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Managing actual production vs. projected economics of PV solar plants

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The economic success of a solar plant is measured by its contribution to net revenue growth of the investor. When assessing the feasibility of solar projects, investors make use of a variety of models to project what the expected solar production is and how this translates into saved costs. In addition, there may be industry incentives such as tax breaks, subsidies and grants. What happens in reality can differ considerably to the projection models. This deviation from expected can be caused by a number of environmental factors, such as solar radiation being lower than expected. However, deviation can also be caused by under performance of the solar plant because of poor maintenance, inefficiencies, bad design, lack of system monitoring. As these industries mature and investors understand the risks that are controllable in solar plants, the focus shifts from low capex to a low LCOE over the lifetime of the plant. The lifetime production and performance of the solar plant becomes more important for investors as they seek to enhance yield through owning solar assets. The main controllable risks are: Technology, product quality, design, in-depth monitoring, fast response to troubleshooting, cleaning panels regularly, grid blackouts, interest rates and currency exchange. There are good ways of mitigating against these risks through following rigorous, well-tested principles and partnering with the right installer. There are risks that are out of control. These are weather, client usage, grid-stability and force majeure events. These risks should be insured or absorbed to ensure the investor achieves their target returns.

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Co-digestion effect of food waste leachate in the in-situ biogasification of sewage sludge in South Korea

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This study was to find out co-digestion effect of food waste leachate in the in-situ biogasification of sewage sludge in South Korea. The 4 facilities for the biogasification of sewage sludge and 8 facilities for co-digestion treating sewage sludge and food wastes were selected as a target for this study. Precision investigation (methane yield, organic loading rate, etc.) was conducted during January 2015 to June 2016. Table 1 presented methane yield with food waste leachate additions in the biogasification of sewage sludge in ongoing biogasification facilities of sewage sludge mainly. Additions of food waste leachate gave an effect on methane yield in the anaerobic digestion of sewage sludge. Methane yield of sewage sludge was 0.199 Sm3CH4/ kgVSin. Methane yields of sewage sludge adding food waste leachate dramatically increased from 0.298 Sm3CH4/kgVSin to 0.458 Sm3CH4/kgVSin according to an increase of quantity of food waste leachate from 6.0% to 63.0%, respectively. Inhibition factor of anaerobic digestion such as volatile fatty acid, NH4+-N, and VFA/alkalinity ratio, etc., were investigated, and pointing out stable digesters under 590 mg/L, 2,340 mg/L, and 0.15, respectively. Removal of nitrogen and phosphorus has been increasingly issued in the sewage treatment plant. Even though the additions of food waste leachate give the favorable effect of anaerobic digestion of sewage sludge, accumulation of nitrogen and phosphorus in accordance with the additions of food waste leachate could not be understated. Total nitrogen and phosphorus in dewatering supernatant of digested sludge were 1.04% and 0.86% of design capacity of the sewage treatment plant, respectively. Therefore, the additional input of food waste leachate in the anaerobic digestion gives an advantageous effect for an increment of methane productivity without any huge hindrance up to 60% of food waste leachate mixing with sewage sludge in in-situ digestion system in South Korea.

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