



Monitoring & Maintenance

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Introduction

- More than 32,000 sites
- Genuine solar veterans
- 20+ years R&D
- 10x growth per annum
- 38 staff and 9PhDs
- 4 countries
- 900 Resellers
- 4 energy utilities
- 2 university partnerships
- 1 amazing team



No one expects things to go wrong, but....

Issues Experienced With Solar PV Systems



Q58. Has your solar PV system ever stopped working and required repairs or replacement? Base: Solar PV households

colmar brunton.

The customer response..(real or imagined problem)



- “It’s all your fault”
- “I paid good money”
- “It’s urgent, I’m losing money”
- “I’ll tell my friends”

The solar dealer response..

- “No maintenance, I just sold it mate”
- “I’ll possibly help, depending on what’s wrong but it may cost”
- “A maintenance agreement is clearly specified and included”



The challenge(s)

- How can you analyse the problem?
- How much will it cost to analyse the problem?
- Do you have to go to site?
- Will fixing problems just cost you money?
- What was the weather doing?
- What was the grid doing?
- What was your hardware doing?
- What was the customer doing?
- What did the Retailer do to tariffs?



Fault analysis

	Inverter fault	Panel fault	Retail tariff	Network behaviour	Weather changes	Consumer behaviour	Installation fault	Electrical fault	Performance fault
Inverter monitor	X								
Panel level monitor		X							
Retail bill			X						
Network analysis				X					
BOM Data					X				
Consumption data						X			
Physical inspection							X		
Commissioning test								X	
Smart Monitoring	X	X	X	X	X	X	X	X	X

Smart monitoring evolution

- **Less false alerts** - Intelligent notifications that take weather into account
- **Dynamic adjustments** – accounting for degradation over time to give real performance expectations
- **Automation** - smart algorithms that automatically identify errors and diagnose faults
- Site anomalies – Algorithms that can identify shade impacts
- **Consumer behaviour** - Identifying changes in consumption through high granularity monitoring
- **Retail behaviour** – impact of tariff changes on economics
- **Network diagnostics** - providing advanced network analysis





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