Full Palm Handling System with Lifting Machine



Smart, Safe, and Efficient Date Palm Harvesting.

The **Full Palm Handling System with Lifting Machine** is an innovative, standalone agricultural robot designed to revolutionize date palm harvesting and maintenance. The system integrates harvesting, pre-harvesting, and post-harvesting operations into a single, versatile machine that requires only one operator and eliminates the need for climbing palm trees or using external lifting equipment.

Designed for safety, productivity, and cost efficiency, this machine is ideal for modern palm farms facing labor shortages and increasing operational costs.

Our Solution

A fully standalone palm handling machine mounted on a truck platform, equipped with: A stable scissor lifting system, a multi-task harvesting and maintenance system a robotic arm with interchangeable tools.

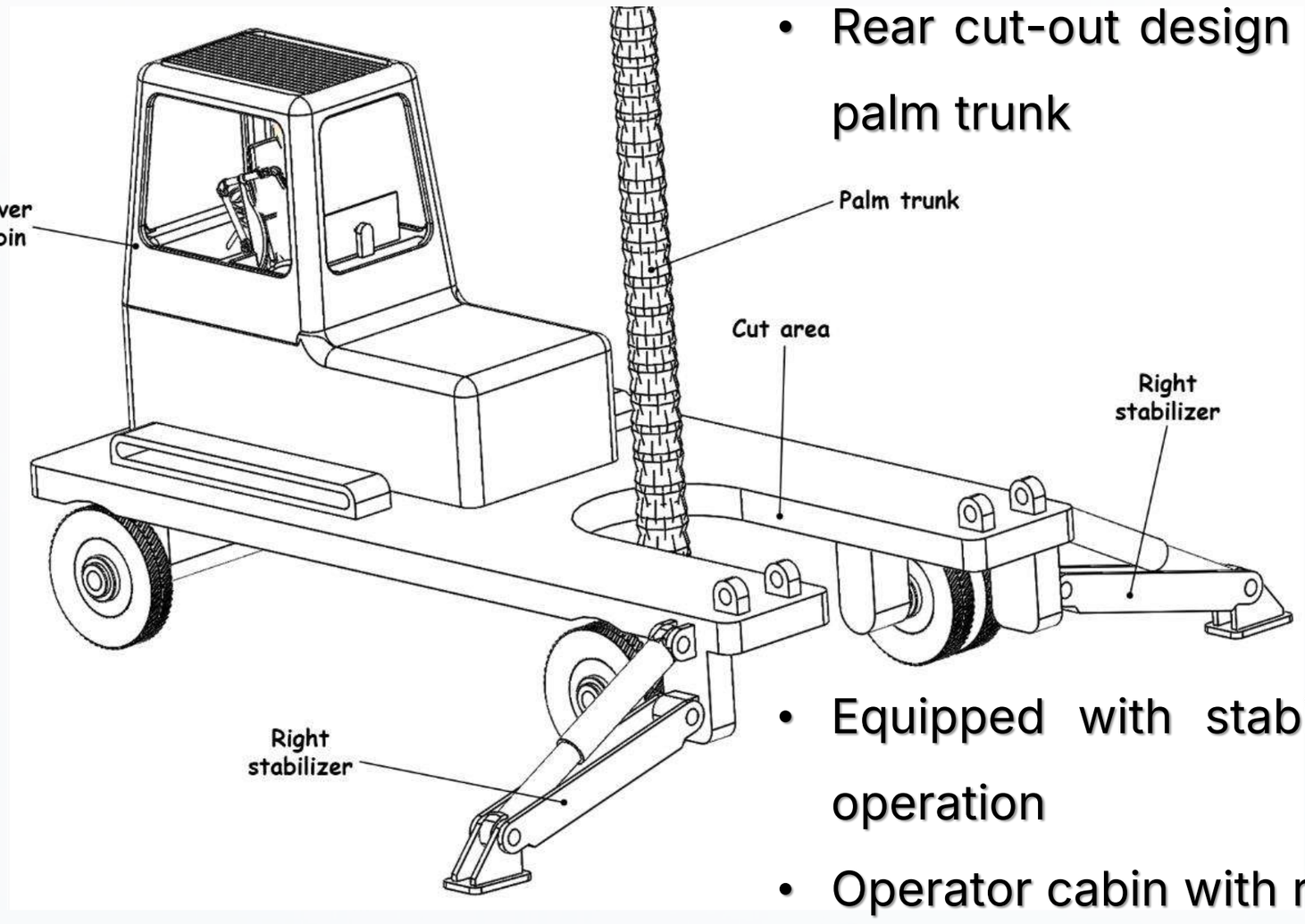
This innovative system offers investors access to a high-growth AgriTech segment. Its patented AI and robotics integration presents licensing, manufacturing, and global distribution opportunities, especially in regions facing food security challenges.

