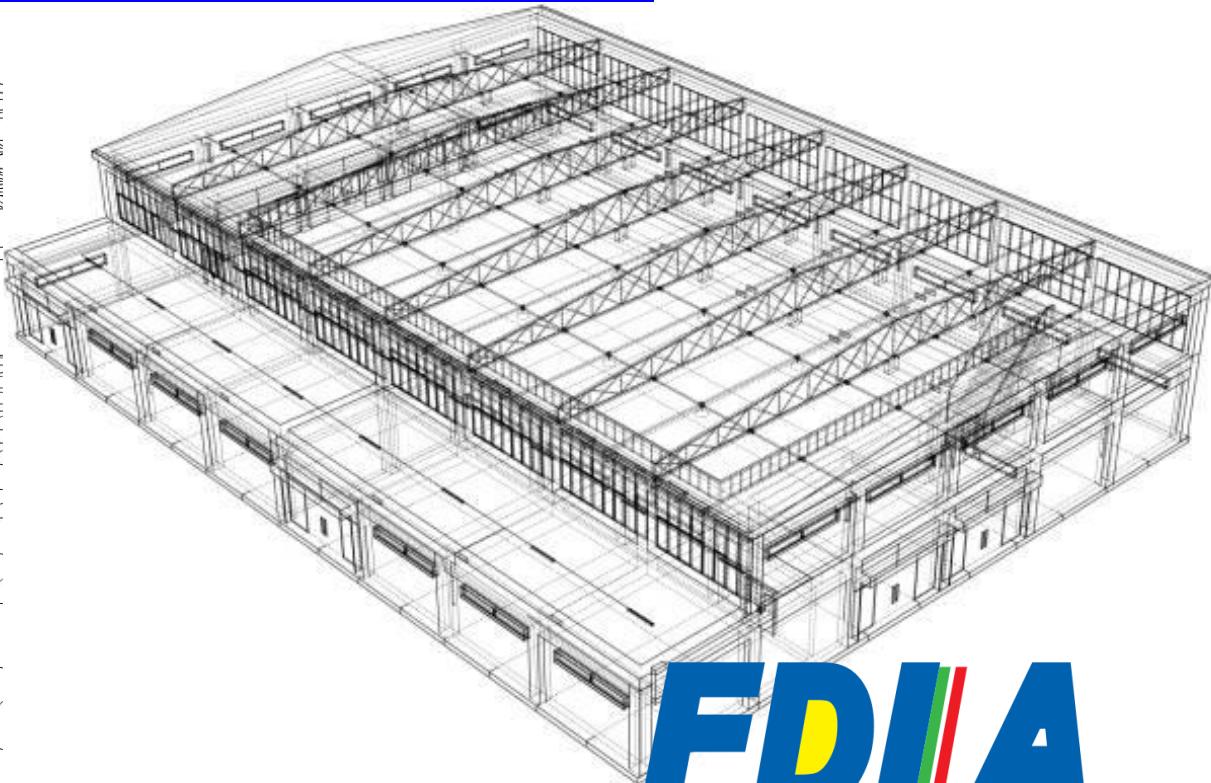
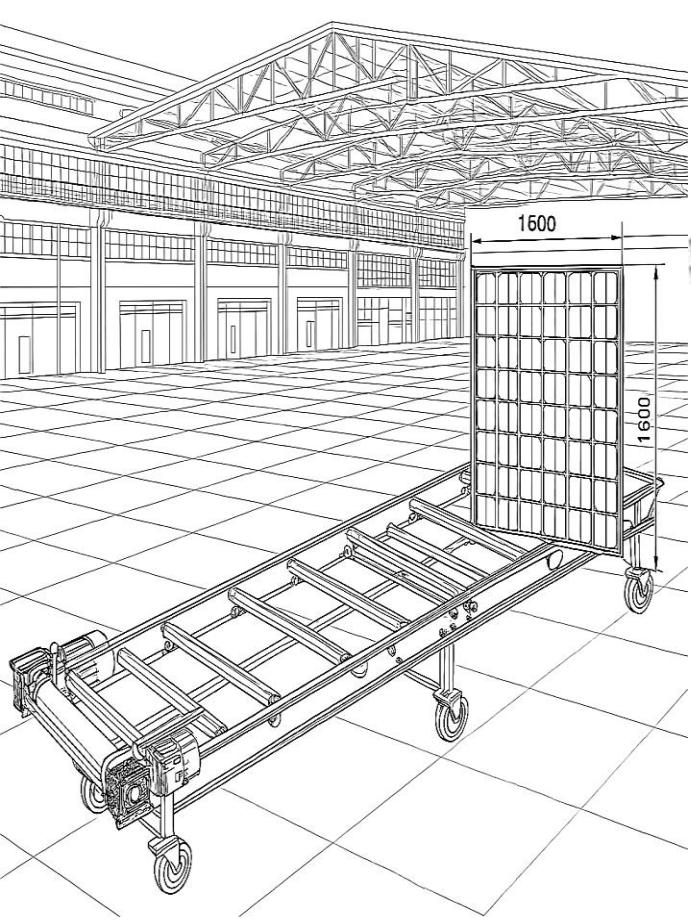
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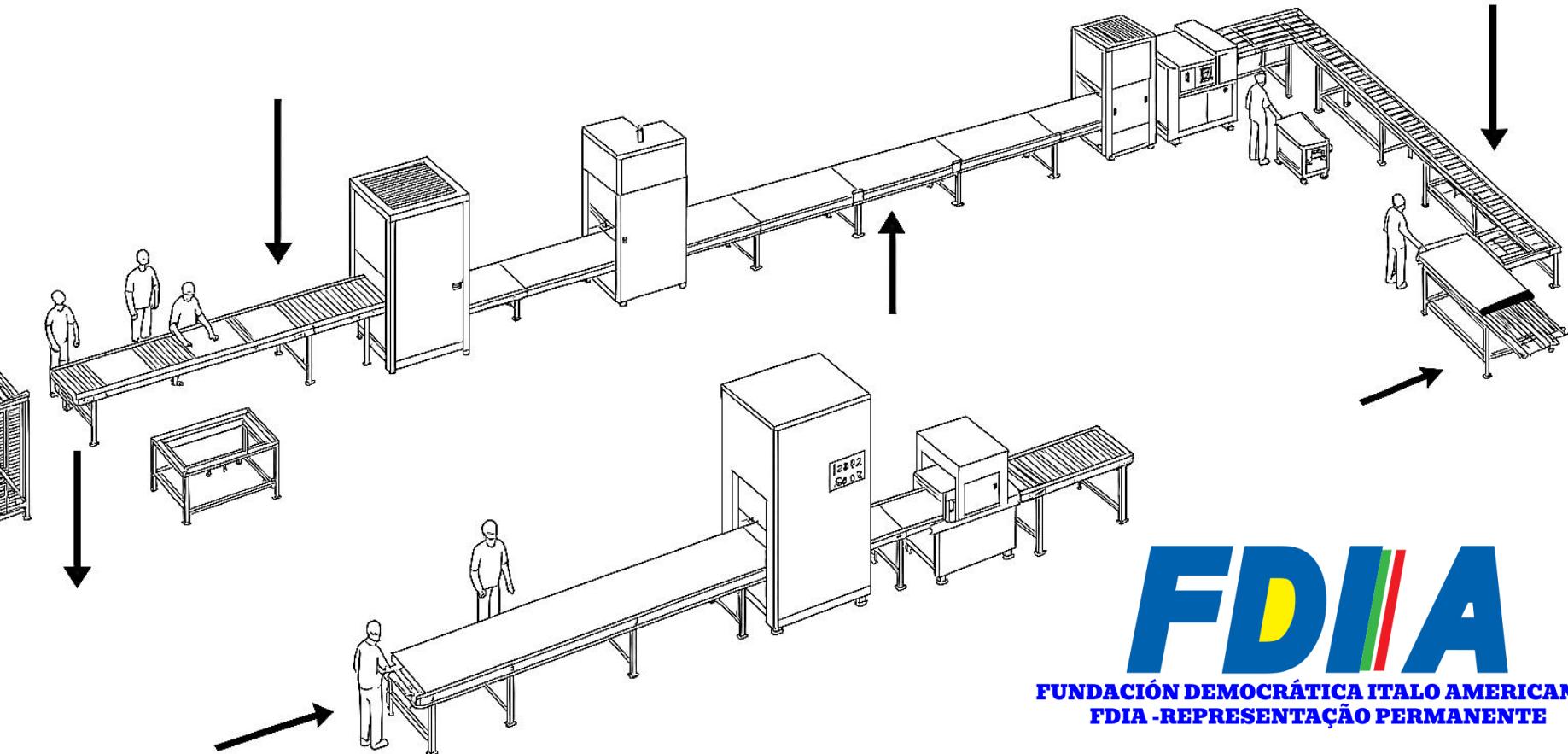
SPIN-OFF IN FUTURE A PHOTOVOLTAIC FACTORY FOR HUMANITARIAN PURPOSE



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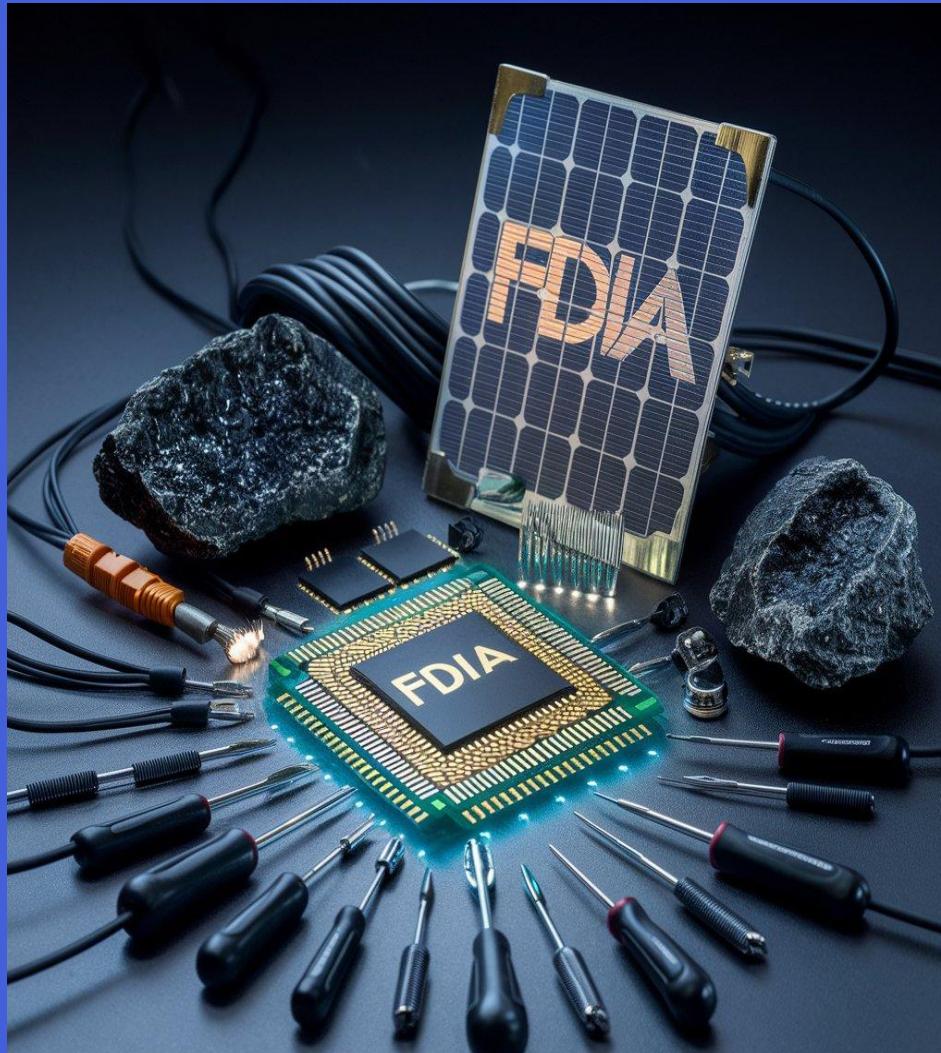


THE OBJECTIVE OF
PHARMA1HUMANITAS HOLDINGS LTD
WITH ITALIAN GROUP IT IS TO
CREATE NEW VALUE CHAINS WHICH,
STARTING FROM RESEARCH AND
DEVELOPMENT, LEAD UP TO THE
GENERATION OF INNOVATIVE
PRODUCTS AND SERVICES AND THE
DEVELOPMENT OF KEY ENABLING
TECHNOLOGIES FOR THE CREATION OF
SUBSEQUENT GENERATIONS OF
PRODUCTS TO INCREASE THE ENERGY
EFFICIENCY OF THE AFRICAN
CITIZENS, IMPROVE ITS
DISTRIBUTION AND BET ON THE
POSSIBILITY OF NEW JOBS THAT CAN
LAST OVER TIME.

