DEHN Protects

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The Lightning Guys

Session 2: *Power & Lightning (Surge) Protection*

February 17, 2021

DEHN's Mission Statement

DEHN's mission is to provide world class Lightning and Surge protection solutions for people, building installations and electrical/electronic devices and systems against the effects of lightning and surges. For the past 111 years, we have been leading the industry in surge protection, lightning protection and safety equipment. DEHN protects.

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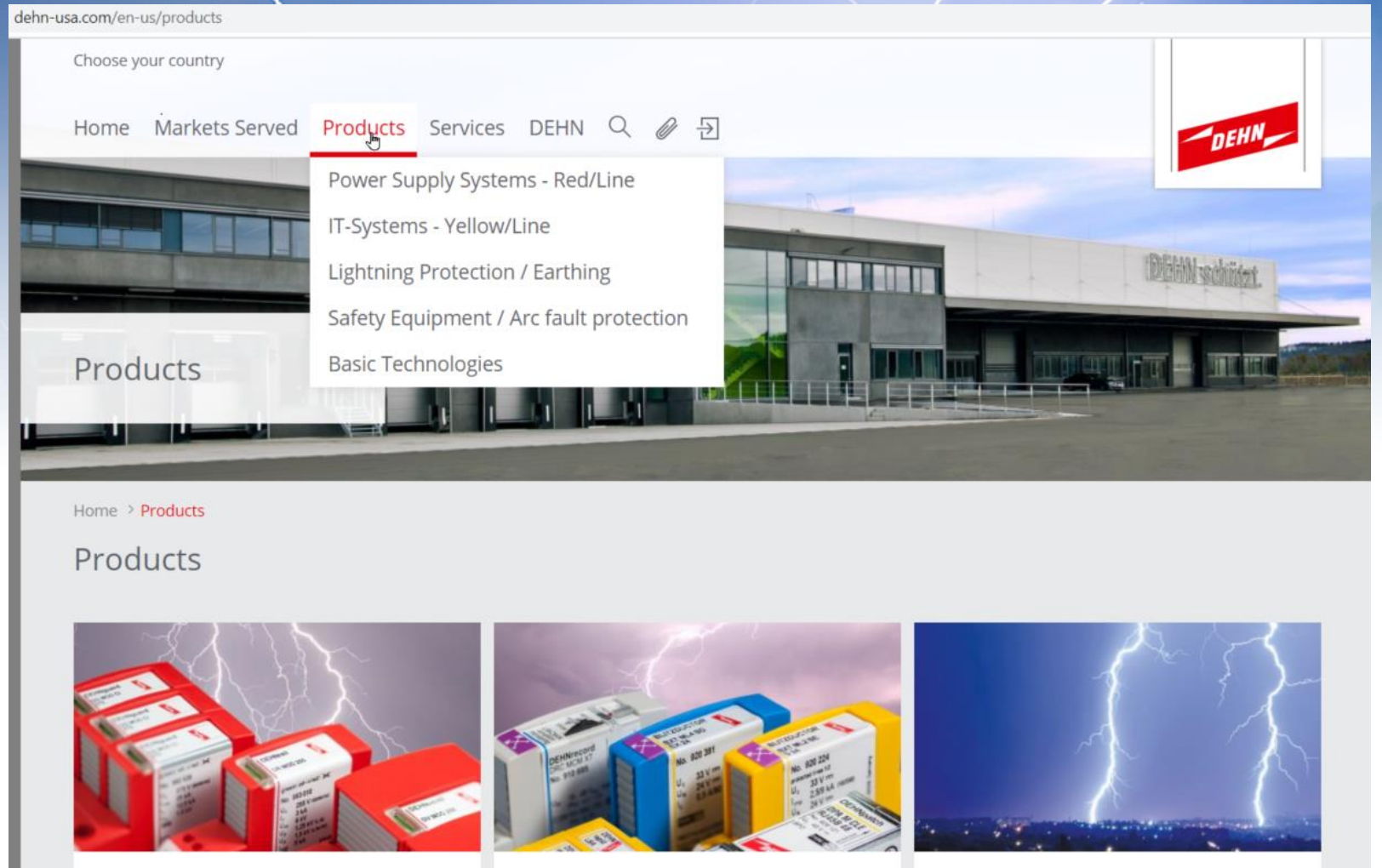
Who we are:



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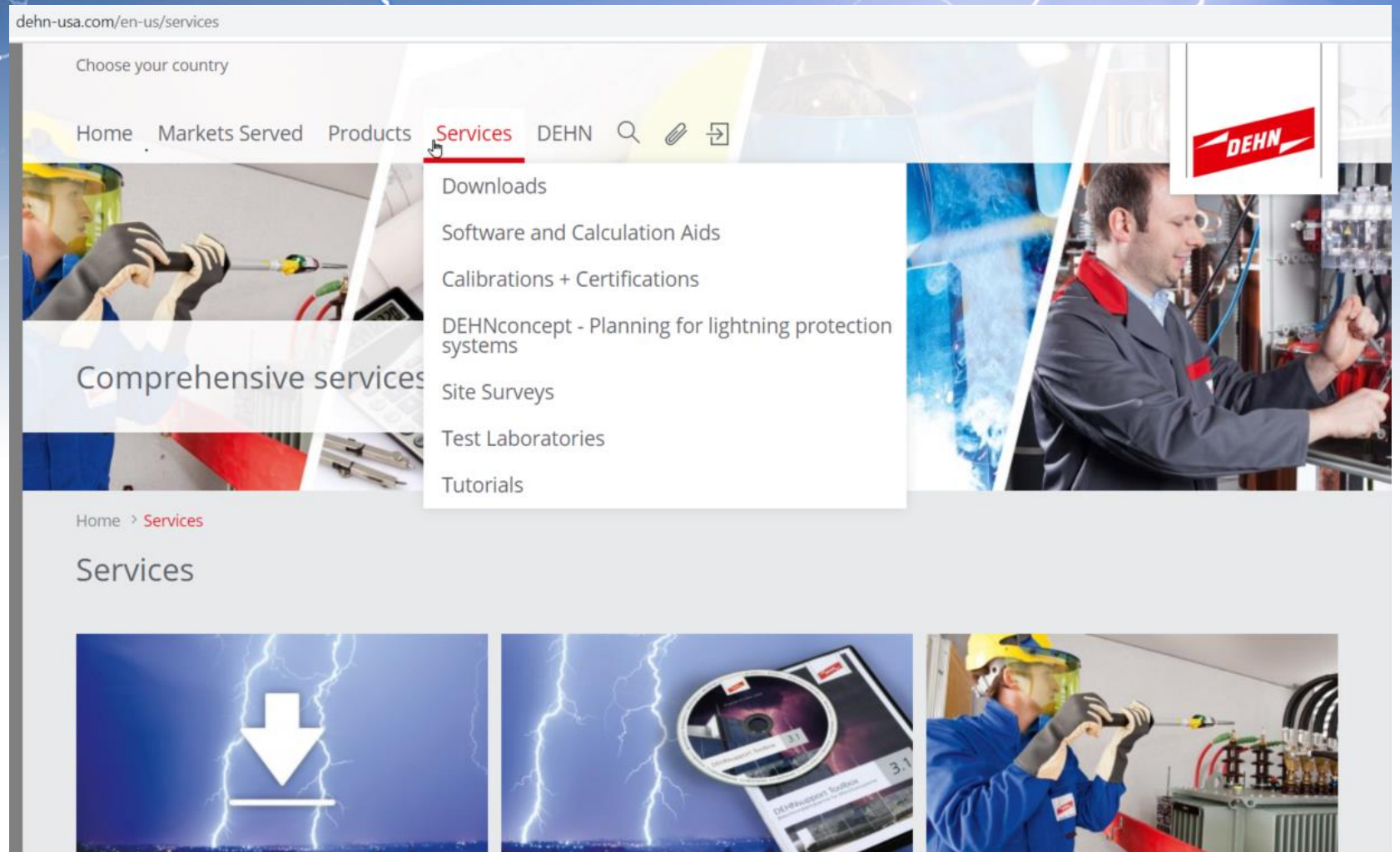
What we do:



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DEHN Inc. is pleased to announce another successful installation of our unique High Voltage Insulated (HVI) lightning protection Franklin rod solutions for composite structures.

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1. IEC 62305-2 Risk Report (Software v.16/29 3.102)

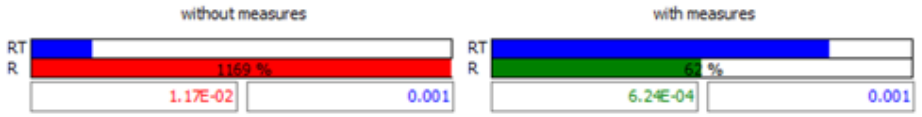
Created for the site in accordance with international standard IEC 62305-2:2010-12 using DEHNsupport Toolbox (ver. 16/29 3.102) software and mitigations methods for this PV site.

The remedial / suggestions for improvement to reduce risk below the industry tolerable thresholds are reviewed in detail.

7.2 Risk R2, Service to the public

The risk R2, failure of services to the public, was determined for the structure Plant to be 11.7 times over the industry acceptable limit of 1 in 1,000 lightning strike occurrences:

Tolerable risk R_T:	1.00E-03
Calculated risk R2 (unprotected):	1.17E-02
Calculated risk R2 (protected):	6.24E-04



8. Selection of protection measures for improved lightning Risk Management

8.1 Air Terminations
8.2 Down Conductor and Separation Distance
8.3 Earthing Grounding and Bonding
8.4 Electrical Surge Protection
8.5 Cathodic Protection
8.6 Personal Protective Equipment
8.7 Maintenance Plan

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2. Grounding and SPD Site Report

Site survey with visual inspection, soil resistivity measurements and pigtail measurements with suggested corrective actions. Analysis of line drawings, switch gear and control panels to select surge protection devices for critical electrical applications per IEC 62305-2

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3. Touch Step/Ground Potential Report (XGS Software)

Follow up analysis of critical structure using site earthing measurements to simulate fault current and lightning strike voltage potential behavior and risk.