This system is protected by us patent No. US11910751B1 which was granted to *King Saud University* in 2024-02-27.

Main System Components

Truck Platform

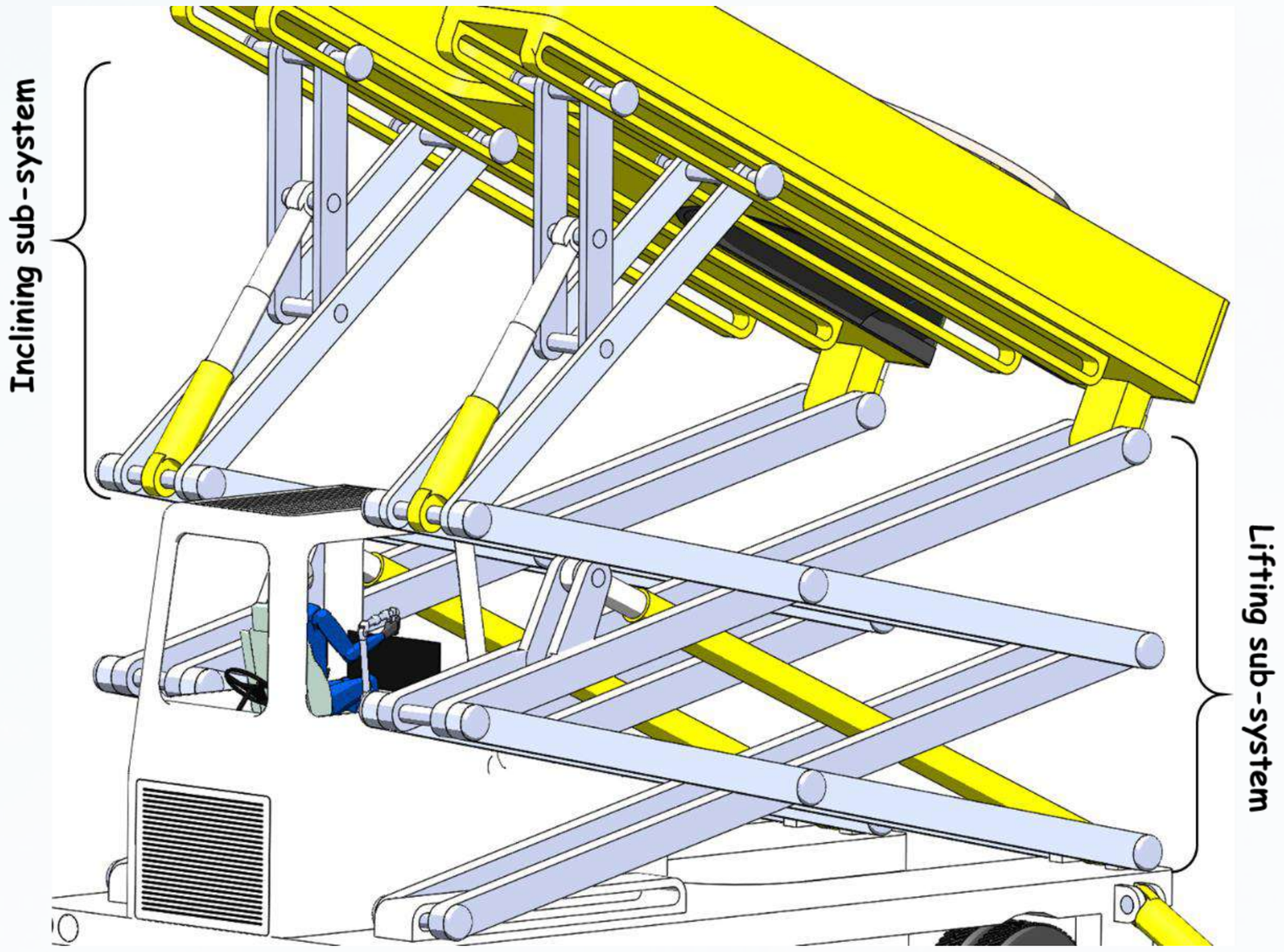
- Provides transportation and mobility between palm trees
- Rear cut-out design allows the machine to surround the palm trunk



- Equipped with stabilizers for maximum safety during operation
- Operator cabin with rotatable seat and control interfaces