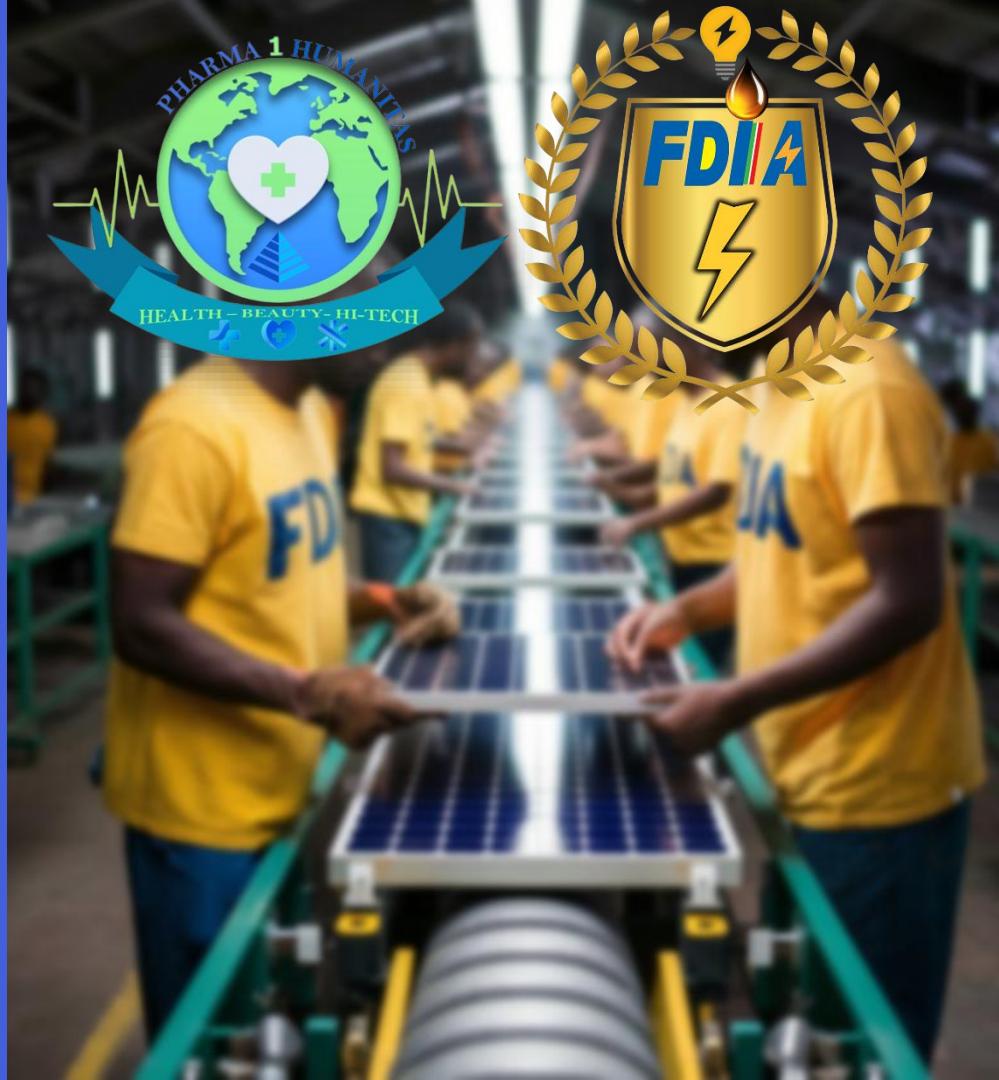




Perovskite is a calcium titanium dioxide mineral, with a very particular and complex crystalline structure which makes it an excellent conductor, a priority and important characteristic in the field of renewable energy. Although currently the most widespread photovoltaic cell is the one made of crystalline material and equipped with semiconductor material (usually silicon), technological research looks to the future to understand how to optimize the production of renewable energy. Related to this objective, perovskite comes into play: more efficient and convenient in the construction of green technologies.



The production of electricity in a photovoltaic system occurs through direct exposure to solar rays which stimulates the excitation of the electrons inside the photovoltaic cells that constitute it. The physical process that occurs is that of the excitation of the electrons, i.e. the increase in their energy which generates the direct electric current. Perovskite photovoltaics follows the same principles, but has a greater number of advantages compared to the materials used so far in the development of solar panels.



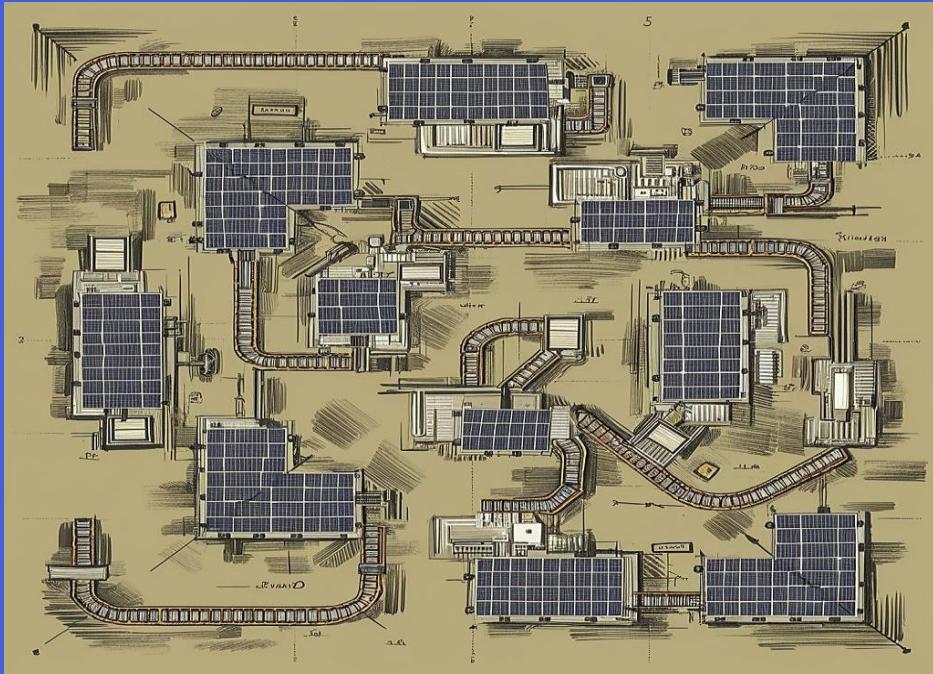


Its chemical composition, in fact, allows for a greater ability to absorb light: the electric charges generated by the absorption of the captured light travel inside the sound-absorbing panel for greater distances, with a higher residence time of the electric charge. A more powerful process than that which occurs with silicon and which, consequently, allows more energy accumulation.





Perovskite is the future of solar cells, as its distinctive structure makes it perfect for creating an efficient and economical photovoltaic product.



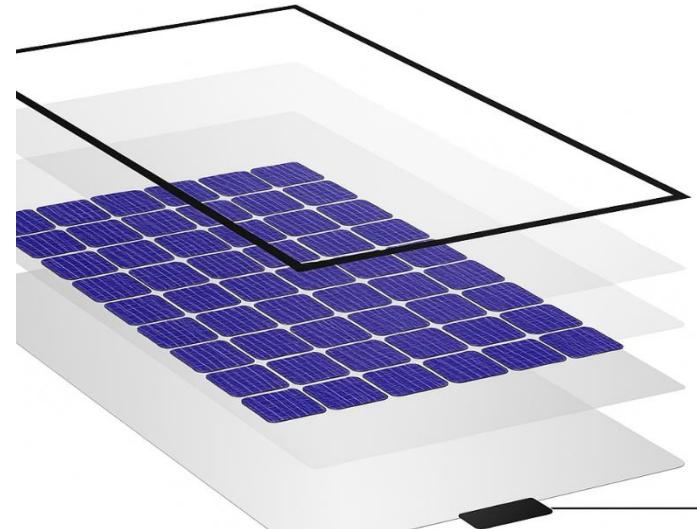
The perovskite panels that will be made in the new plant will be a revolution in the photovoltaic sector because they will allow an innovative combination of low cost and high efficiency, but also less CO2 emissions.

CREATE A RENEWABLE ENERGY COMMUNITY=

- ✓ 2000 MW/YEAR
- ✓ 360 PANELS/H PRODUCTION CHAIN
- ✓ 14 WORKERS PER SHIFT
- ✓ 3000 KW/H 6BAR 20600 NL/1
- ✓ 12700 SQM AREA REQUIRED
- ✓ 1 GW/YEAR FOR GLASS + BACKSHEET PANELS
- ✓ 1 GW/YEAR FOR GLASS + GLASS PANELS
- ✓ OPTIONAL EQUIPMENT FOR G+G CONFIGURATION
- ✓ HALF CELL
- ✓ AVAILABLE FEATURES
- ✓ PRODUCTION LINE
- ✓ LOGISTICS INTEGRATED
- ✓ TRACEABILITY SYSTEM
- ✓ COMPATIBLE WITH SMART COMPUTERED MANUFACTURE
- ✓ P-TYPE PERC. N-TYPE TOPCON, N-TYPE HJT
- ✓ GLASS-GLASS PRODUCTION SUITABILITY
- ✓ PRODUCTION:8000 PANELS PER DAY
- ✓ GLASS-BACKSHEET PRODUCTION SUITABILITY
- ✓ M12 210MM
- ✓ 3 SHIFTS OF 8 HOURS
- ✓ 750 W PER MODULE



- ❖ INTEGRATED SYSTEMS & FEATURES
- ❖ SMART MANUFACTURING COMPATIBILITY
- ❖ FULL TRACEABILITY SYSTEM
- ❖ INTEGRATED LOGISTICS SOLUTIONS
- ❖ ADVANCED PRODUCTION LINE AUTOMATION





Better African worker Index

The objective of the construction of the industrial plant is to generate for the workers and the community in question; a higher income, better quality of working conditions, excellent living and working conditions, guaranteed education, clean environment surrounding the factory, social relations, civic employment, health, work safety, life balance, life satisfaction. These are positive expenses that increase well-being with the availability of excellent services for the African population. This project aim to fight unemployment in all its forms and help marginalized communities.

