SUNTRACKER TECHNOLOGIES

Tel 778-433-7868
Suite 303-31 Bastion Square
Victoria, BC, Canada V8W 1J1
info@suntrackertech.com
www.suntrackertech.com

ASABE AE50 Product Awards

Contact Information

SunTracker Technologies Ltd.
Attn: Ian Ashdown, Senior Scientist
Suite 501 – 747 Fort Street
Victoria, BC V8W 3E9
Canada

Exact Product Name and Company Information

Cerise365+GreenHouseDesigner™

New Product or Major Modification

New product.

Abstract

Cerise365+GreenHouseDesigner™ (aka *GreenHouseDesigner*) is a Software-as-a-Service (SaaS) application that enables users to design horticultural lighting systems for their greenhouses and vertical farms using only a web browser. No computer-aided drafting (CAD) experience is required, as the program automatically generates greenhouse and vertical farms models using only a few basic user-specified parameters. The user selects horticultural luminaires from a list of major manufacturers, and the program calculates Photosynthetic Photon Flux Density (PPFD) distributions on a two-foot grid at the plant canopy. The program can also calculate monthly Daily Light Intergral (DLI) distributions inside the greenhouse, based on geographic location, building orientation, greenhouse roof style, and historical weather records.

Official Product Trademark, name, model and/or series

Cerise365+GreenHouseDesigner™

Date when product was or will be first available for ordering or purchase

January 10, 2022.

Website where product is offered for sale

https://www.heliosolsoft.com/greenhousedesigner/

Which area of principal use is this product or system designed for

Horticultural lighting design for greenhouses and vertical farms, including climate-based daylight analysis based on historical weather records and weather satellite data.

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Does this product qualify as a component, machine, or system?

System.

Is the product an application of new technology or a new application of existing technology?

GreenHouseDesigner is derived from SunTracker Technologies' *Cerise365*™ architectural and roadway lighting design and analysis software, an OEM product that has been in production since 1996, and which is currently used by an estimated 25,000 professional lighting designers worldwide.

Why is this product a worthwhile contribution to advancing engineering in agricultural, food, and biological systems?

Horticultural luminaire manufacturers currently offer the clients proprietary "light plans" that are calculated using architectural lighting design and analysis programs such as Lighting Analysts' *AGi32* and DIAL's *DIALux*. (Lighting Analysts licenses our *Cerise365* software for its products.) Unfortunately, these programs require considerable experience and training, and do not support horticultural lighting metrics such as PPFD and DLI.

GreenHouseDesigner is designed specifically for horticultural lighting design. In addition to calculating supplemental electric lighting in greenhouses and table and tray lighting in vertical farms, it performs climate-based daylight analysis to calculate monthly DLI distributions inside the greenhouse, taking into account hourly sky conditions and glazing reflectance properties.

What innovative techniques were used to develop this product or system and how did they influence the results?

GreenhouseDesigner uses a patented parametric CAD engine to automatically generate detailed CAD models of greenhouses and vertical farms based on user-specified parameters for building geometry and materials. It also employs a patented climate-based daylight analysis engine for monthly DLI calculations.

Which markets or industries will benefit from this development and how will they benefit?

Horticultural luminaires manufacturers and distributors can quickly prepare estimates for potential clients, followed by more detailed designs for confirmed orders.

Greenhouse manufacturers can estimate electrical power needs and layouts for supplemental electric lighting.

Vertical farm operators can confirm PPFD distributions and uniformity on their tables and trays, and determine electrical power needs for planned installations. They can also compare the performance of horticultural luminaires from different manufacturers.

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Greenhouse operators can confirm daylight PPFD and monthly DLI distributions within planned or existing greenhouses to: 1) assist in choosing an appropriate roof design; 2) orient the building for optimal PPFD and DLI distribution; 3) compare direct versus diffuse daylight distributions based on glazing selection; 4) determine the need for curtain systems based no maximum PPFS; and 5) predict monthly energy costs for supplemental electric lighting.

Utility companies can predict or verify the estimated electrical power requirements of greenhouses and vertical farms.

How large is the total estimated market (in dollars and/or units)?