The table of contents of the report, some of the key touch step voltage rise simulation and the remediations suggestions on the right image showing green additions to existing red ground grid lines in the soil.

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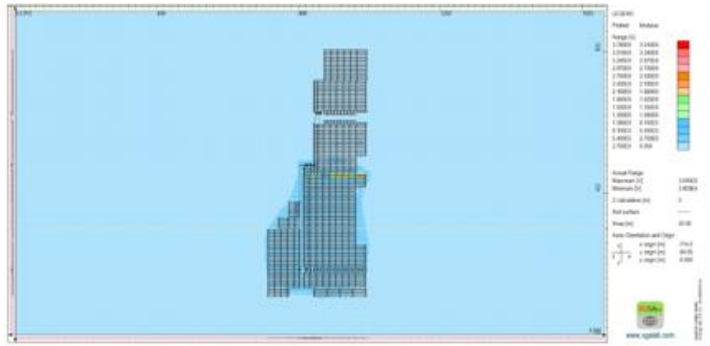


FIGURE 9: GPR 2D VIEW DURING DIRECT FIRST NEGATIVE STROKE

As seen in Figures 19 and 20, the GPR is localised with a very steep rate of rise. This is as expected for high frequency current injections (in this case 250kHz).

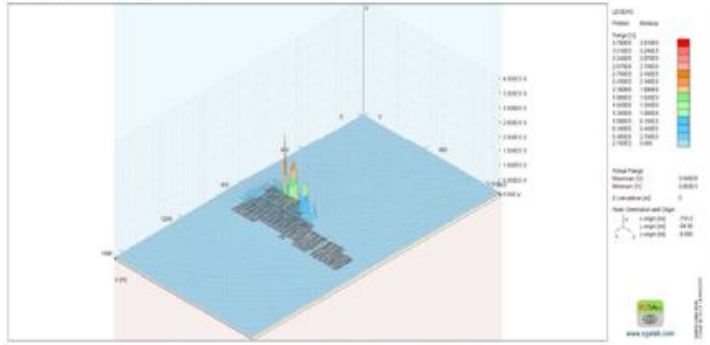
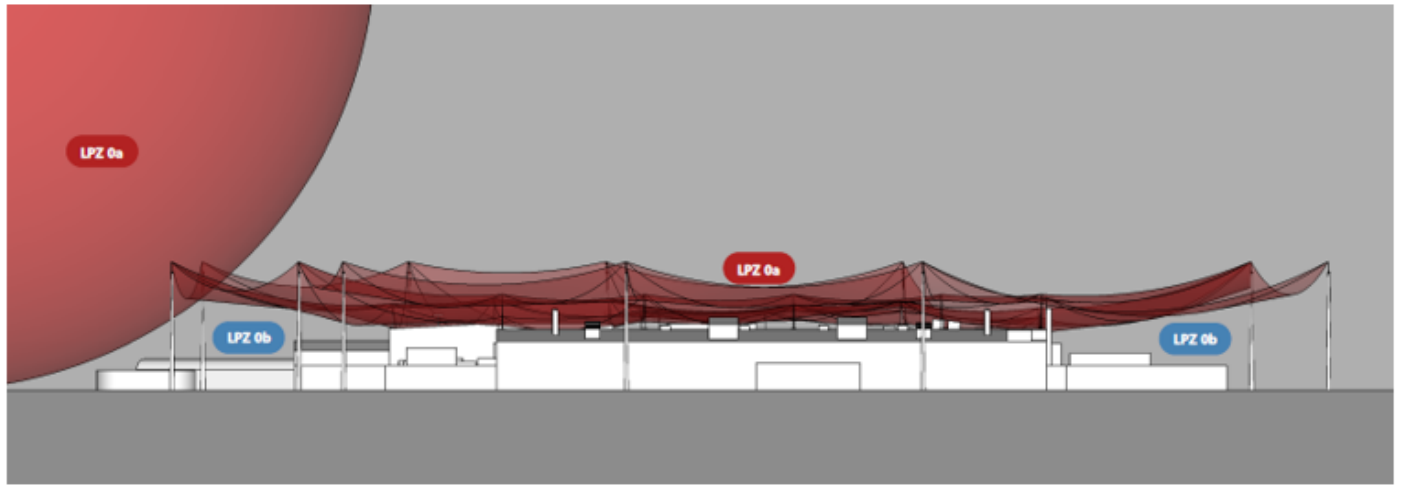


FIGURE 10: GPR 3D VIEW DURING DIRECT FIRST NEGATIVE STROKE

4. External Lightning Protection Design

Follow up analysis of critical buildings/structures and rolling sphere calculations to draft the external lightning protection system per IEC 62305-3 including suitable PE stamped drawings. The typical coverage calculations will look as illustrated:



Thanks and be sure to see us on linkedin
and visit us at DEHN-USA.com