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- **Power conversion efficiency:** to spread perovskite solar cells on a large scale, stability and sizing must be achieved.
- **Stability and degradation:** Perovskite solar cells have demonstrated competitive efficiencies with potential for higher performance.
- **Manufacturability:** Increased mineral extraction is needed to enable the production of perovskite solar cells. Making processes scalable and reproducible could increase production and enable perovskite photovoltaic modules to meet and potentially exceed electricity cost targets.
- **Technology validation and fundability:** Validation and performance verification are essential for the commercialization of perovskite technologies. Variability in testing protocols and minimal field data have limited the ability to compare performance between perovskite devices and develop greater confidence in operational behavior.

OUR INNOVATION

Perovskite does not compete with silicon. The photovoltaic cells produced in the new factory will be tandem cells combining silicon with perovskite.

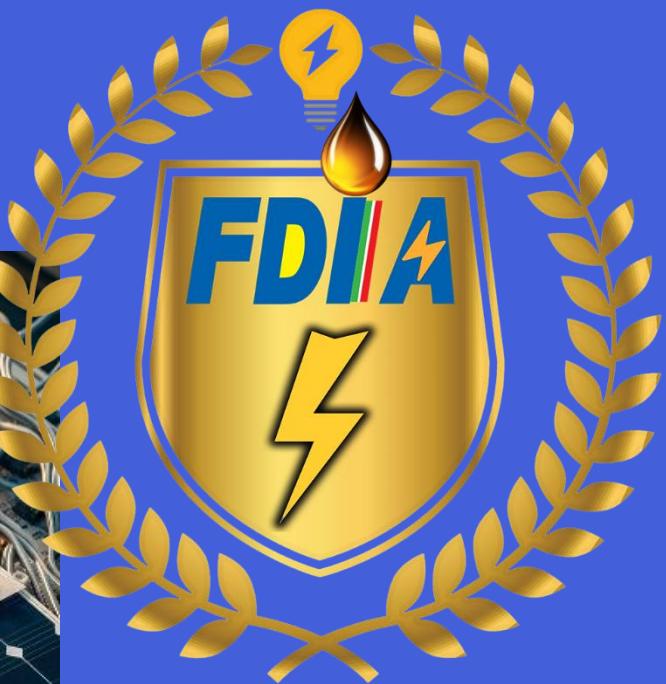
It is the future of solar cells, since its distinctive structure makes it perfect for creating an efficient and economical photovoltaic product.

Our company has achieved an innovation in the perovskite deposit process on photovoltaic panels, thus being able to create large perovskite panels.

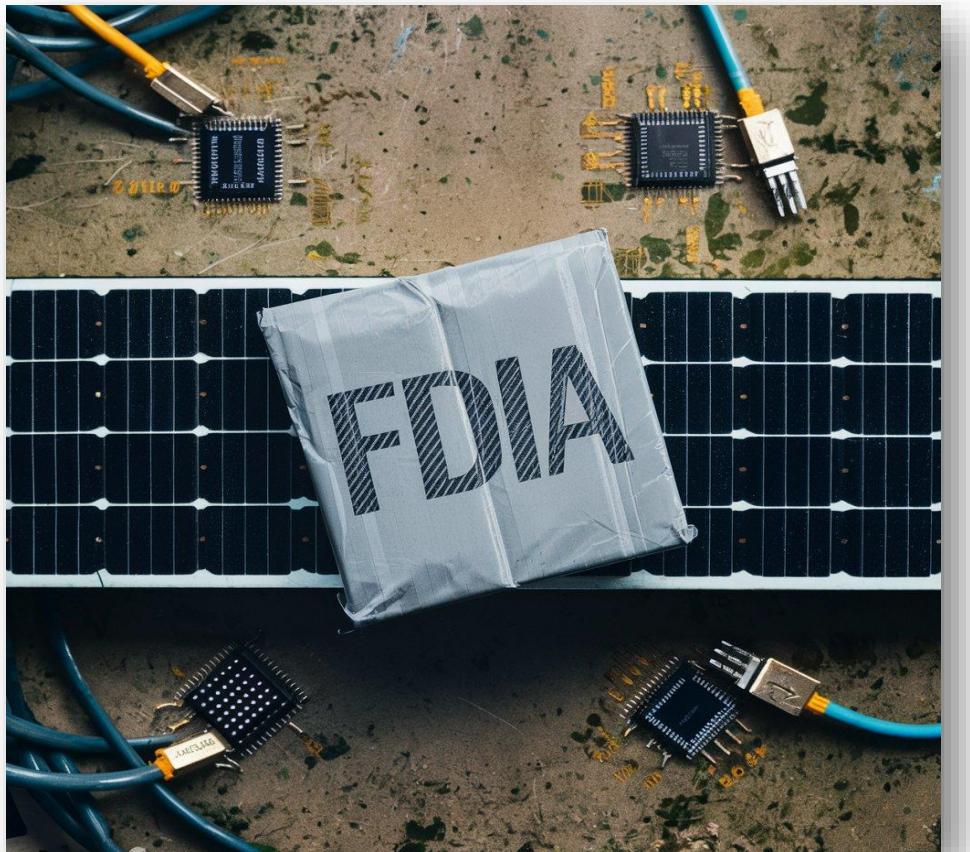


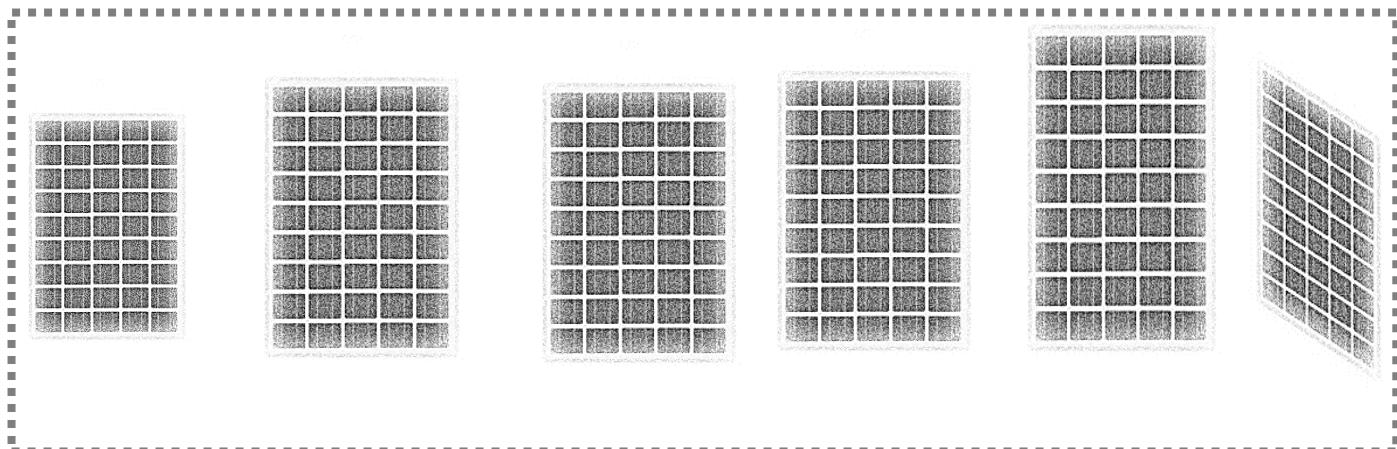
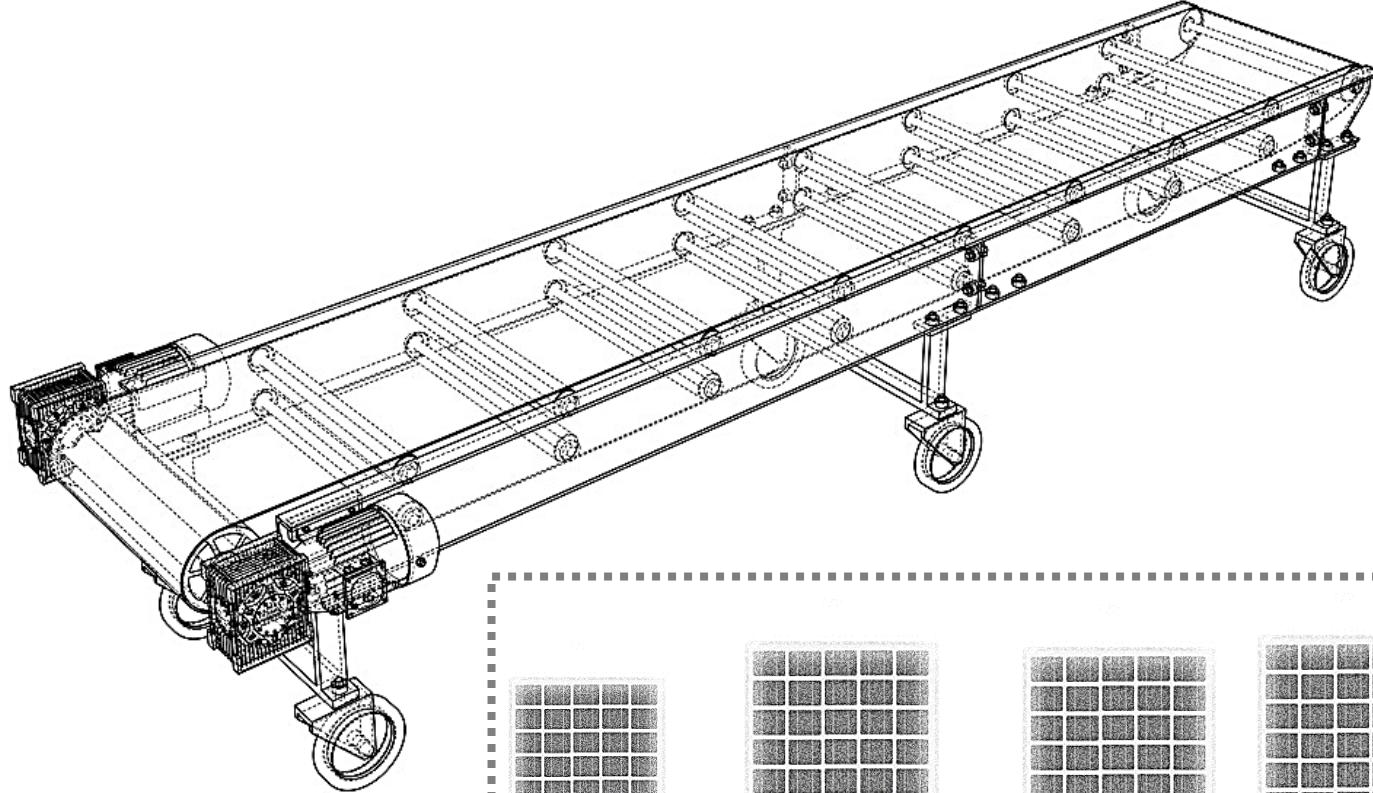
STRUCTURE OF A PV MODULE

The technological key is a procedure that makes perovskite printable on panels under controlled environmental conditions. The perovskite cells, hybrid single-crystalline and coarse-grained, are manufactured with the "Solvent-Gradient" method, creating two nano-porous films on the panel that act as empty layers for the transport of electrons according to a low-temperature deposition



MATERIAL CONTRIBUTION OF A PV MODULE





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SOLAR FACTORY INFRASTRUCTURE & FACILITY REQUIREMENTS

A photovoltaic (PV) factory requires a well-structured infrastructure and carefully planned facility specifications to ensure efficient, high-quality solar panel production. Below are the key infrastructure and facility requirements for a solar factory with a production capacity of 2000 MW per year.