It is risky to predict an estimated market, as *GreenHouseDesigner* offers novel capabilities that have no historical precedence. However, market research reports indicate that the global lighting market is valued at $150 billion a year, with greenhouse lighting accounting for approximately $5 billion of this. The market for architectural lighting design software is estimated at $30 million per year, which suggests a market of one million a year for *GreenHouseDesigner*.

What is the retail price of the product or system?

An annual subscription with up to five concurrent users is $5,000 USD per year, targeting corporations.

Has a patent been issued or applied for? Is the product trademarked or registered?

Cerise365+GreenHouseDesigner™ is protected the following patents:

U.S. Pat. Nos. 9,078,299; 9,955,552; 10,289,094; 10,290,148; 10,448,483; 10,514,671; 10,785,849; 10,796,479; 10,952,302; 11,002,606; 11,080,441; 11,085,819.

Is there a similar product or machine offered by a competitor?

No. *GreenHouseDesigner* is unique.

Include product literature and diagrams

See https://www.heliosolsoft.com/greenhousedesigner/

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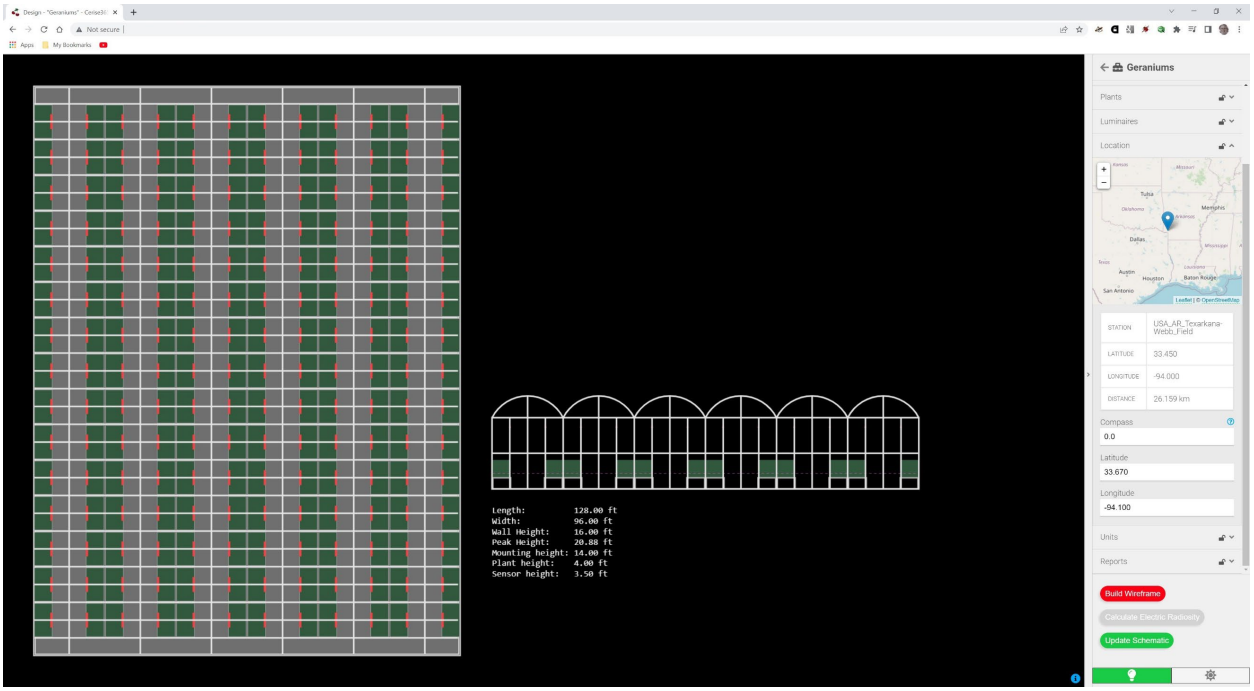