Scissor Lifting & Inclining System

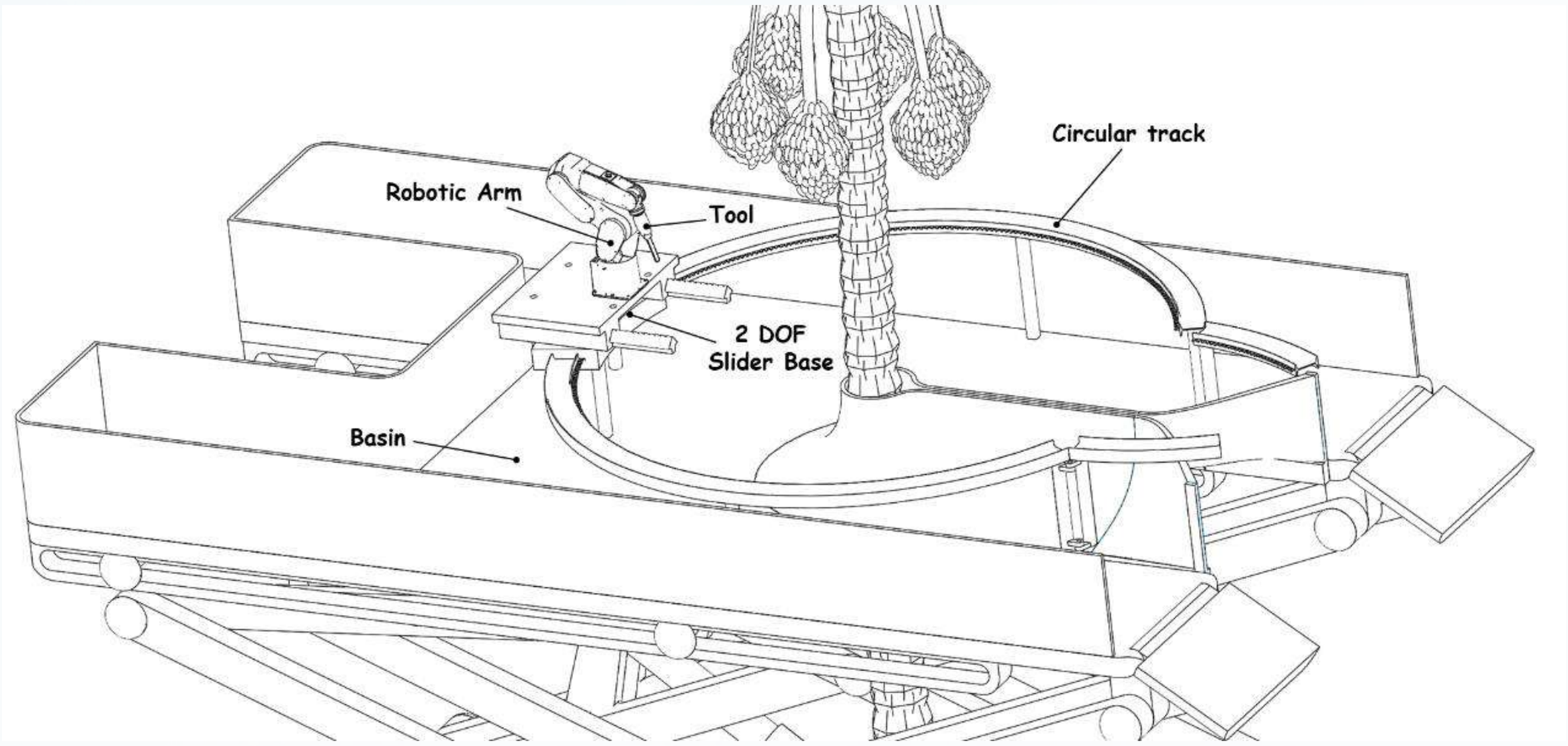
- Raises the multi-task system to the top of the palm tree
- Keeps the center of gravity stable at all heights
- Inclining mechanism allows fast and easy fruit discharge



Main System Components

Multi-Task Handling System

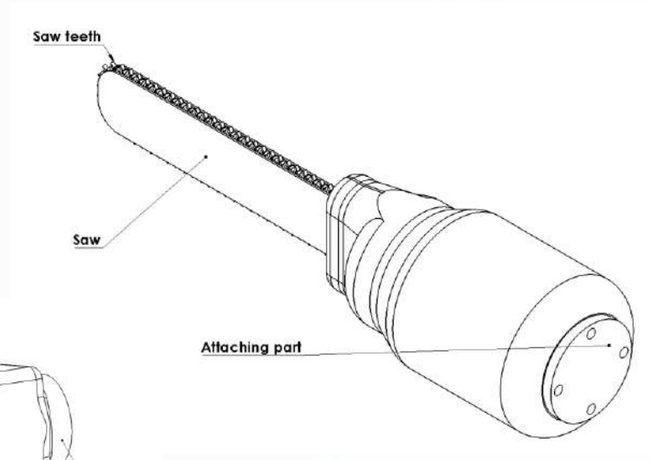
- **Basin:**
  - Large-capacity basin to catch harvested fruits gently
  - Flexible trunk entry prevents fruit loss
  - Hydraulic discharge door for fast unloading
- **Circular Track:**
  - Surrounds the palm tree completely
  - Open/close mechanism for easy positioning
  - Internal spur gears enable smooth motion of the robotic system
- **2-DOF Slider Base:**
  - Circular motion around the palm tree
  - Radial motion toward and away from the trunk
  - Allows operation on palm trees of any size
- **Robotic Arm:**
  - At least 6 Degrees of Freedom (DOF)Medium weight with high payload capacity
  - Equipped with dual cameras for full visual coverage

