# DAS2.0 Webpage User Manual

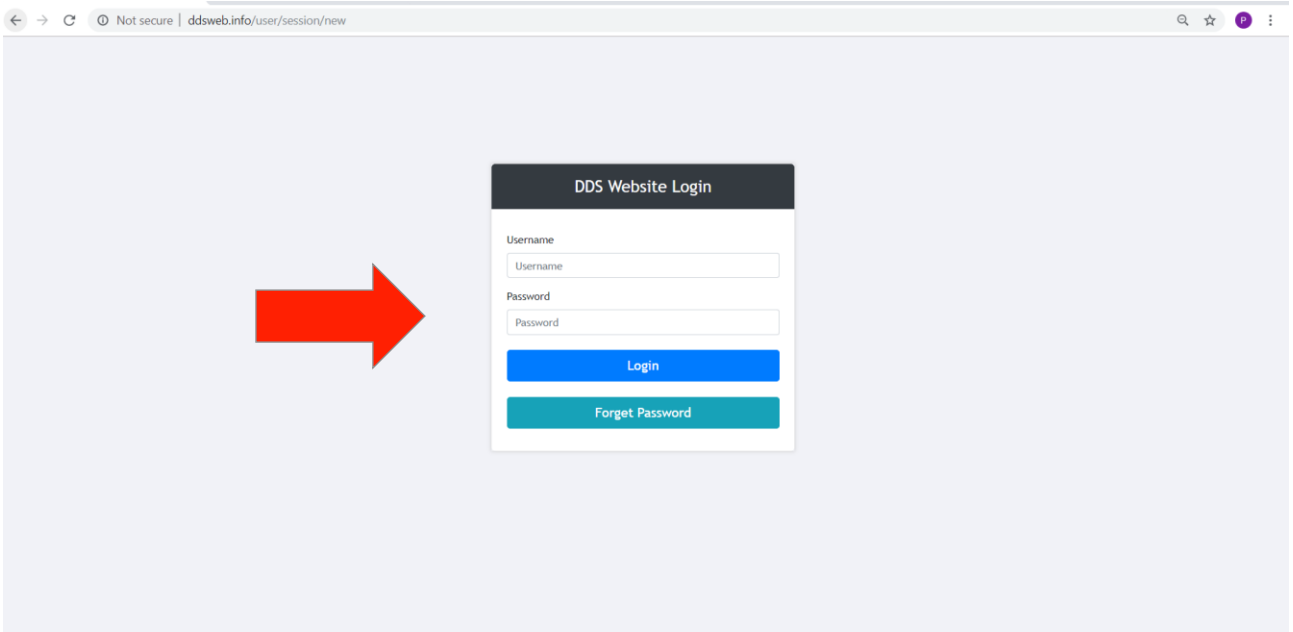
March 20th, 2024

kiwa EXTEL

We Create Trust

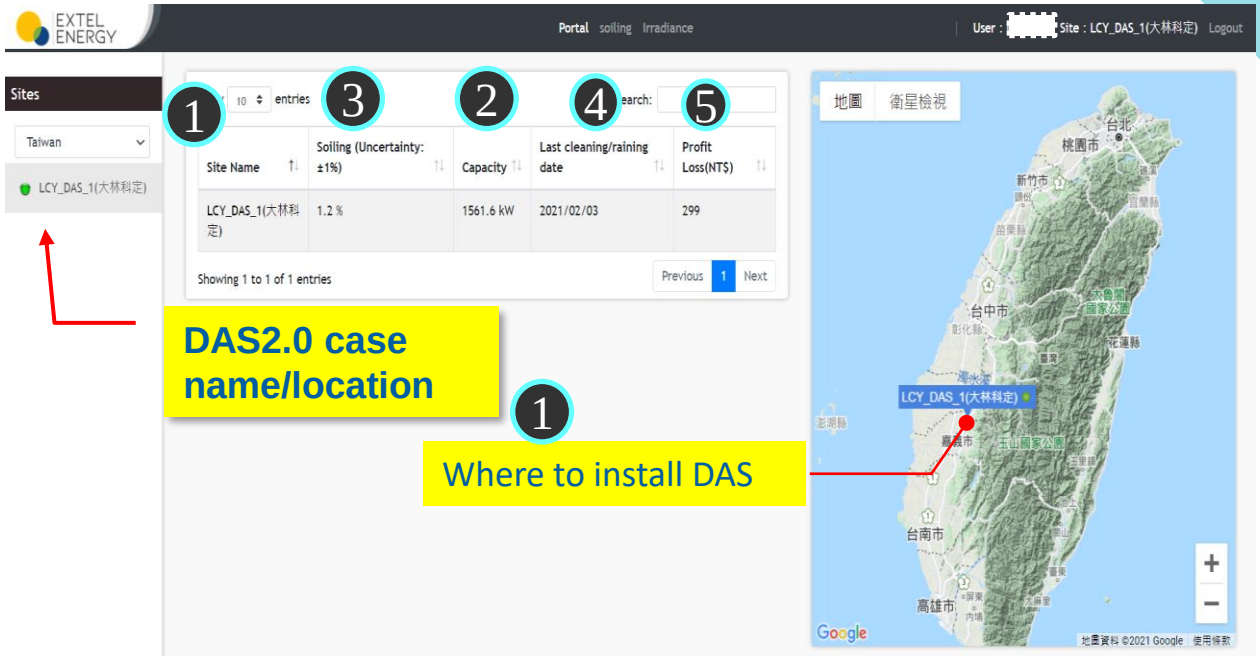
# DAS2.0 Exclusive Webpage Login

- URL: http://pva.extelenergy.com
- Please enter your username and password