1. Total Area Required: 12,700 sqm

To support high-volume production, the facility must have:

- Dedicated production areas for glass + backsheets and glass + glass panel manufacturing.
- Separate zones for raw material storage, assembly, lamination, testing, and packaging.
- Space for automation and logistics systems, ensuring smooth material flow.
- Safety zones and workforce movement areas, adhering to industry regulations.

- High-ceiling, well-ventilated production halls.
- Floor load-bearing capacity to support heavy manufacturing equipment.
- Expansion capability for future capacity upgrades.

2. Energy Consumption: 3000 kW/h

Manufacturing solar panels is an energy-intensive process that requires:

- Continuous power supply for high-precision machines, including cell stringers, laminators, and testing equipment.
- Renewable energy integration (e.g., solar panels on-site) to reduce operational costs.
- Backup power solutions such as UPS systems or generators to prevent downtime.

Energy Optimization Strategies:

- High-efficiency machinery to reduce power waste.
- LED lighting and smart power management to optimize electricity use.
- AI-driven energy monitoring systems for real-time power consumption analysis.

3. Compressed Air Requirements: 6 bar, 20,600 NL/min

Compressed air is crucial for:

- Automation equipment (robotic arms, pneumatic tools, pick-and-place systems).
- Material handling systems used in lamination and module framing.
- Quality control and cleaning processes (dust removal, pre-lamination surface treatment).

Implementation Considerations:

- Centralized compressed air system with efficient distribution.
- Leak detection systems to minimize energy loss.
- Proper maintenance schedules to ensure consistent air pressure.

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4. Integrated Systems & Features

Smart Manufacturing Compatibility

- AI-driven production control for efficiency optimization.
- Machine learning algorithms for defect detection and predictive maintenance.
- IoT-based sensors to monitor real-time performance metrics.

Full Traceability System

- End-to-end tracking of materials and components for quality assurance.
- QR code and RFID-based module tracking for inventory control.
- Compliance with industry standards to ensure high reliability and transparency.

Integrated Logistics Solutions

- Automated material handling for seamless inventory management.
- Smart warehousing with real-time stock updates.
- Efficient scheduling of raw material delivery and finished product dispatch.

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Perovskite photovoltaic panels have gained significant attention in recent years due to their unique properties and potential for various applications, including in healthcare facilities, hospitals, and clinics. Here are some applications and benefits of using perovskite solar cells in healthcare settings:

1. Energy Sustainability

Reduced Energy Costs: Hospitals and clinics consume large amounts of energy for lighting, medical equipment, and climate control. Implementing perovskite solar panels can reduce reliance on the grid, leading to significant cost savings.

Improved Energy Security: By generating their own energy, healthcare facilities can ensure a more reliable power supply, which is critical for maintaining operations, especially during emergencies or grid failures.

2. Space Efficiency and Aesthetics

Lightweight and Flexible: Perovskite panels can be manufactured to be lightweight and flexible, making them easier to integrate into various building designs, including rooftops, facades, or other structures.

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Architectural Integration: The aesthetic versatility of perovskite panels allows for architectural integration, which can help maintain the design integrity of healthcare facilities while contributing to energy generation.

3. Sustainable and Green Building Certifications

LEED Certification: Using perovskite solar cells can help healthcare facilities achieve green building certifications, which is becoming increasingly important for new constructions and renovations.

4. Off-Grid Applications

Remote Clinics: In areas where grid electricity is unreliable or unavailable, perovskite solar panels can provide an essential power source for remote healthcare facilities, ensuring that they can operate without interruption.

5. Research and Development

Innovative Healthcare Technologies: With ongoing research in perovskite materials, healthcare facilities can also invest in R&D for new medical technologies, including wearable health devices powered by solar energy.

6. Environmental Impact

Reduced Carbon Footprint: By using renewable energy sources like solar, healthcare facilities can significantly lower their carbon footprint, contributing to broader environmental goals and public health.

7. Resilience in Emergencies

Backup Power Supply: In disaster-prone regions, integrating perovskite solar panels can ensure that hospitals maintain power for critical care even during natural disasters when conventional power sources may fail.

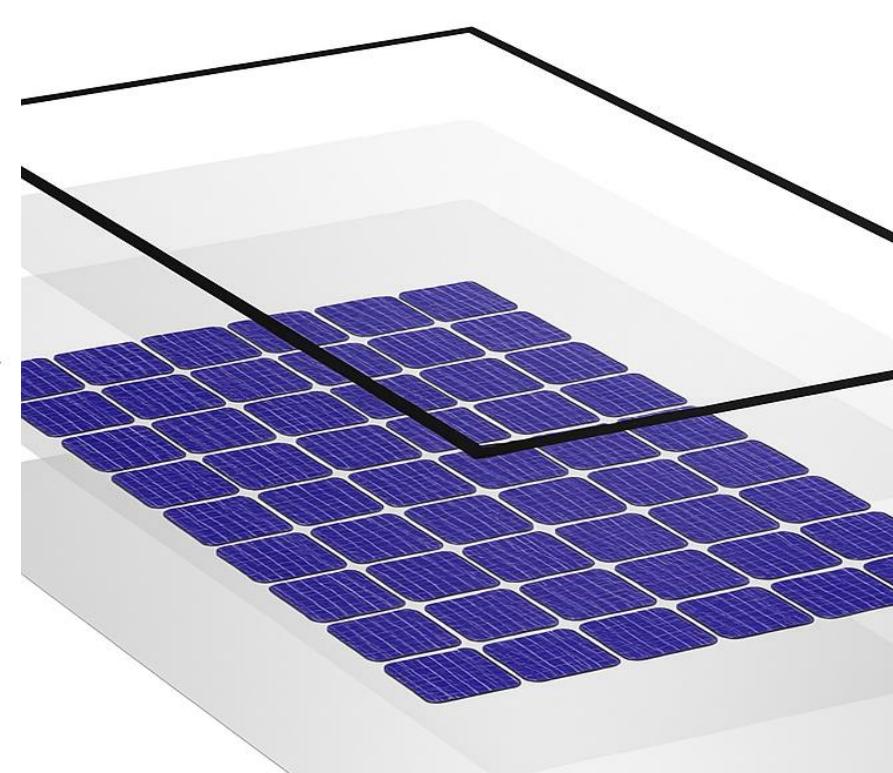
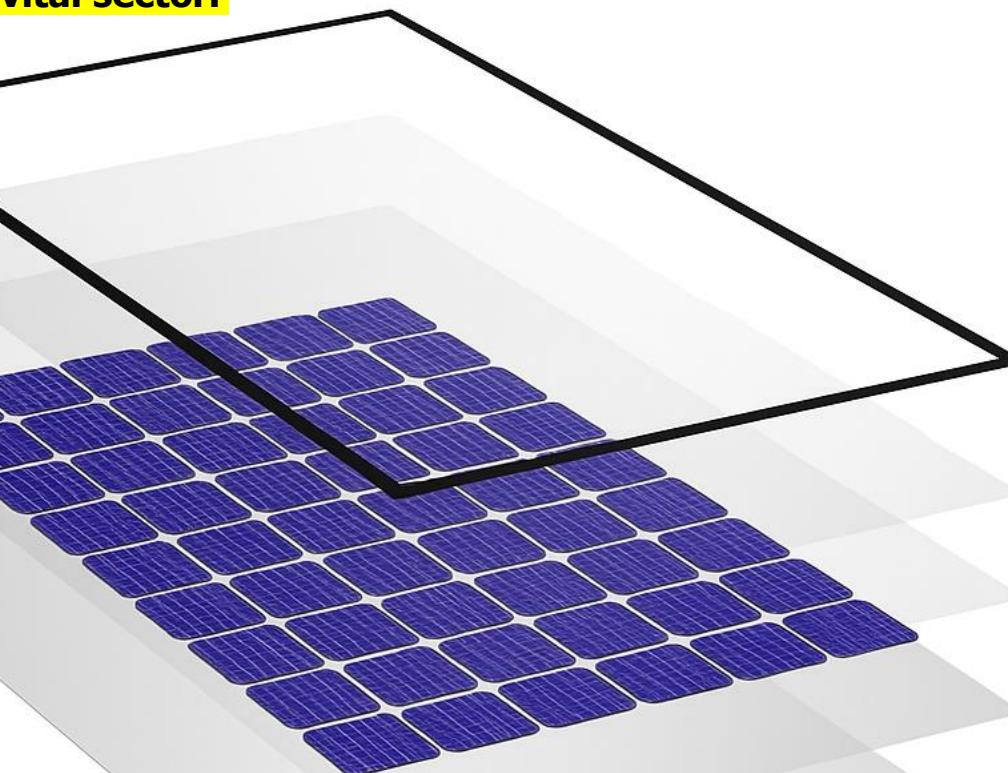
8. Education and Awareness

Patient and Staff Engagement: Hospitals using innovative technologies like perovskite solar cells can serve as educational platforms, promoting sustainability and environmental awareness among patients and staff.

Conclusion

The integration of perovskite photovoltaic panels in healthcare facilities is a forward-thinking approach that aligns with global trends towards sustainability and energy efficiency. Their

lightweight nature, versatility, and potential for cost savings make them an excellent option for hospitals and clinics looking to innovate while ensuring a reliable power source for their critical operations. As technology advances and scalability improves, the adoption of perovskite solar cells in healthcare is likely to grow, leading to better energy management and environmental benefits in this vital sector.

