1. Inovatif dalam menangani produk pertanian yang dibuang atau dijual dengan harga rendah.

Proyek ini memiliki keunggulan kompetitif dalam menangani produk pertanian yang dibuang atau dijual dengan harga rendah. Dengan menemukan cara untuk mengolah produk pertanian yang tidak terpakai menjadi produk bernilai tinggi, caranya adalah dengan melakukan pengeringan terhadap produk-produk hasil pertanian sehingga dapat diolah menjadi produk siap pakai ataupun disimpan lebih lama. Hal ini tentunya dapat menghilangkan harga jual yang jatuh jika terdapat kelebihan panen dimana proyek ini dapat memanfaatkan produk yang sebelumnya dianggap tidak berharga. Hal ini dapat meningkatkan efisiensi dalam industri pertanian dan juga membantu mengurangi limbah.

Proyek ini memiliki teknologi pengeringan intermiten yang dibantu oleh perangkat lunak yang sudah dikembangkan. Teknologi ini dapat membantu meningkatkan efisiensi dan kualitas produk. Dalam industri pertanian, pengeringan adalah proses penting dalam mengolah produk. Kontrol suhu dan kelembaban otomatis serta menggunakan energi terbarukan untuk dayanya membuat proyek ini mumpuni digunakan dengan berbagai jenis produk pertanian. Selain itu, data stok produk pertanian akan disimpan di database sehingga dapat dimonitor jumlah persediaan produk yang ada. Dengan teknologi pengeringan yang lebih baik, proyek ini dapat meningkatkan kualitas produk dan juga mengurangi waktu pengolahan.

RenaiSun is a spin-off of a thesis and project carried out by Bagas Pramana Putra Fadhila and his colleagues. During the research and development process, it was discovered that there was real potential that could be implemented to address the ongoing challenges of post-harvest processing that continue to impact farmers. With the principle of usefulness in mind, this research was complemented with economic and business development studies.

The project's results received positive responses and support from various parties in Taiwan. The research project won a gold medal in an energy innovation competition organized by the Taiwan Ministry of Education and successfully competed with other leading universities. This shows that usefulness is the key to implementing renewable energy.

The research also received support from various significant figures, such as the founder of the global non-governmental organization Tzu Chi, the chairman of Sinarmas, the chairman of Agung Sedayu Group, and Dr. Hoffmire from the Oxford Center for Mutual and Co-Owned Business. It is the encouragement and support from those who care about sustainable business that has led to the formation of the RenaiSun team as a driver and pioneer of renewable energy utilization in the fields of agriculture and circular economy.

Vision Statement:

1. To become a Leading Agricultural Product Processing Company The company's main business is providing processing services and equipment for agricultural products while also developing its business from selling equipment, developing farmer cooperatives, and providing planning consultation to support the sustainability of the agricultural industry in Indonesia. It aims to set an example as a company that cares about developing agriculture in Indonesia.
2. Bringing Prosperity to Indonesian Agriculture The company aims to bring prosperity to the agricultural sector in Indonesia through steps that optimize the resilience of agricultural products and improve sales distribution.

Mission:

1. To run a business in the agricultural sector that prioritizes customer and investor satisfaction.
2. To eliminate the gap between supply and demand for agricultural products in Indonesia to prevent a significant decrease in prices through the optimization of the resilience of agricultural products.
3. To be a pioneer in the use of emission-free products and new renewable energy (EBT).
4. To strive for an end-to-end integrated system to optimize the agricultural business.

Motto: "From Farmers to the Heart," which means that every food and beverage product comes from agriculture. Therefore, the focus is on helping farmers optimize their production so that they can develop their business better and become the backbone of the economy in Indonesia.

BAGUS:

Produk ini bernama “ Pengering RenaiSun” yang merupakan alat pengering produk hasil pertanian. Produk ini tercipta karena adanya hasil panen yang berlimpah di Indonesia pada musim kemarau sehingga produk panen yang berlebihan ini menyebabkan harga anjlok karena tidak terserap pasar. Dengan metode pengeringan hasil panen, produk hasil pertanian akan bisa diolah menjadi produk siap pakai ataupun disimpan lebih lama sehingga meminimalisir terjadinya harga jatuh karena supply berlebih.

RenaiSun Post Harvest Solution ialah suatu sistem solusi dalam bidang pasca panen khususnya pengeringan dengan menerapkan 3 pilar solusi: energi bersih, jaminan mutu, dan konektivitas. Sistem solusi ini hadir dengan tujuan untuk meningkatkan nilai ekonomi pasca panen dengan cara melindungi nilai ekonomi komoditas pertanian sebelum terjadi pembusukan, sehingga dapat diolah di kemudian waktu dan menciptakan nilai ekonomi tambahan.