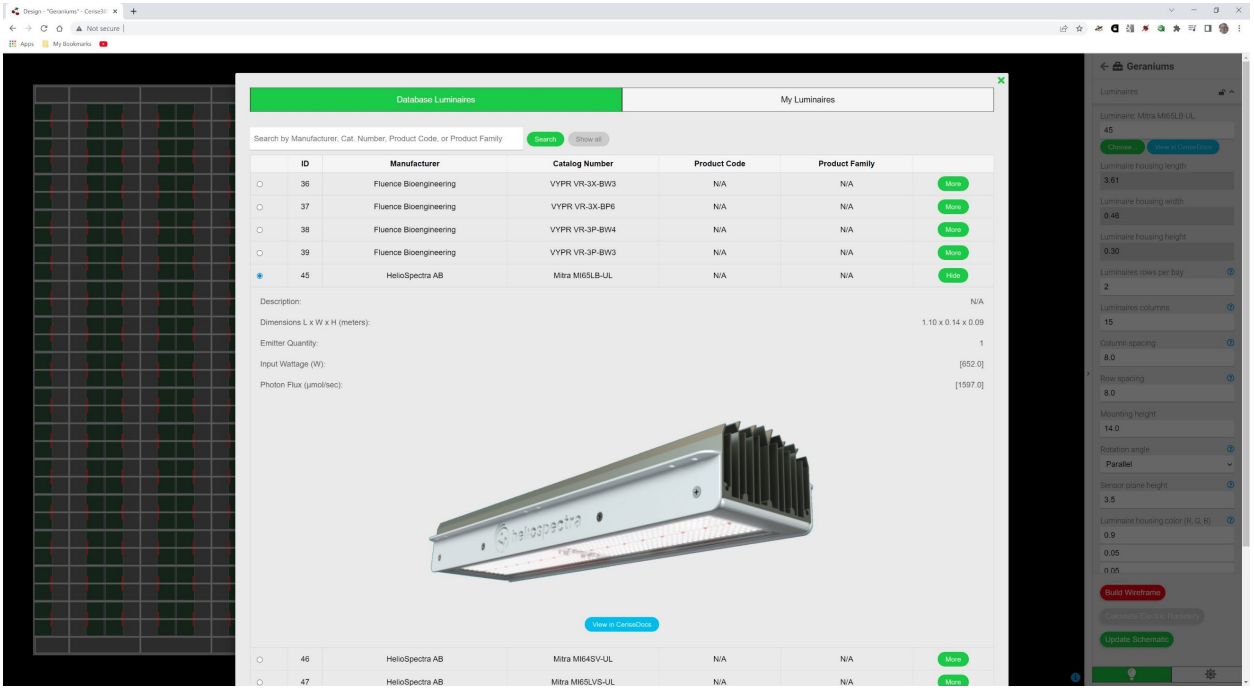

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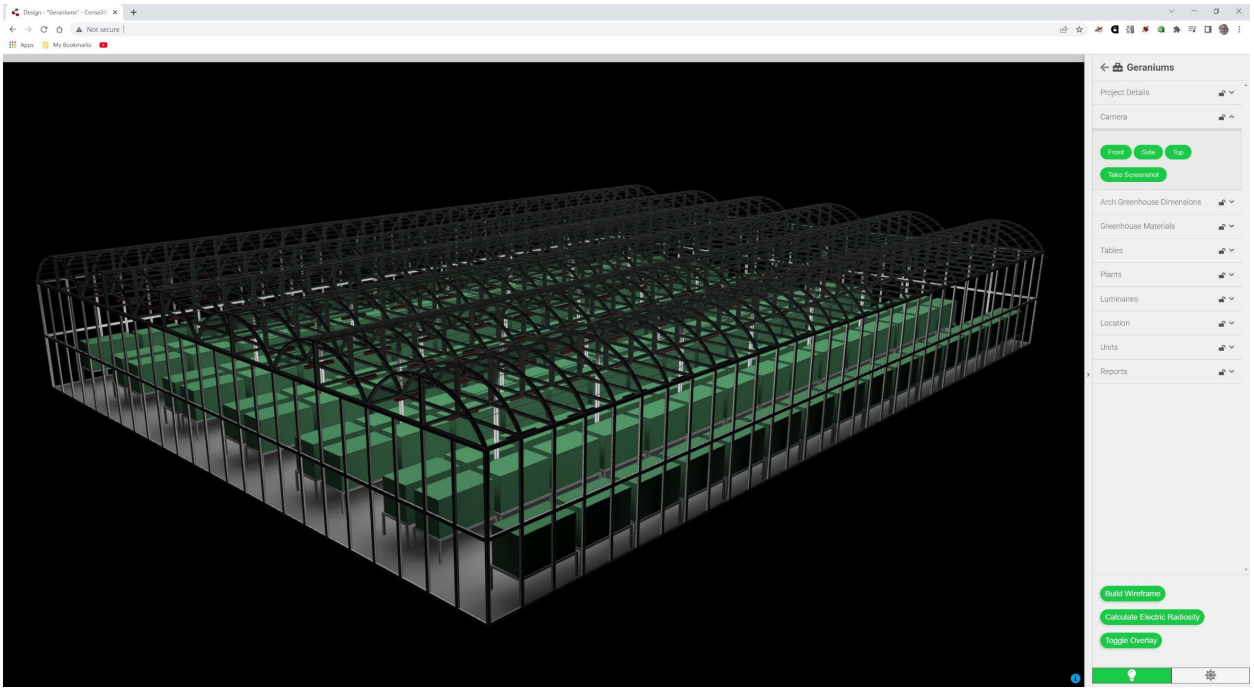