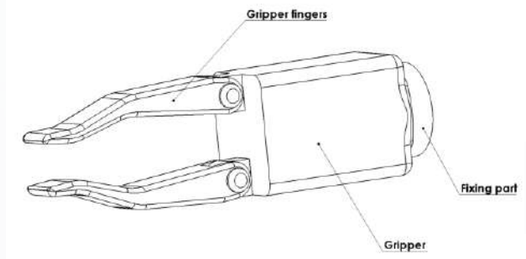


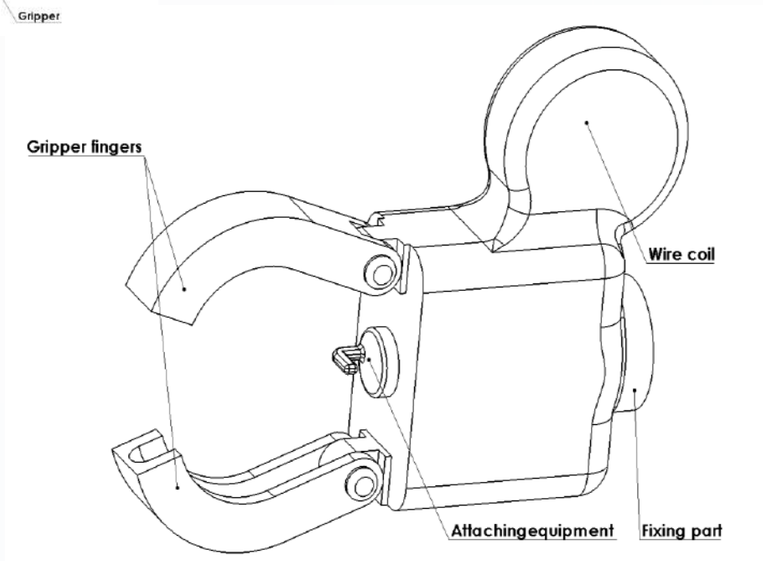
Interchangeable Tools & Functions

Harvesting Tools

- Electric cutting saw for fruit bunch harvesting
- Individual date picking gripper

