Interview Transcript 1: Participant P1 (Maintenance Engineer, Noida)

Interviewer: Can you share a little bit about your current job? What experience do you have in the solar power area?

P1: As a maintenance engineer, I have worked for this solar power facility in Noida for approximately six years. My primary responsibilities include overseeing the regular maintenance of the solar panels, troubleshooting technological issues, and ensuring the facility operates as effectively as possible.

Interviewer: How long have you been looking after solar power plants?

P1: I have worked in the solar power plant maintenance sector for the majority of my six years.

Interviewer: What obstacles have you faced while maintaining the efficiency of your solar power plant?

P1: The biggest issue we have is dust accumulation, especially during the dry seasons. The panels' efficiency is significantly reduced if they are not cleaned on a regular basis. Shadowing from nearby trees is another problem, particularly in the early morning and late afternoon.

Interviewer: In your experience, do you think dust on the panels affects how well they work?

P1: Dust can reduce the efficiency of the panel by up to 15% if it is not cleared. We have noticed that dirty panels seem to generate much less electricity.

Interviewer: How does shadow impact the plant's ability to produce electricity?

P1: Shade can get bad. Even slightly darkening a few panels can reduce the output of the entire string by as much as 80%. We've had to occasionally prune some trees and cut down others to alleviate this issue.

Interviewer: What upkeep procedures are in place now to deal with problems like dust buildup and shade?

P1: Twice a week, our automated cleaning system works. We've marked out the most impacted places for shading, and we routinely prune the surrounding plants.

Interviewer: How frequently do you maintain or clean the solar panels? Which techniques do you employ?

P1: Twice a week, the panels are cleaned by the automated system. Every month, we also perform a manual examination to look for any new problems that might need to be fixed.

Interviewer: Have you seen any adjustments in performance following maintenance or cleaning tasks?

P1: Definitely, yes. Power output improves by 10% to 15% right away upon cleaning.

Interviewer: What impact do weather conditions like wind, humidity, and temperature have on solar panel performance?

P1: The panels' efficiency is decreased by high temperatures. Humidity increases the stickiness of dust, making cleaning more difficult. Although wind helps remove loose dust, it also attracts more material.

Interviewer: Have you put any plans in place to lessen these environmental factors' detrimental effects?

P1: To lessen the effects of warmth, we've added cooling systems for the panels. To clean the panels more regularly throughout the humid season, we have also modified our cleaning schedule.

Interviewer: What tactics, in your opinion, might be used to raise the efficiency of the solar power plant?

P1: Cleaning more frequently might be beneficial, particularly during the dry season. Advanced technologies such as robotic cleaners that can function on a regular basis without human assistance are also being investigated.

Interviewer: Do you think any cutting-edge methods or technologies could be implemented to improve performance?

P1: AI-driven predictive maintenance has a lot of potential, in my opinion. It would enable us to plan maintenance in accordance with issues before they impact performance.

Interviewer: How do you keep an eye on the solar panels' performance? Which metrics are you monitoring?

P1: We employ a remote monitoring system that continuously monitors defects, temperature, and power output. Finding out when and where maintenance is required depends on this data.

Interviewer: Have you seen any trends in the performance data that point to certain areas that need work?

P1: It is true that during the dry season, when dust accumulation is at its highest, efficiency considerably decreases. This implies that maintaining efficiency during these months may be aided by more regular cleaning.

Interviewer: Would you like to add anything more about the efficiency of solar power plants or the difficulties you encounter?

P1: The secret to keeping these facilities operating at peak efficiency is simply frequent maintenance. We would perform much worse without it, which would affect our total energy production.

Interviewer: Do you have any suggestions for additional study or areas that require more investigation?

P1: I believe that greater study on predictive maintenance and automated cleaning technology would be helpful. These might lessen the amount of labor needed for upkeep and increase the general effectiveness of the plant.