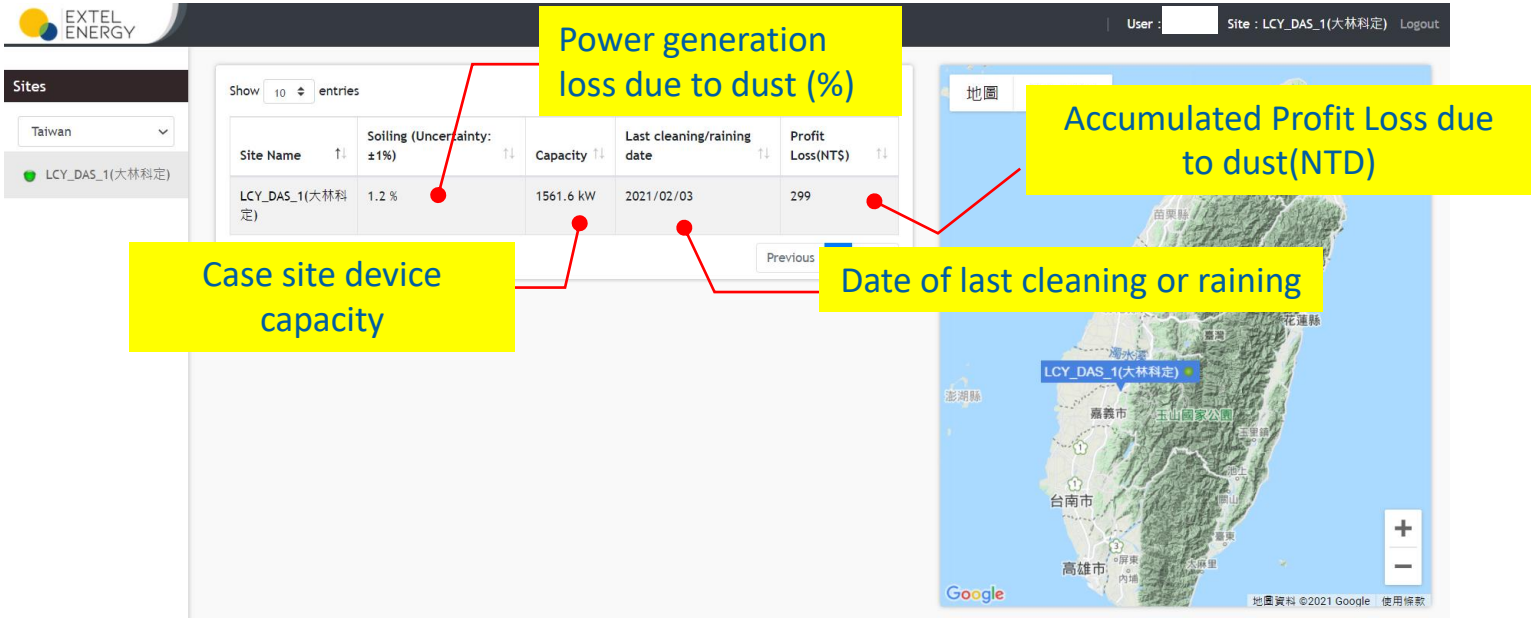
# DAS2.0 Main Page_1

- The main page (Portal page) displays the following key information:
  1. Site location
  2. Installed capacity
  3. Current soiling loss (%)
  4. Last cleaning date
  5. Power generation loss due to soiling, etc.



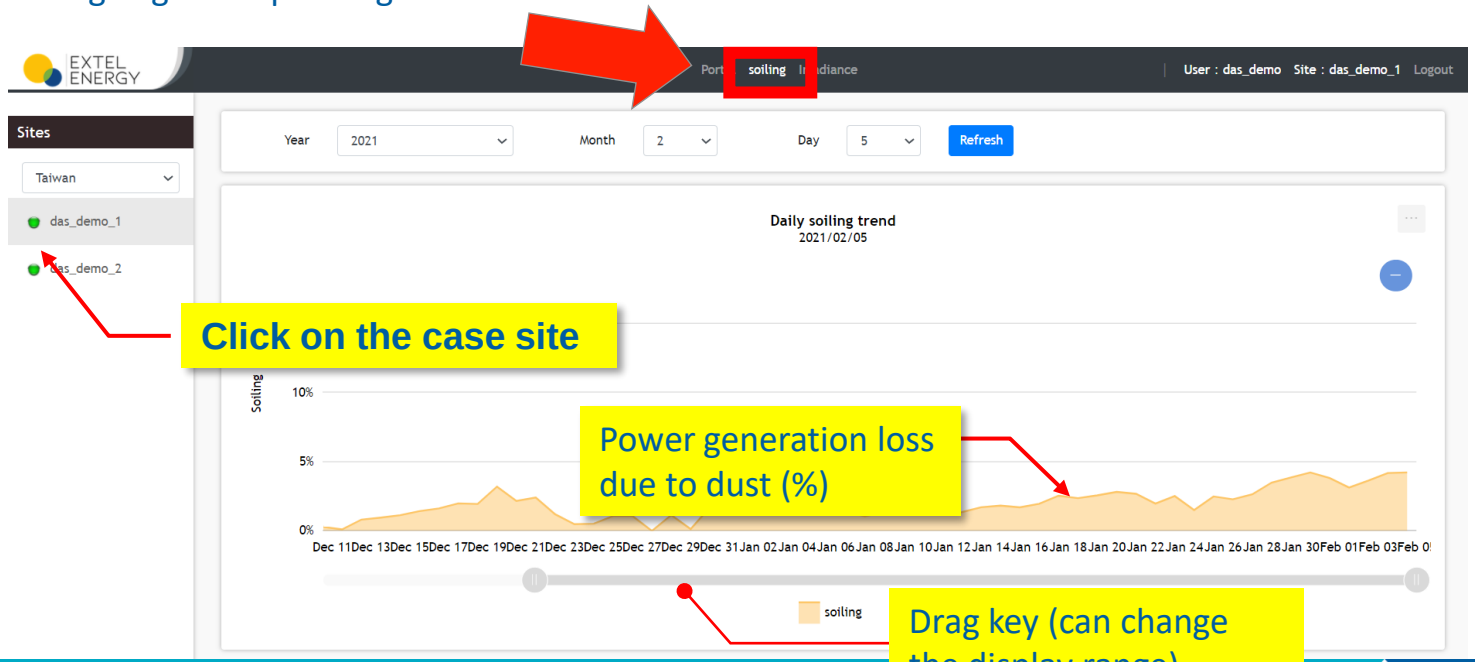
# DAS2.0 Main Page_2

- Users can quickly grasp the degree of contamination of the case site on the home page and determine whether to proceed with cleaning based on the last cleaning date, case site size, and power generation loss, as well as the priority of cleaning.