Inovasi:

Desain Modular dan Scalable On-Demand

Untuk Skala besar, desain fleksibel modular dapat dilakukan sesuai dengan output yang berbeda disesuaikan dengan kebutuhan tiap masing-masing lokasi pertanian, untuk mengurangi biaya perakitan sistem dan biaya pemeliharaan tindak lanjut.

Pengeringan terintegrasi menggunakan NB-IoT

Sensor yang ada dipasang di kotak pengering untuk mengumpulkan data seperti suhu, kelembapan, dan berat (seperti Gambar 9), membangun berbagai produk pertanian yang berbeda basis data, sebagai data dasar yang penting untuk peningkatan kualitas proses tindak lanjut.

Off-grid dan Energy Saving

Rancangan sistem secara keseluruhan tidak memerlukan penggunaan energi fosil sama sekali, dan energi yang dibutuhkan untuk pengeringan langsung menggunakan energi panas matahari. Daya yang dibutuhkan oleh sistem kontrol berasal dari fotovoltaik (PV).

Pengeringan bertahap menggunakan low-cost AIoT

Desain inovatif ini berbeda dengan sistem panas matahari pada umumnya yang tidak memiliki fungsi kontrol suhu, produk ini dapat menggunakan sistem kontrol berdasarkan persyaratan pengeringan produk pertanian. Hal ini penting karena proses intermittent drying merupakan kunci utama penambahan mutu dalam proses pengeringan. Proses pengeringan yang terkontrol dan termonitor akan menghasilkan produk akhir yang memiliki jaminan mutu dan dapat diterima oleh pasar industri.

This product is called "RenaiSun Dryer" which is a drying tool for agricultural products. The product was created due to the abundance of harvest in Indonesia during the dry season, resulting in excess harvest products and causing prices to drop due to oversupply. By drying the harvest products, agricultural products can be processed into ready-to-use products or stored for a longer period, minimizing the occurrence of price drops due to oversupply.

RenaiSun Post Harvest Solution is a post-harvest solution system, particularly in drying, by applying three solution pillars: clean energy, quality assurance, and connectivity. This solution system aims to increase the economic value of post-harvest by protecting the economic value of agricultural commodities before they spoil, making it possible to process them later and create additional economic value.

Innovation: Modular and Scalable On-Demand Design For large-scale operations, a flexible modular design can be adjusted to meet different output requirements for each agricultural location, reducing the cost of assembling the system and subsequent maintenance costs.

Integrated Drying using NB-IoT Sensors are installed in the dryer box to collect data such as temperature, humidity, and weight (as shown in Figure 9), building various agricultural products' different databases as important basic data for improving the quality of the follow-up process.

Off-grid and Energy Saving The overall system design does not require the use of fossil energy at all, and the energy required for drying is directly obtained from solar heat. The power required by the control system comes from photovoltaics (PV).

Gradual Drying using low-cost AIoT This innovative design differs from typical solar heating systems that do not have temperature control functions. This product can use a control system based on agricultural product drying requirements. This is important because the intermittent drying process is the key to improving the quality of the drying process. A controlled and monitored drying process will produce a final product that has quality assurance and is acceptable to the industry market.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Factor | RenaiSun | Natural | Electric | Gas/Diesel |
| Product Name | - | Solar Dryer Home | Electric Dryer | Diesel Dryer |
| Manufacturer | - | PT Impack Pratama (LED) | Taiki Sangyo (Japan) | Taiki Sangyo (Japan) |
| Endorsement | - | Ministry of Agriculture | United Nations Industrial | Development Organization |
| Capacity | 20-25 kg @ 1 kW Solar Thermal 0.1 kW Electric | Per Dome: 200-300 kg | 60-105 kg @ 9.5 kW Electric | 120-210 kg @ 1 kW electric 1.35 gal/h |
| Drying Process | In Box, Programmable Pattern | Natural Air Flow | In Box, Programmable Pattern | In Box, Programmable Pattern |
| Drying Time | 2-3 Days | 4 Days ( @7 hours per day) | 20 Hours | 20 Hours |
| Drying Cost per kg (wet) | 0 | 0 | Rp 2.500 (@ Rp 1.147/kWh) | RP 2.300 (@LPG 12 kg: Rp 53.000) |
| Carbon Emission per kg (wet) | 0 | 0 | 0.26 kg | 0.16 kg |
| Fixed Capital per 100 kg Wet Capacity | Rp 25.000.000 | Rp 17.000.000 | Rp 190.000.000 | Rp 217.000.000 |

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