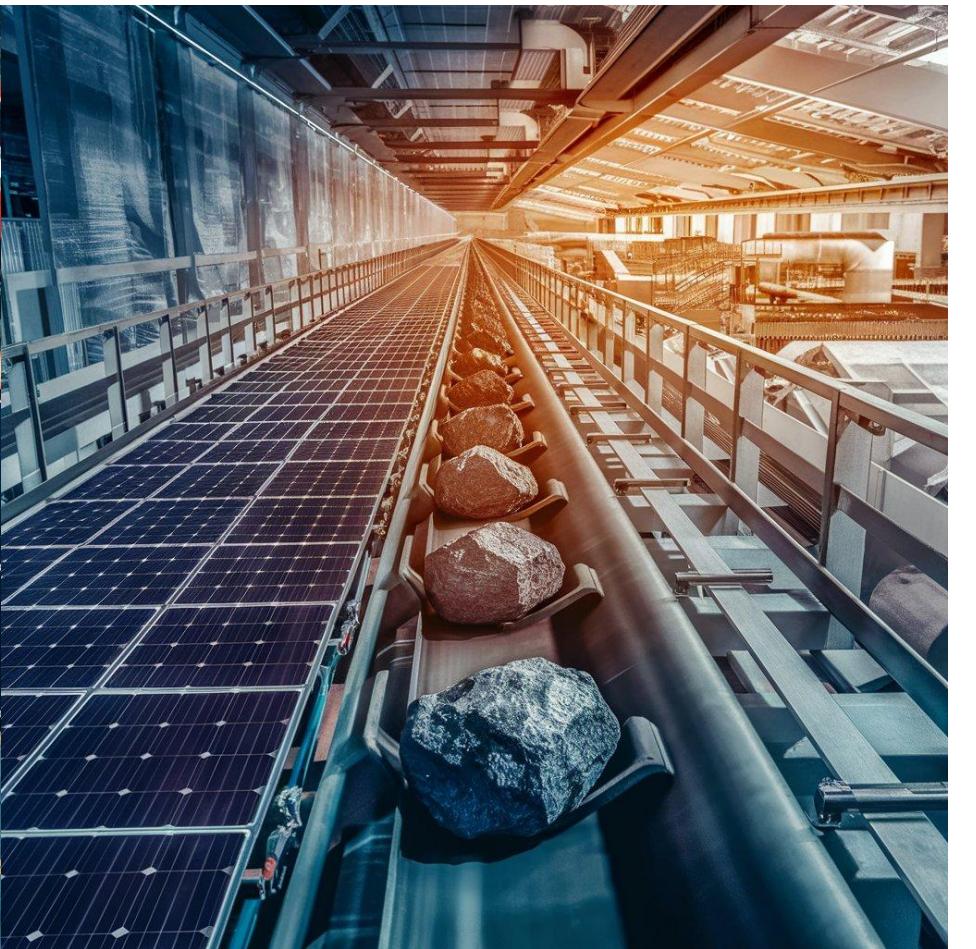
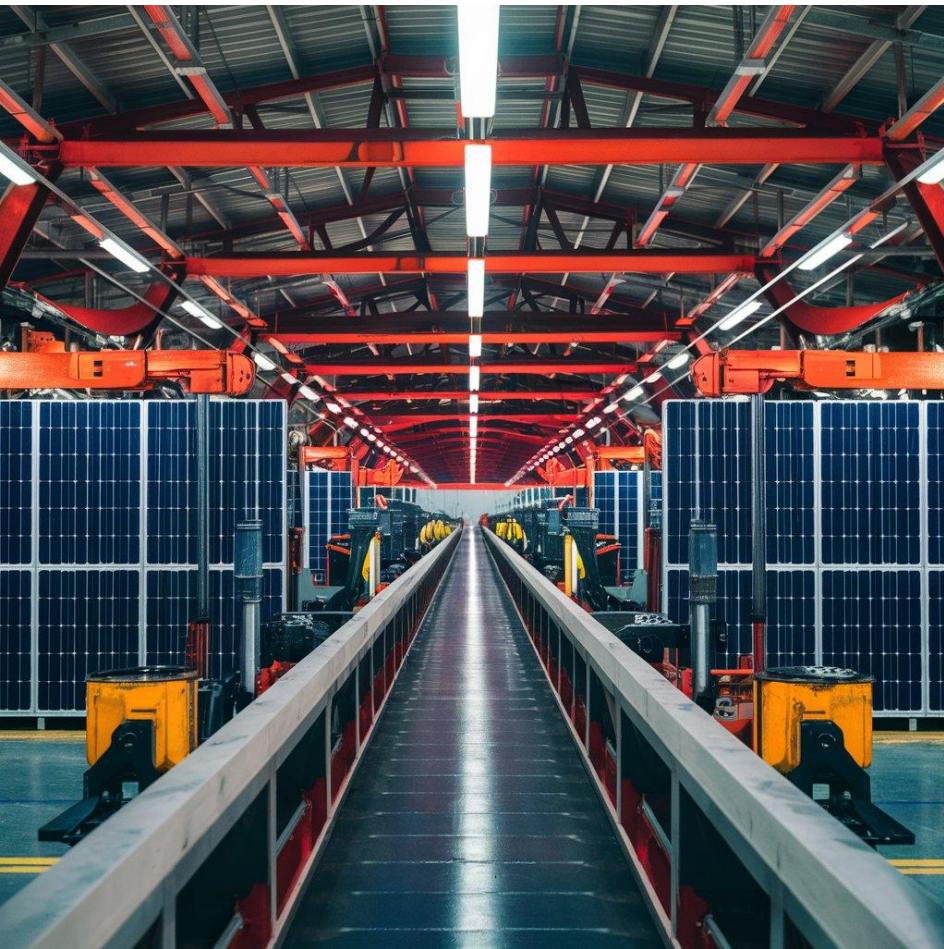