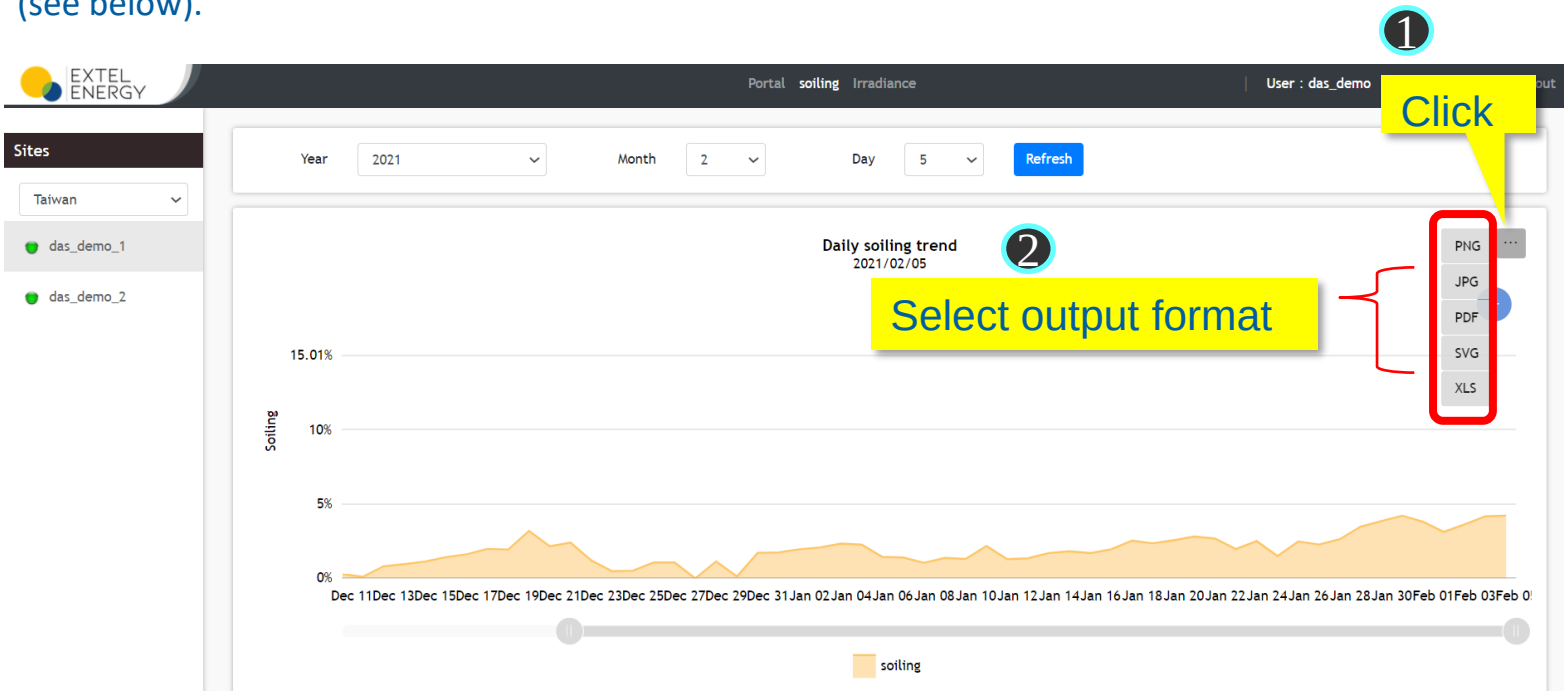
# Soiling Loss Trend Chart_1

- The dust trend chart shows the daily power generation loss (%) caused by dust at each site, e.g. If the loss is 0%, it means that the module surface is clean. On the contrary, the higher the number, the surface is seriously dirty, resulting in greater power generation loss.



