SLOPEHELPER

Grape Picker

Autonomous grape cluster/banche harvesting with 4 robotic manipulators

The **Slopehelper Grape Picker** is an **autonomous harvesting solution** designed specifically for **premium wine** and **sparkling wine production**, where **grape detachment** from the bunch and **oxidation** are unacceptable. Before PeK Automotive introduced the **Slopehelper Grape Picker** to the world, the only alternative for high-quality **winemaking** was **manual grape picking**, as all previously existing **mechanical harvesters** were **shaking-type machines**.

100% Autonomous | **100% Electric**

The fundamental issue with **shaking harvesters** is that they disintegrate grape bunches, causing vibration-induced **grape detachment** and immediate **juice oxidation**. This significantly reduces the quality of harvested grapes, making them unsuitable for **premium wine production**. The **Slopehelper Grape Picker** eliminates this problem by carefully collecting intact grape bunches, ensuring they remain **undamaged** and **oxidation-free**.

Unlike conventional harvesters, the **Slopehelper Grape Picker** allows entire **grape bunches** to be transported to the **wine production center**, where they can be sorted using **advanced sorting machines**. This preserves the highest **quality standards**, making it possible to produce **exceptional wines** that were previously only achievable through **hand-picking**. This innovation marks a revolution in **vineyard automation**, allowing growers to combine **efficiency** with **premium-quality wine production**.

Features & Benefits

Fully Autonomous Harvesting System

The **Slopehelper Grape Picker**, combined with the **Slopehelper Base Platform**, operates with **complete autonomy**, eliminating the need for an operator to manage platform driving, supervision, or **harvesting control**.

With this **autonomous harvesting system**, a single operator can oversee the entire **vineyard**, only handling **agro bin loading and unloading** using a forklift. Instead of relying on a large seasonal workforce, just one operator per shift (two per 24 hours) is required to manage the entire field's **harvesting process**.

This revolutionary **automation** drastically reduces **labor dependency** and costs, ensures continuous **high-efficiency harvesting**, and maximizes **productivity** with minimal **human intervention**.

Non-Damaging Grape Bunch Harvesting for Zero Oxidation

The **Slopehelper Grape Picker** replicates **human-like harvesting precision** to ensure **grape bunches** remain intact and **oxidation-free** during collection.

The process begins with a **general observation camera**, which scans the search area to detect **grape stems**. Once a potential grape bunch is identified, the system initiates a gentle, **non-damaging harvesting sequence**:

- **Finger-basket manipulators** carefully open the leaves, providing unobstructed access to the bunch.
- **Precision cutting scissors**, integrated within the basket, extend to cleanly cut the stem.
- The grape bunch falls naturally into a **cushioned tray**, preventing impact damage.
- From the tray, the bunch is relocated onto a **conveyor** and transferred into the **agro bin**, maintaining its integrity and freshness.

This delicate and controlled harvesting method eliminates **mechanical pressure** on the grapes, prevents **oxidation**, and ensures that harvested grape bunches remain in **perfect condition** for **premium-quality wine production**.

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One Instrument Replacing a Team of Seasonal Workers

The **Slopehelper Grape Picker** is a **high-efficiency robotic harvesting instrument** designed to replace a team of **6 seasonal workers**, significantly **reducing labor costs** and dependency on human workforce availability.

Unlike human labor, the **Slopehelper Base Platform** requires only **3 hours for recharging** (provided a sufficiently powerful **electric grid**). The **Grape Picker** operates tirelessly for **16 out of 24 hours**, without breaks, fatigue, or need for meals, outperforming any human team in terms of **continuous operation**.

This **fully autonomous, high-performance harvesting solution** ensures maximum **efficiency**, reduces **harvesting costs**, and makes it an indispensable tool for modern **fruit plantations**.

Shift to the Premium Segment & Increased Business Profitability

By eliminating **oxidation during harvesting, growers** can achieve a dramatic improvement in **wine quality**, allowing them to elevate their production into the **premium segment**. The ability to deliver **intact, oxidation-free grape bunches** ensures that wineries can produce higher-quality wines, including **premium** and **sparkling varieties**, which command significantly higher market prices.

This shift not only enhances **brand reputation** and **product value** but also leads to a substantial increase in **business profitability**. With higher-grade wines, **vineyards** can access more lucrative markets, gain stronger customer loyalty, and achieve better financial returns, making the **Slopehelper Grape Picker** a key investment in long-term **business success**.