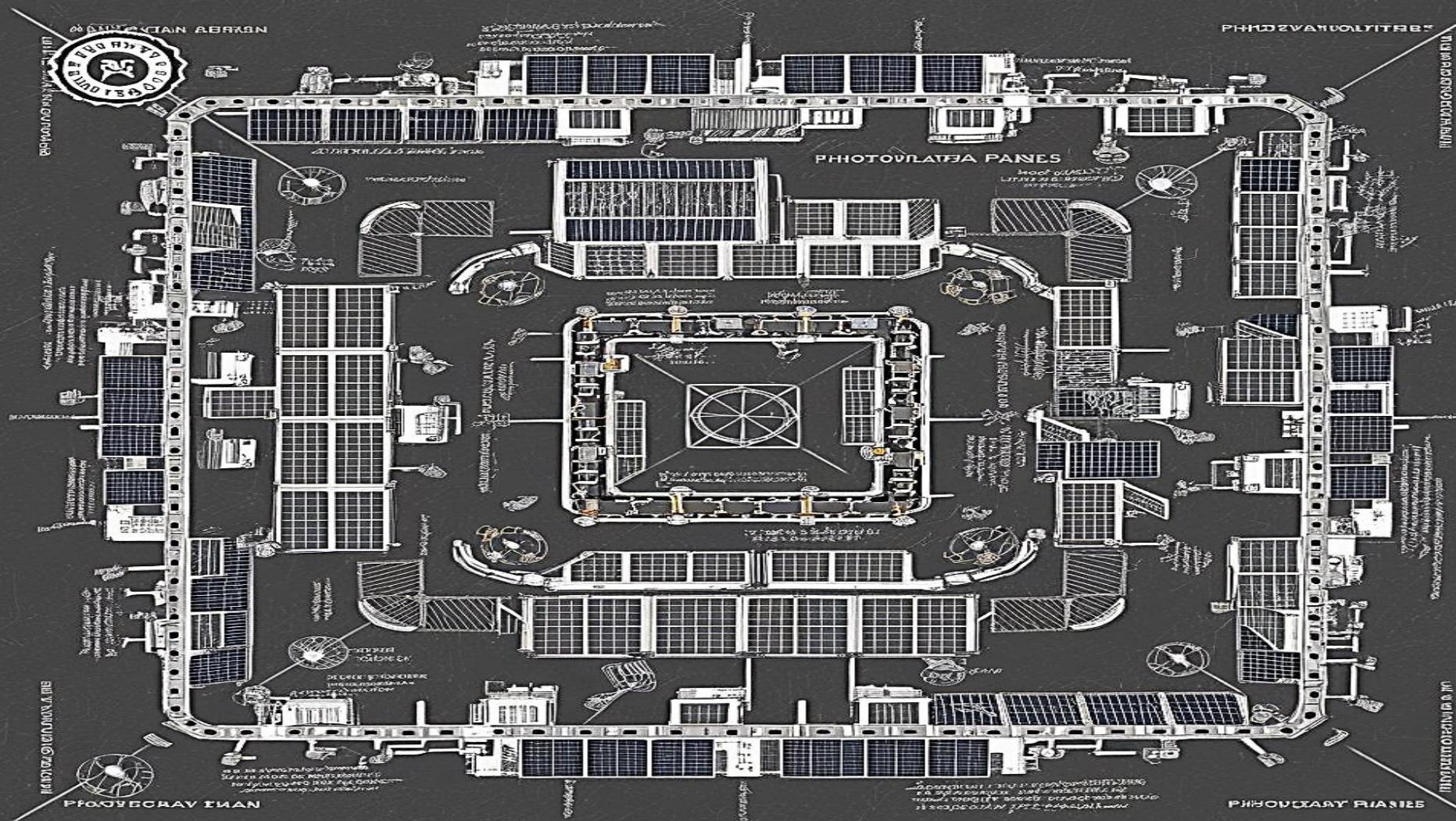


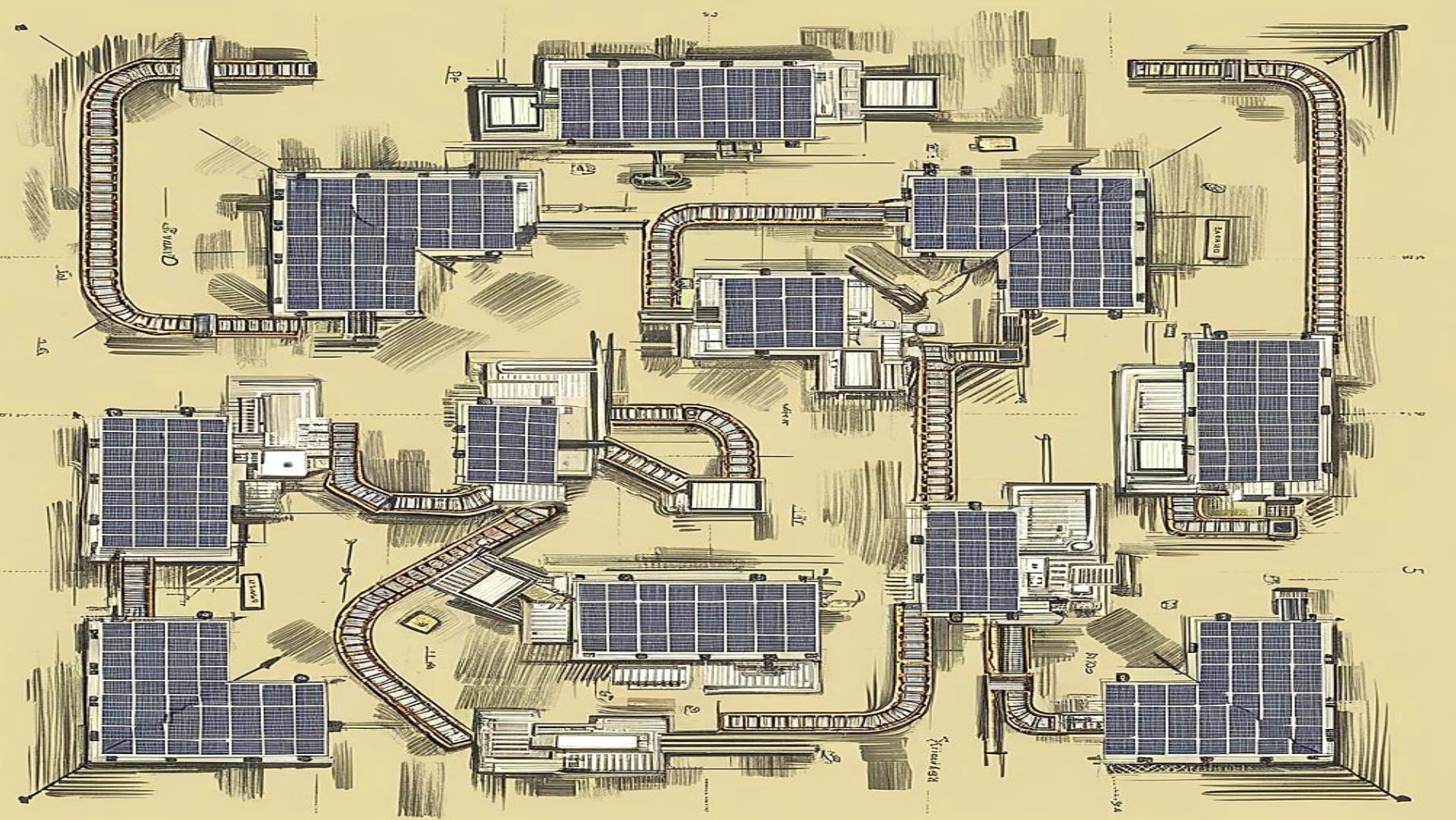
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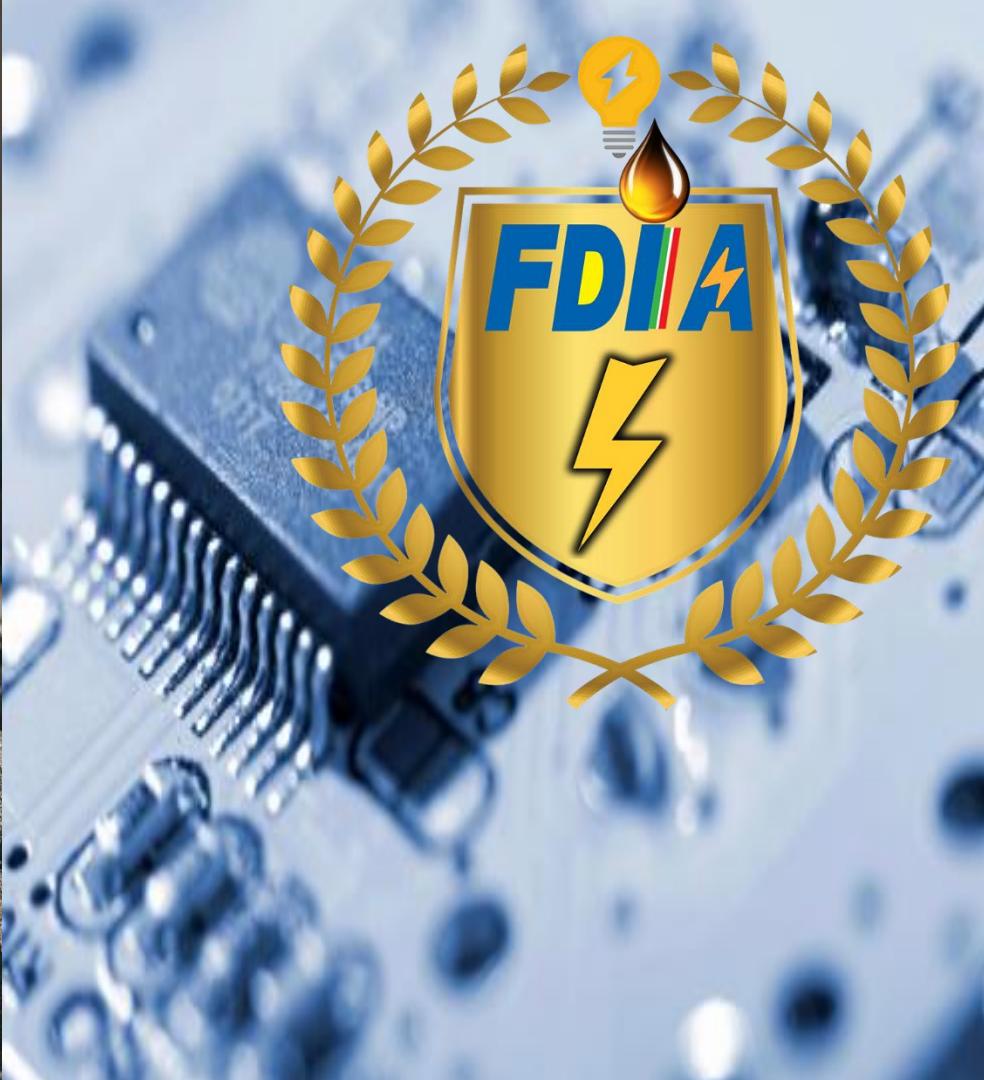
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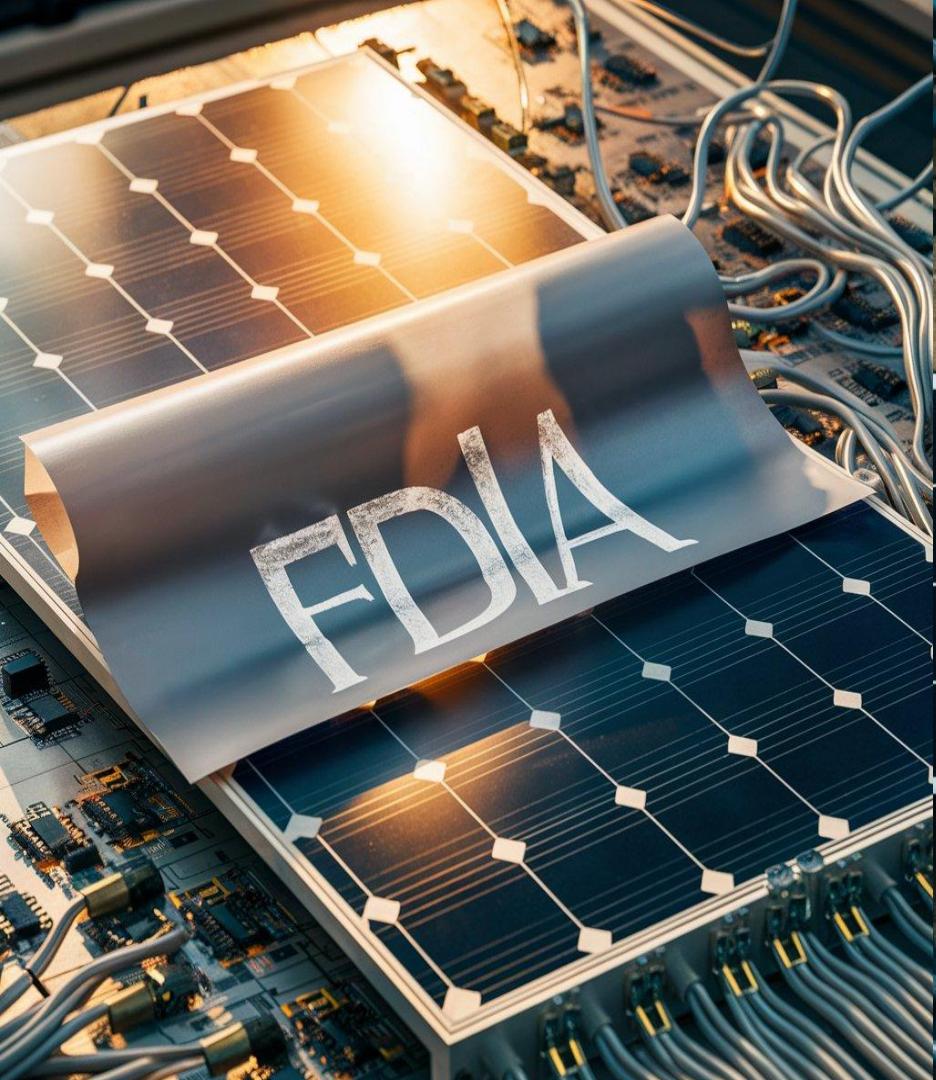


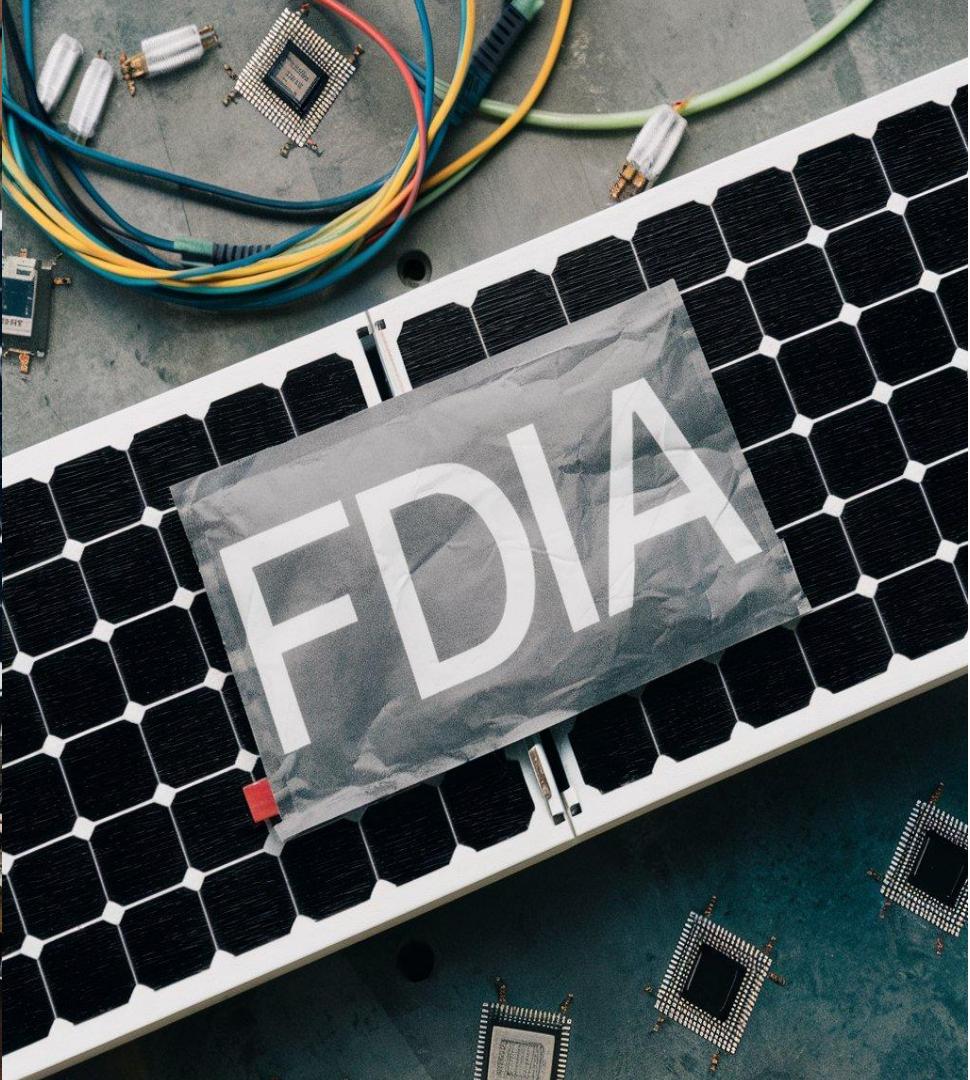
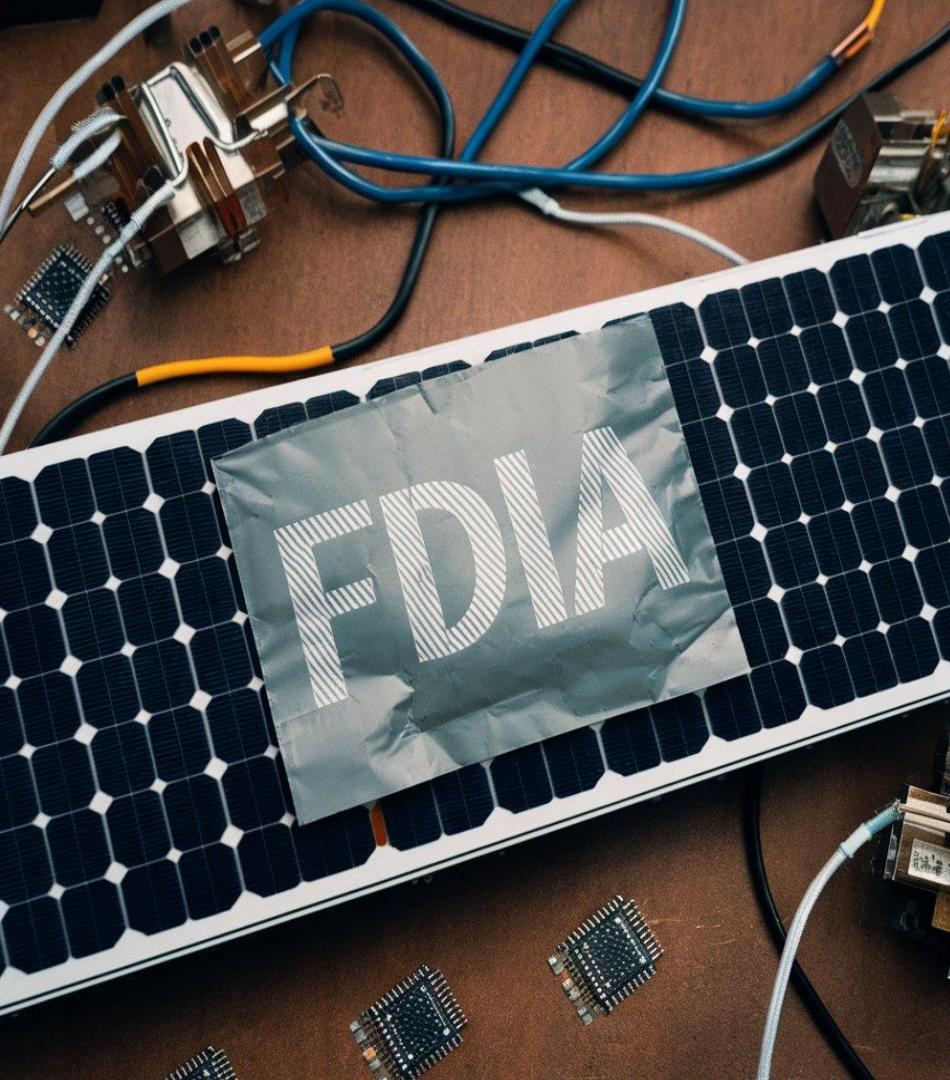