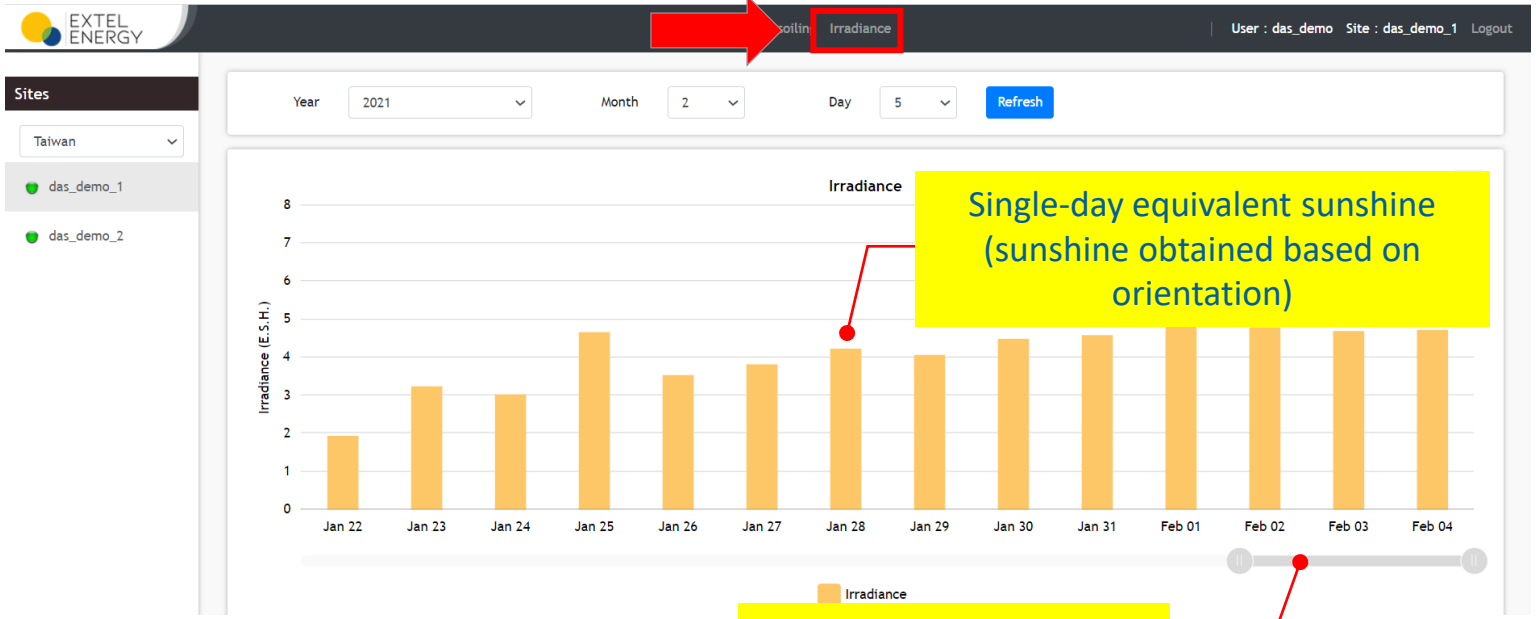
# Soiling Loss Trend Chart_2

- If users need further data analysis, they can download daily soiling data from the trend chart page (see below).



