

#### **Interview Transcript 4: Participant P4 (Senior Engineer, Gurgaon)**

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

**P4:** I work as a Senior Engineer in Gurgaon at a sizable solar power facility. I've been overseeing the technical facets of plant operations and maintenance for almost a decade and a half.

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

**P4:** I have twelve years of experience operating solar power plants, mostly huge installations.

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

**P4:** The two biggest obstacles are the buildup of dust and the impact of high temperatures on panel efficiency. Another problem we face is shadowing from adjacent infrastructure.

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

**P4:** If dust accumulation is not cleaned on a regular basis, panel efficiency might drop by as much as 15%. The high quantities of construction dust in Gurgaon make this especially challenging.

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

**P4:** Shadowing has a negative effect. On impacted panels, even a minor shade can lower output by 70–80%. To reduce this problem, we've had to implement several changes.

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

**P4:** Twice a week, we use an automated cleaning system. To avoid shadowing the plant, we also routinely check on and prune the surrounding vegetation.

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

**P4:** The panels are cleaned by the automated system twice a week, and we perform a comprehensive hand examination once a month.

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

**P4:** After cleaning, we usually observe a performance improvement of 12–15%.

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

**P4:** High temperatures lower efficiency, particularly in the hottest parts of the summer. Cleaning is made more difficult by humidity, which makes dust stickier. While wind can occasionally be helpful in clearing away dust, it can also introduce additional material.

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

**P4:** To lessen the effects of high temperatures, we've installed cooling systems. Additionally, we've changed our cleaning schedule such that it occurs more frequently during humid times.

**Interviewer:** What tactics, in your opinion, might be used to raise the solar power plant's efficiency even further?

**P4:** I think using automatic cleaning technology more often could be beneficial. To find problems more rapidly, we're also looking at the prospect of employing drones for aerial inspections.

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

**P4:** AI-powered predictive maintenance tools have a lot of potential applications. They would enable us to use real-time data to optimize maintenance schedules.

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

**P4:** We employ a sophisticated monitoring system that continuously measures temperature, shading effects, and power production.

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

**P4:** Indeed, we have noticed that environmental conditions cause efficiency to decline more quickly in some parts of the plant. This has made it easier for us to focus our maintenance efforts.

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

**P4:** The crucial element is constant improvement. We're constantly searching for innovative techniques and technologies to improve the productivity of our plant.

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

**P4:** I believe it would be highly advantageous to conduct additional research on the long-term impacts of environmental factors on panel longevity.