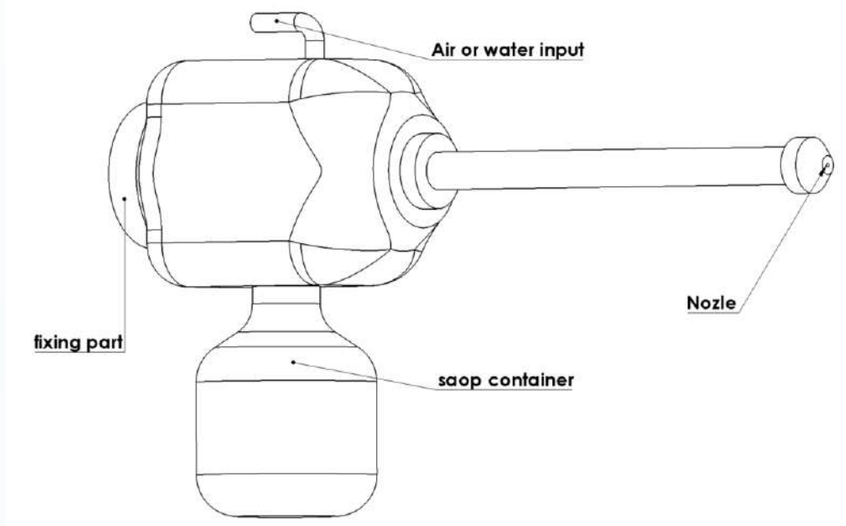


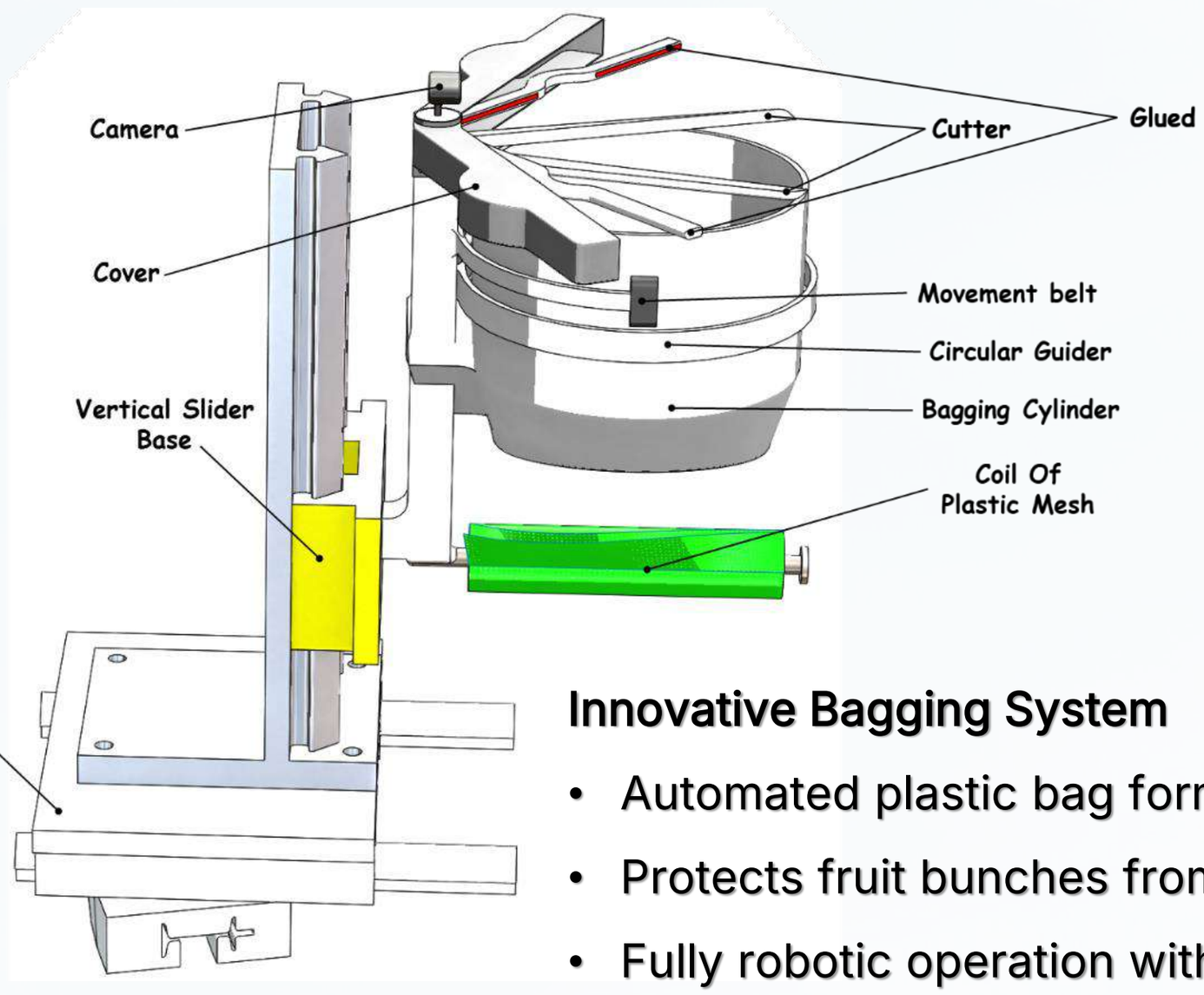




Maintenance Tools

- Gripper for bunch alignment and attachment
- Wiring and tying tool
- Sprayer for pollination, cleaning, and pest control