Eliminating Parasite Contamination in Wine Production

One of the significant yet rarely discussed issues in modern **wine production** is the risk of **parasite contamination**, which can pose serious health risks to consumers. This problem is particularly associated with **shaking-type harvesters**, which use an open harvesting system where **grape juice** begins forming prematurely. As grapes are mechanically disintegrated, the juice accumulates in open tanks, creating an ideal environment for insect attraction and **contamination**.

These open, juice-filled tanks attract flies and other insects, many of which are known hosts of **parasites**. Inevitably, some of these insects sink into the tanks, becoming unintended contaminants that are later transferred into **wine fermentation tanks**. Since not all parasites or bacteria die during fermentation, this can lead to serious hygiene and safety concerns in the final **wine product.** Additionally, the shaking process itself makes it impossible to prevent insect attraction or to wash contaminated grapes, further increasing the risk.

In contrast, the **Slopehelper Grape Picker** ensures a fully **hygienic harvesting process** by keeping **grape bunches intact**, preventing premature **juice formation** that could attract insects. Unlike shaking harvesters, it does not rely on open tanks where flies can settle and contaminate the harvest. With no semi-squashed grape mass, there is no risk of insects sinking into juice tanks before processing. This closed and controlled system guarantees that only clean, high-quality grapes reach the winery, making Slopehelper's technology a significantly safer choice for **wine consumers** and **premium winemakers** alike.

Fully Electromechanical Solution – No Hydraulic or Pneumatic Actuation

The **Slopehelper Grape Picker,** like all **Slopehelper Agrosystem instruments**, operates exclusively on **electromechanical solutions**, without relying on **hydraulic** or **pneumatic actuators**.

By eliminating fluid-based systems, this robotic harvester offers:

- **Higher durability** – No risk of leaks, pressure failures, or maintenance-intensive components.
- **Superior energy efficiency** – Optimized **power consumption**, extending operational runtime.
- **Precision and control** – Smooth, accurate movements that replicate human-like picking actions without mechanical delays.

This robust **electromechanical design** ensures the **Grape Picker** is a fully field-ready, highly efficient, and long-lasting solution for modern **fruit harvesting**, delivering the performance and reliability that growers demand.

Adaptation for Operation on Slippery Terrain

The **Slopehelper Grape Picker** is engineered for stable and precise **harvesting** even on **slippery** or **uneven terrain**. Special **actuators** dynamically adjust the **manipulator frame inclination,** ensuring that robotic arms stay perfectly aligned with the **green fence** and crop, regardless of ground conditions.

Additionally, the self-stabilizing **cargo platform** of the **Slopehelper** keeps the **agro bin** in a constant **horizontal position**, maximizing bin filling efficiency while preventing fruit from shifting or sustaining damage due to terrain irregularities.

This advanced **terrain-adaptive system** ensures safe, efficient, and **damage-free harvesting**, maintaining consistent productivity even in challenging field conditions.

Autonomous Bin Unloading for Seamless Harvesting

When the **Slopehelper Grape Picker** detects that the **agro bin** is full, it automatically initiates the **bin replacement process** to ensure uninterrupted **harvesting**. Here's how the process works:

1. **Notification & Navigation** – The system sends a notification to the operator via the **TeroAir application** and autonomously travels to the designated **download point**.
2. **Automated Bin Handling** – Upon arrival, the **distribution system** automatically opens and parks aside, allowing a **forklift** to remove the full bin and load an empty one.
3. **Seamless Resumption** – After the bin swap, the **Grape Picker** autonomously returns to the exact location where the bin was detected as full and continues harvesting without delay.

This intelligent **automation** ensures continuous operation, eliminates the need for **manual intervention**, and optimizes **harvest logistics** for maximum efficiency.

Technical Specifications

DIMENSIONS	VALUE
Height	2800 mm
Length	5350 mm
Width	2100 mm
Weight of attachment	900 kg
Weight with installed attachment	2800 kg

WORKING DIMENSIONS	VALUE
Maximum height of harvesting	1800 mm
Minimum height of harvesting	500 mm
Maximum depth of harvesting	300 mm
Maximum slope angle	10°
Number of hands	4 (2 lines with 2 hands on each)
Picking speed	550 kg/h
Operation speed	2 km/h

Technical Specifications

GENERAL SPECIFICATIONS	VALUE
Compatibility	SH.056 Slopehelper
Drive method	Conveyor Belt
Number of belts	2
Motor	Brushless motor - BLDC (stepper)