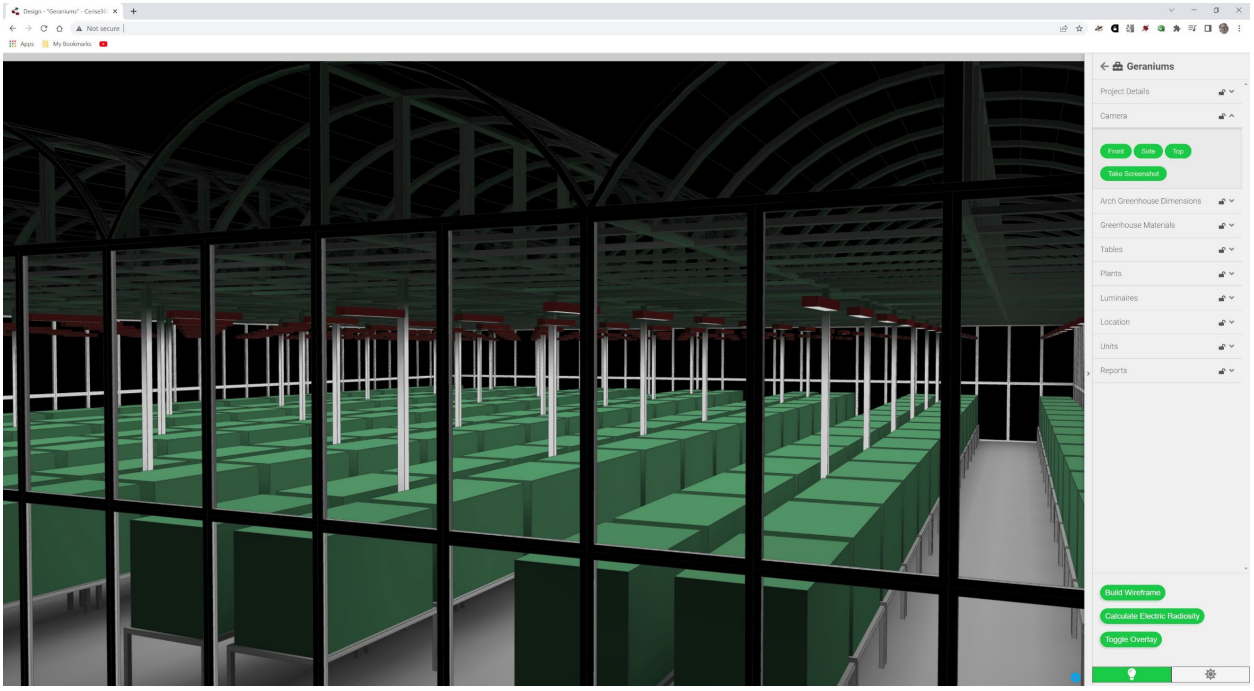

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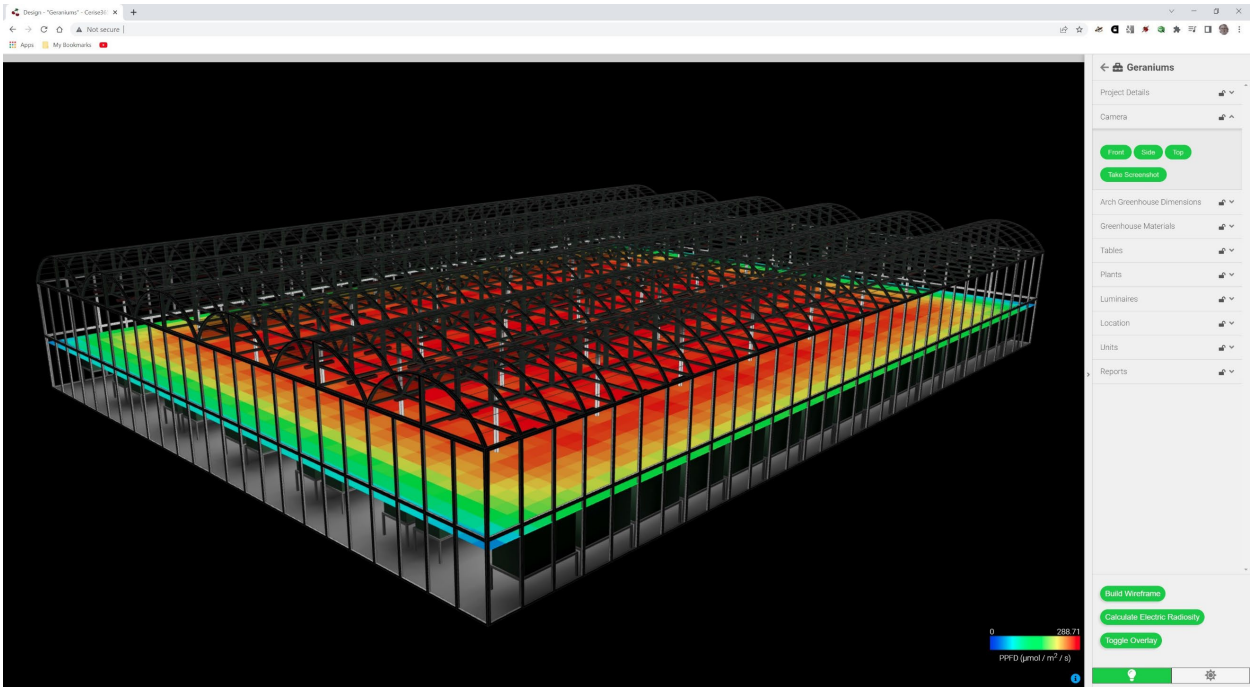