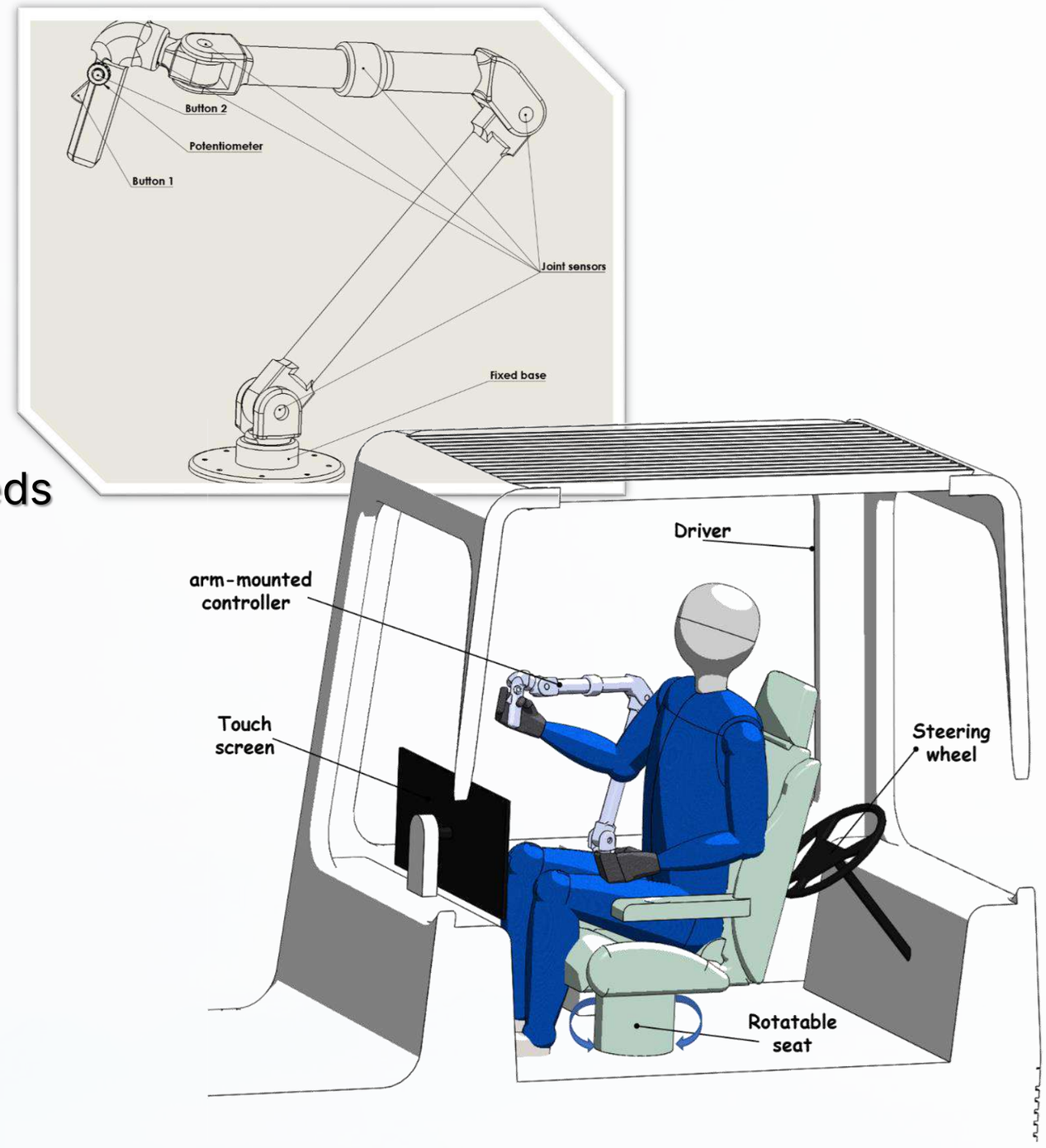




Innovative Bagging System

- Automated plastic bag forming and sealing
- Protects fruit bunches from insects and environmental damage
- Fully robotic operation with cameras and sensors

Novelty And Capabilities Of Invention



Smart Control & Operation

- Wireless teleoperation
- Arm-mounted controller or 3D joystick
- Touchscreen displays with live camera feeds
- Optional sensor glove for intuitive control

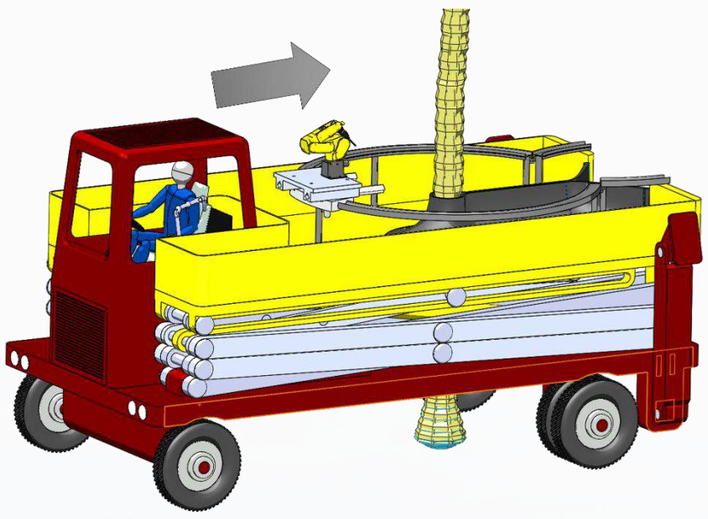
Key Benefits

- Faster harvesting and reduced downtime
- One operator only
- Reduced labor dependency
- Safe, enclosed operation cabin
- Day and night operation capability
- Year-round palm tree maintenance
- Lower long-term yield cost
- Fully standalone (no external power or lifting equipment)
- Extremely stable scissor lift design
- High fruit capacity (up to 10× more than traditional systems)