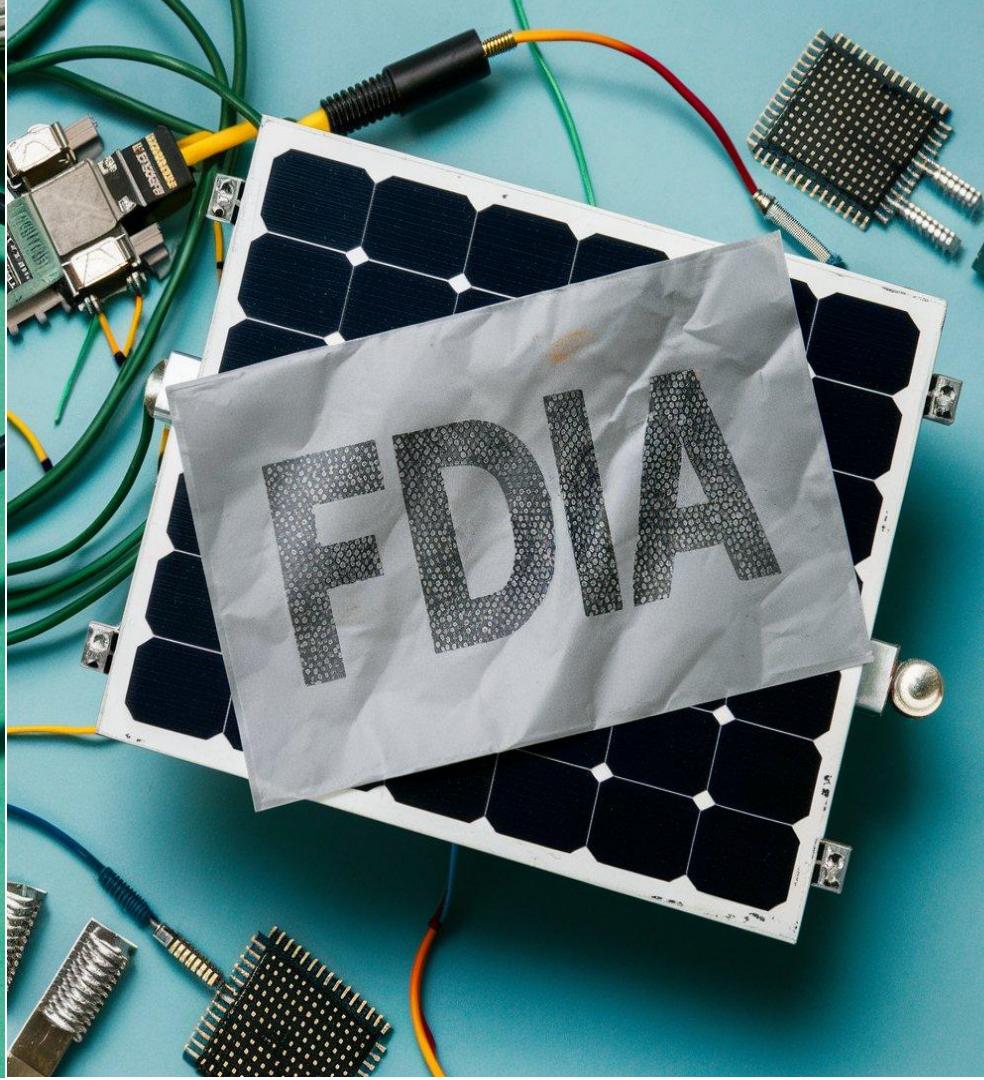
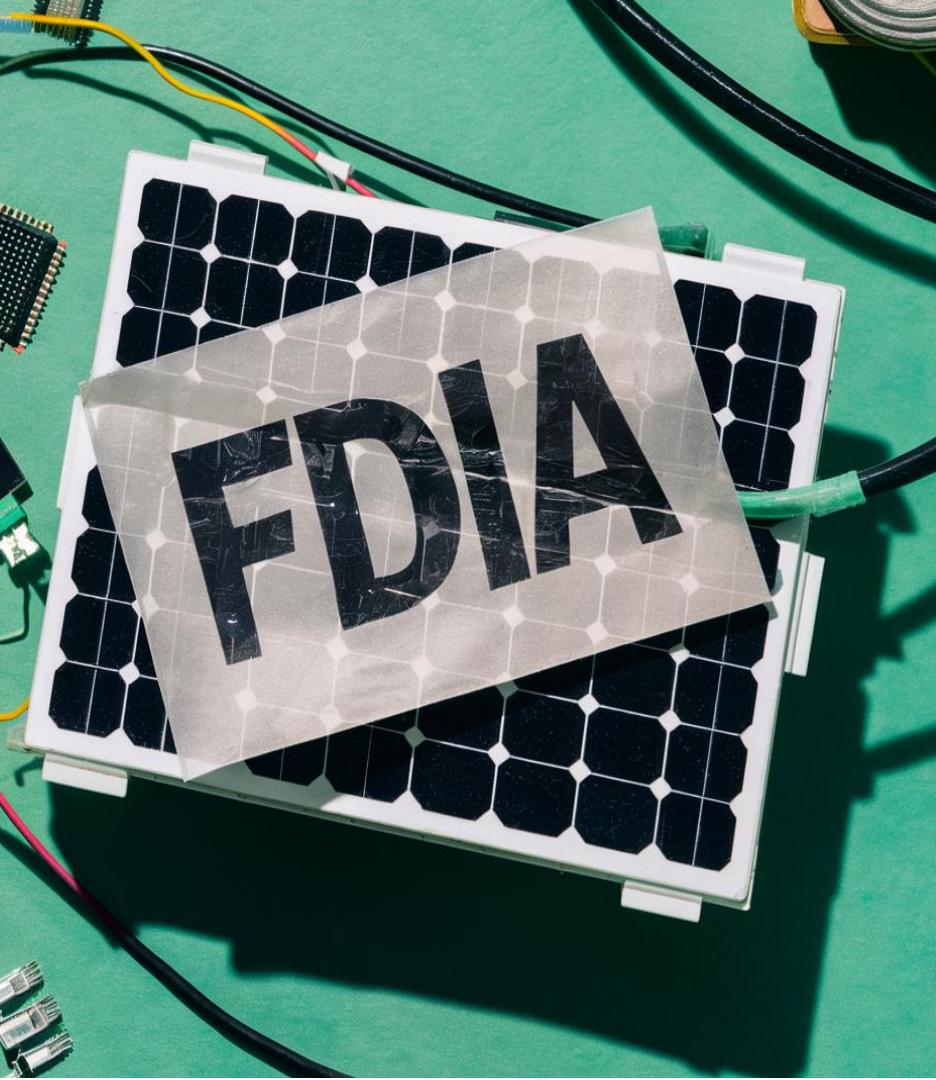


