Continental and Land Life Advance Reforestation with Tree Seeding Robot

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Tree Seeding Robot blends Continental’s automotive know-how with Land Life’s reforestation expertise for autonomous, high-quality nature restoration globally

- Innovative sustainability solution: Robot effortlessly navigates through difficult terrain and sows one seed per minute

- In-house development service provider Continental Engineering Services (CES) responsible for innovative autonomous seed module

- Martin Poettcher, Head of GreenTech at CES:

> We are pleased to partner with Land Life and to jointly develop a sustainable solution for the preservation and protection of vital ecosystems. Our collaboration will clearly benefit the environment

Frankfurt, Germany, September 25, 2024. Continental is developing a tree seeding robot together with the nature restoration company Land Life in order to mitigate the effects of deforestation. The robot can sow at a rate of one tree seed per minute, with the remote-controlled vehicle placing up to 60 pits in the ground per hour. This makes it a particularly effective and sustainable solution for reforestation in regions affected by environmental damage.

Continental's in-house engineering and development services provider Continental Engineering Services (CES) and Land Life are collaborating to bring this innovative robot to the market for the first time. Land Life is a global market leader for renaturation and reforestation solutions based in the Netherlands. The company will contribute its in-depth expertise in nature restoration projects. CES, on the other hand, is developing the automatic drilling and seeding module for sowing the seed balls. A robot vehicle from the German

manufacturer Stella Engineering, which is already available in the market, serves as the automated driving unit that carries the robot.

> We are pleased to partner with Land Life to jointly develop a sustainable solution for the preservation and protection of vital ecosystems,

says Martin Poettcher, Head of Business Center GreenTech at CES.

> We have adapted the robot to our proven, robust automotive technology so that it can operate in an automated and safe way, even in rough terrain. Our collaboration will clearly benefit the environment.

According to a monitoring report by the World Resources Institute (WRI), global forest loss increased by 24 percent in 2023: from 22.8 million hectares in 2022 to 28.3 million hectares in 2023. The loss of tropical rainforest is particularly serious. In total, around 37,000 square kilometers (3.7 million hectares) disappeared in 2023 – a forest area much larger than Belgium. According to the WRI, the world has lost three to four million hectares of tropical forest per year over the past two decades. Areas of mature rainforest are particularly important for biodiversity, carbon storage, and the regulation of regional and local climate impacts.

In view of the serious effects climate change has, with forest fires and also the ongoing clearing of forests, the restoration of ecosystems has never been more urgent. However, conventional reforestation methods are often impractical, especially in inaccessible terrain. More advanced solutions are needed. This is where the seeding robot offers new possibilities for restoring vital tree populations – thus protecting climate and biodiversity.

Sustainable, practical and natural restoration, thanks to automotive expertise

> Our collaboration with CES will strengthen biodiversity while expanding natural ecosystems. This synergy of CES' automotive know-how with Land Life's reforestation background is advancing the approach to autonomous, high-quality nature restoration worldwide,

explains Harrie Lövenstein, Head of R&D at Land Life.

> Our partnership represents an interdisciplinary approach that is essential for the development of innovative technologies which will protect ecosystems in the future. Continental’s automotive expertise in the development of high-quality and robust technologies and innovations that are necessary in the automotive environment has allowed us to make major advances in innovative reforestation technologies that would have been unimaginable just a few years ago.

The sowing robot offers many advantages over conventional sowing and planting techniques. For example, it relies on an innovative, fully automatic direct sowing method. The drilling and sowing module developed by CES is at the heart of the automated sowing machine. And this is how it works: first, ground-covering weeds and grasses are removed. The robot then drills a hole at optimum depth and width for the soil and tree. A seed ball is dropped into the drilled hole using compressed air, and the soil that was initially drilled out is then emptied back over the seed. The whole process takes less than a minute.

Use of the seeding robot for global reforestation

Reforestation projects in geographically-diverse regions globally require a highly-versatile solution. Such an offering must effortlessly sow native seeds in various shapes and sizes while navigating through dramatically different terrains including rocky and sandy zones, extreme inclines and sharp slopes, and slippery surfaces covered with branches and debris. The electrically-powered seed drill must guarantee high-quality precision sowing and follow a predetermined sowing plan. The innovative technology developed by CES ensures optimum embedding of the seed. The robot is designed for reliable and robust performance in difficult environments and is able to cope with varying soil conditions, strong weather, dust and extreme temperature fluctuations. This allows large areas of degraded soil to be restored quickly and effectively. This innovation is not just about planting trees but securing a sustainable future.

CES is developing sustainable technologies to protect the environment

CES is increasingly being called in for "green" development projects. The engineering services provider's GreenTech division pursues a

holistic approach to ecological sustainability, for example by using artificial intelligence (AI) to increase the energy efficiency of technology systems and machines. This results in a variety of innovative technological solutions. CES recently developed a weed control system for the automatic removal of weeds and the protection of crops. The system combines proven automotive sensor technology and AI to enable ecological, environment-friendly weed management. The tree seeding robot is the next step towards environmentally conscious care of vital ecosystems.

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