# Equivalent Irradiance Bar Chart_1

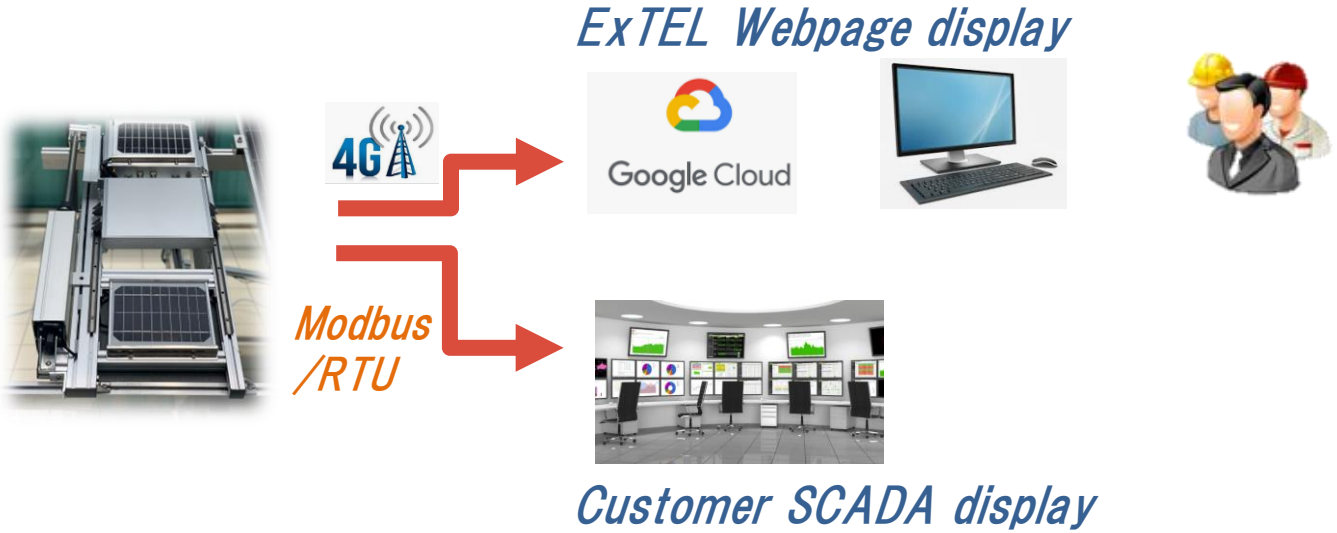
- According to the DAS2.0 system measurements, the daily irradiance data is directly displayed on the Irradiance tab.
- The ESH value is the equivalent irradiance hours per day (06:00-18:00).



# Appendix

# Data Transmission Method – 4G Webpage (KIWA EXTEL) / SCADA (Customer)

- DAS 2.0 provides two data interfacing options:
  1. DAS 2.0 Webpage display (4G webpage provided by Extel Energy)
  2. Modbus/RTU direct communication with on-site SCADA (customer data collector)



# DAS Modbus Communication Protocol (Optional)

*Read Holding Registers (0x03)*

| Addr | Variable description | Units | Size | Read / Write |
|---|---|---|---|---|
| 0x00 | Date_1 | YYYY | 2_byte | Read Only |
| 0x01 | Date_2 | MMDD | 2_byte | Read Only |
| 0x02 | Soiling Gap | *0.01+% | 2_byte | Read Only |

Send : 01H+03H+0000H+0003H+05CBH(CRC)

Response : 01H+03H+06H+07ECH+0A0FH+0CAFH+C7B2H(CRC)

**Example**

**Send**：01 03 00 00 00 03 05 CB

**Response**： 01 03 06 07 EC 0A 0F 0C AF C7 B2

YYYY =>0x07EC = 2020 MMDD=>MM+DD=>0x0A0F=1015

Date=2020/10/15

Soiling Gap=>0x0CAF=3247*0.01% =32.47%

# DAS Modbus Communication Protocol

***ID Setting***

***Preset Single Register (0x06)***

Send : 01H+06H+001FH+AAH+ (id code)H+(CRC)

Response : (id code)+06H+001FH+AAH+(id code)+(CRC)

**Example：**

**Send ：**01 06 00 1F AA 03 86 AD

**Response：** 03 06 00 1F AA 03 87 4F

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