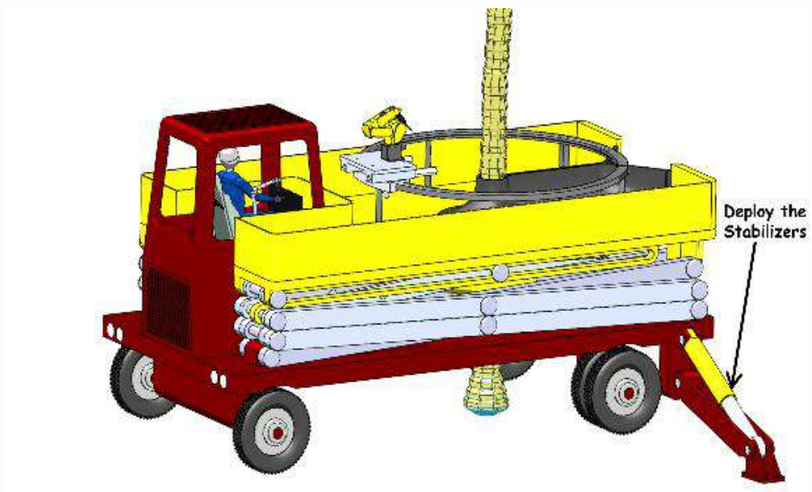
Advanced Capabilities

- Pattern recognition and camera-based tree health monitoring
- Stress and disease detection
- Adaptable to different palm sizes and farm layouts
- Stable operation at high elevation
- Balanced load distribution
- Designed for off-road agricultural environments

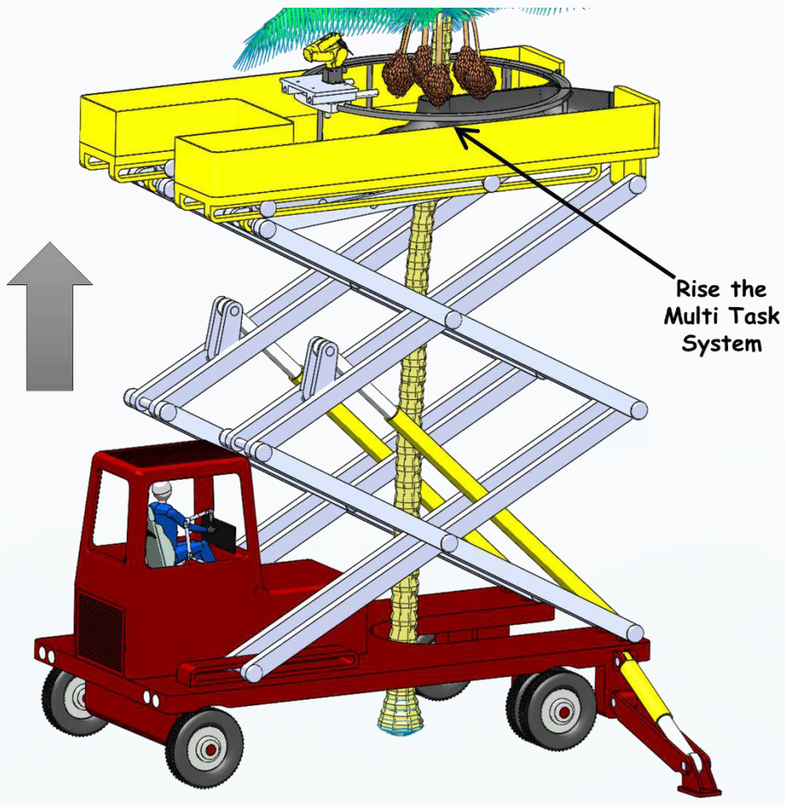
Typical Harvesting Workflow



1. Position machine around the palm tree



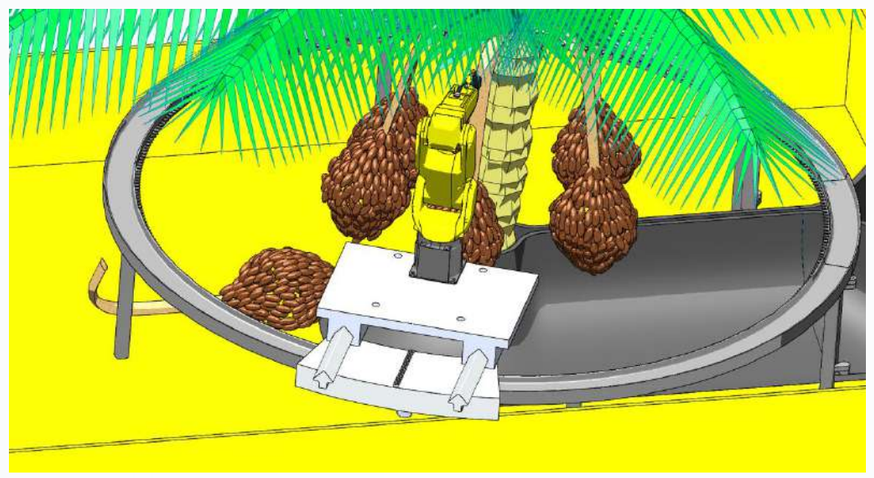
2. Close circular track and deploy stabilizers