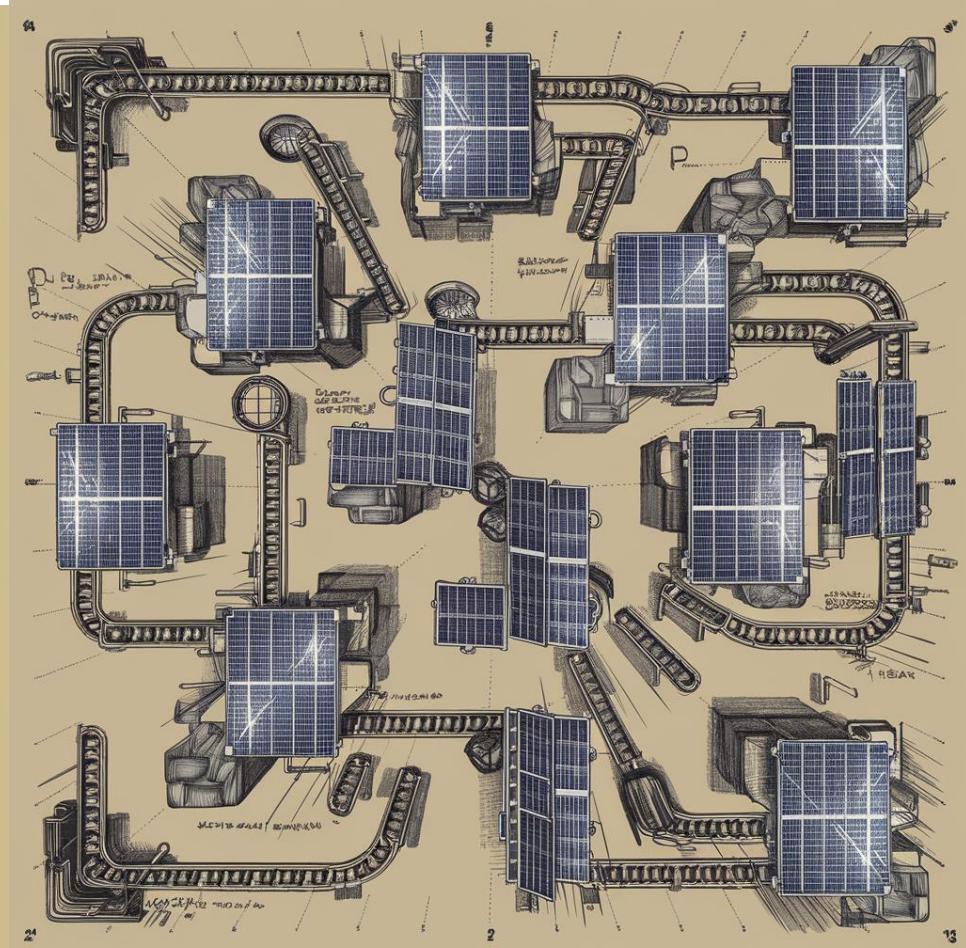
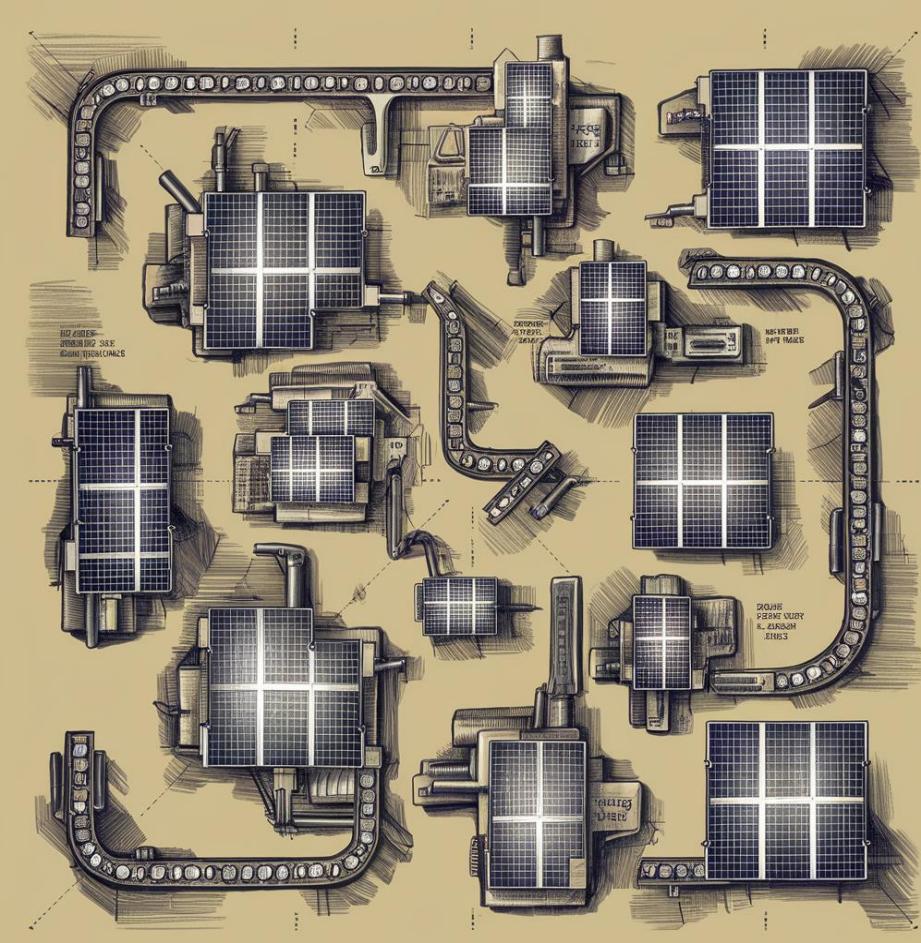


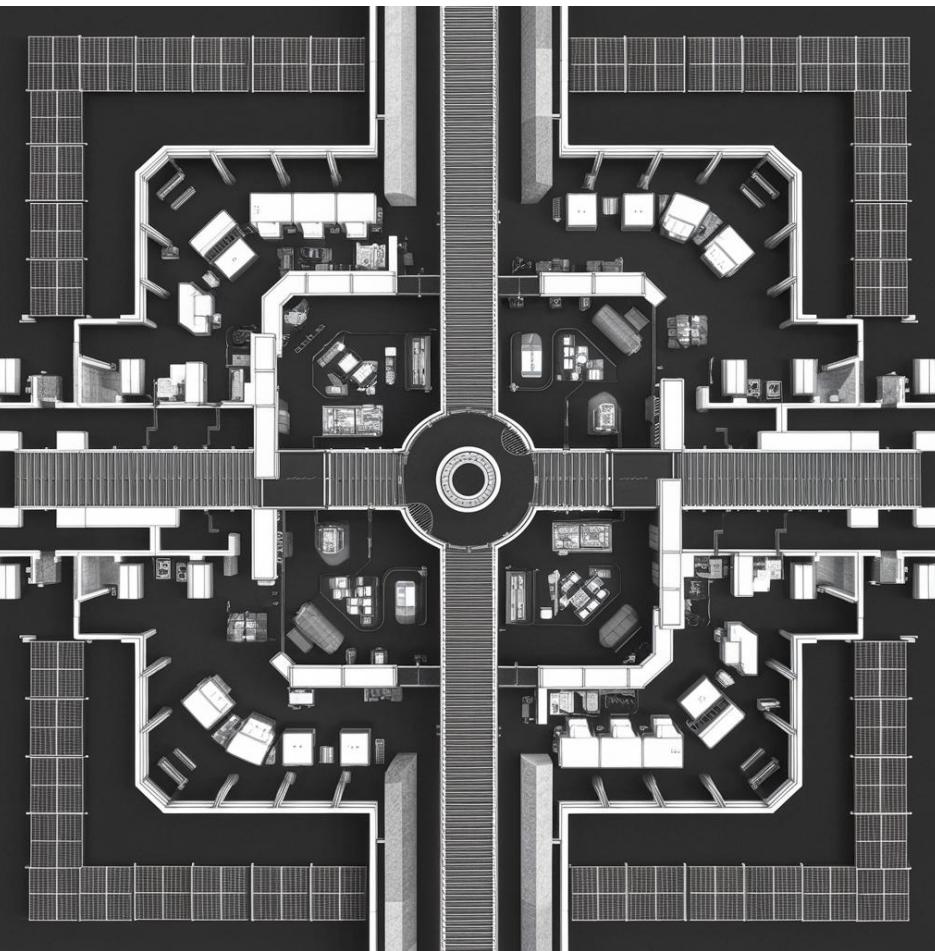
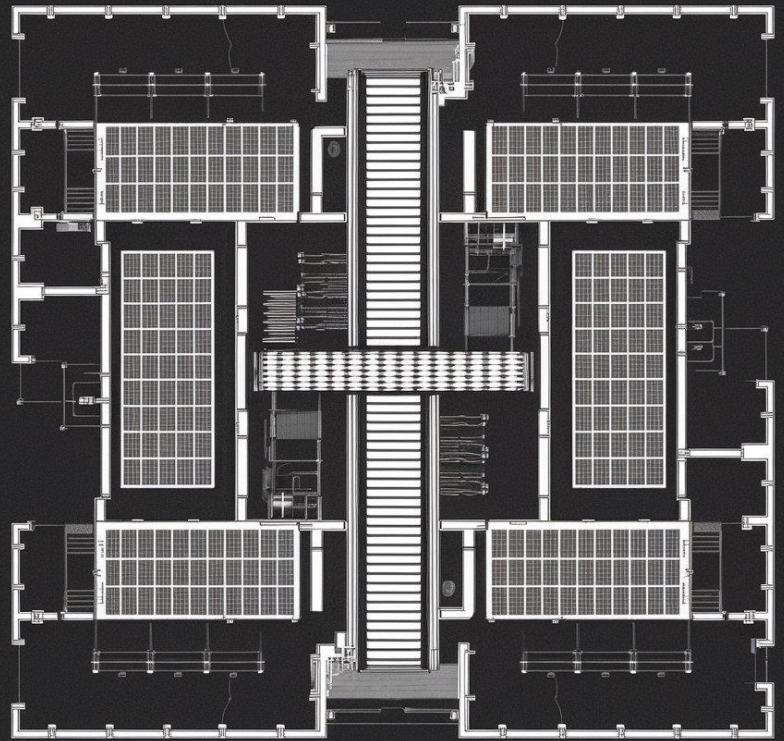


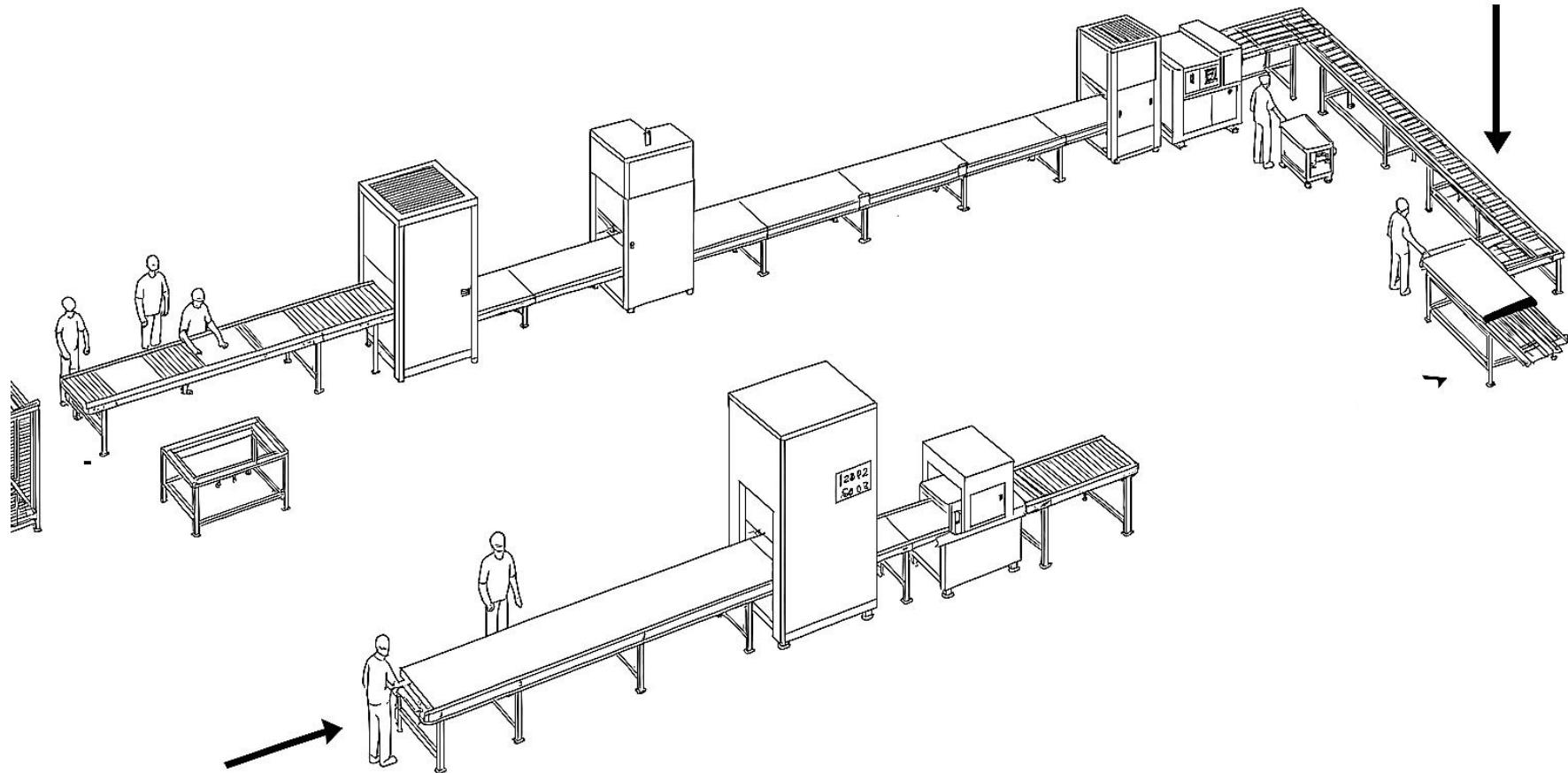












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