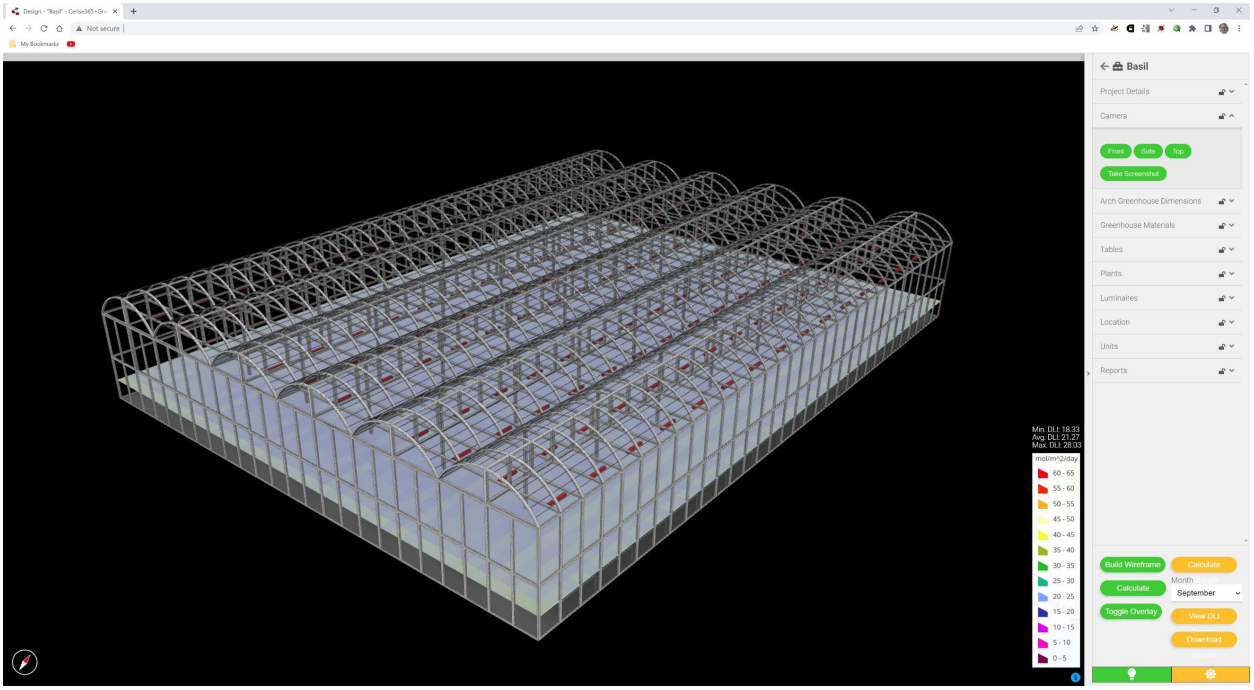

Include a high quality image (at least 1 mb in file size, 300 dpi)

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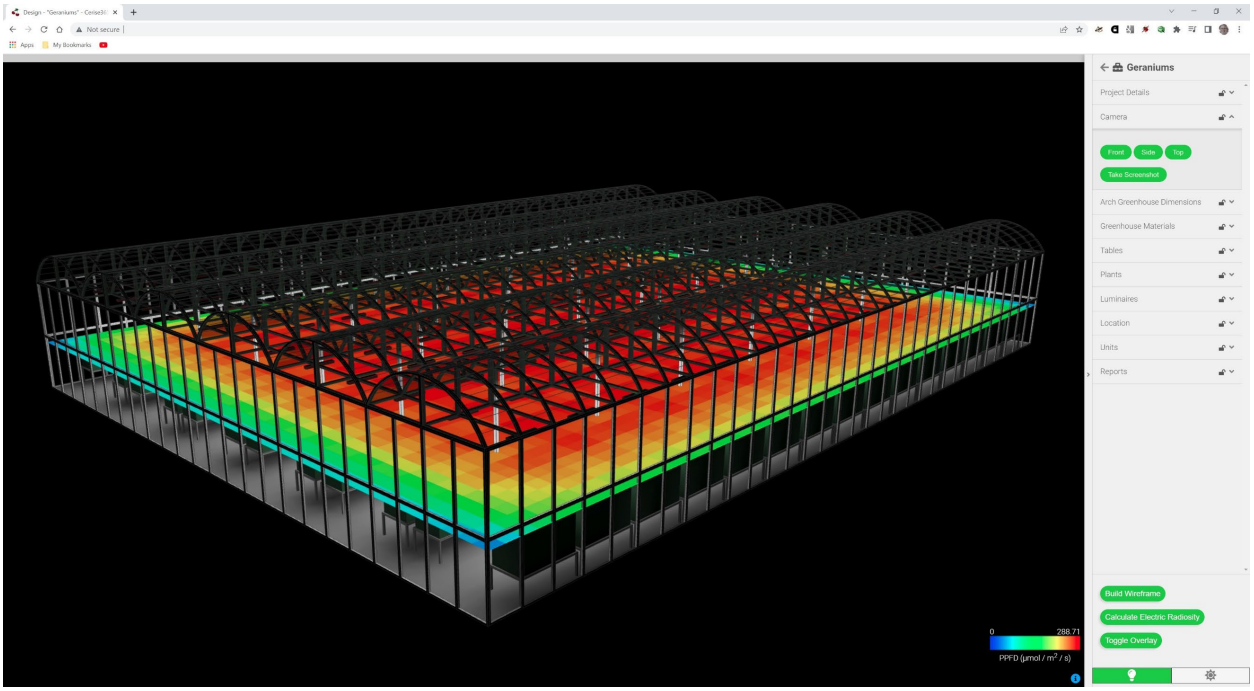

Include a promotional video, featuring the product, no longer than 30 seconds, share via YouTube link.

See https://youtu.be/S5WmvbKRYA4

More videos in production – visit:

https://www.youtube.com/channel/UCJHu2o1Pi9w74d6Ce4kRMmQ

for latest videos.