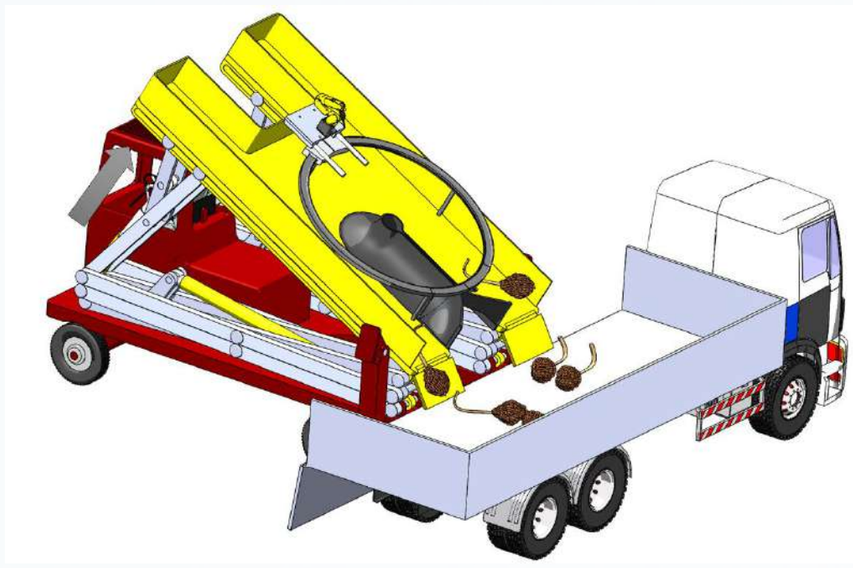
3. Lift system to tree top

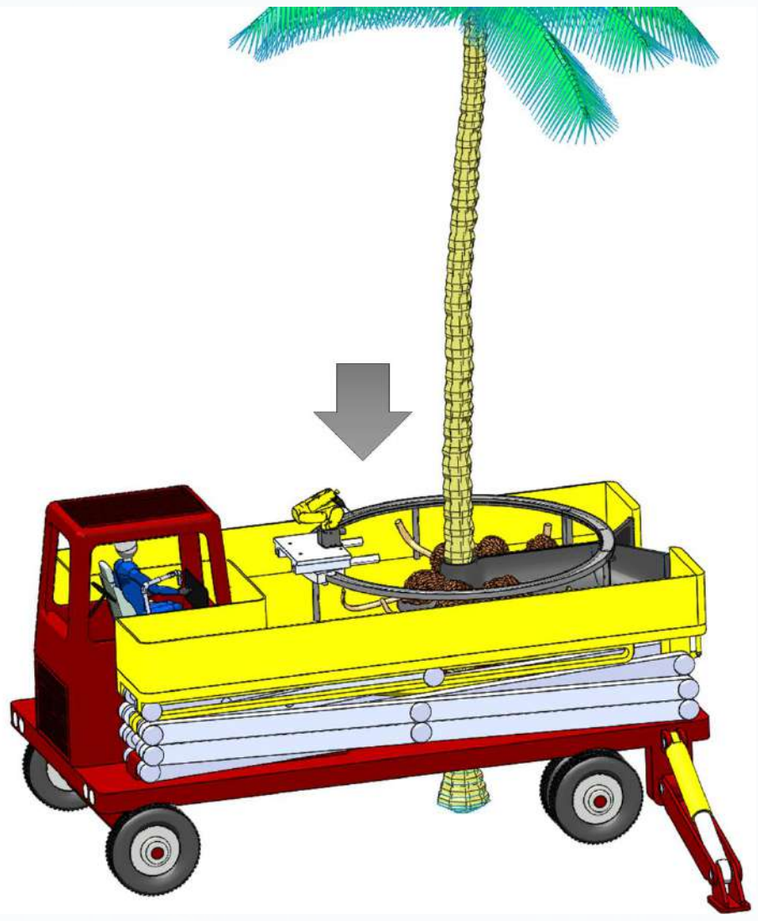


4. Harvest fruit bunches gently into basin



5. Repeat for all bunches





6. Lower system and move to next tree or discharge fruits

Ideal For

- Date palm farms
- Large-scale agricultural operations
- Smart farming and agri-robotics initiatives
- Regions with labor shortages and high temperatures

Conclusion

The Full Palm Handling System with Lifting Machine offers a safe, efficient, and future-ready solution for date palm harvesting and maintenance. By combining robotics, automation, and intelligent design, it empowers farmers to increase productivity, reduce costs, and protect both workers and crops.

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