

TECHNICAL SPECIFICATIONS AND QUALITY CONTROL PROCEDURES FOR REDUCING THE UNCERTAINTY IN PV INSTALLATIONS: RESULTS OF THE FP7 PROJECT PVCROPS

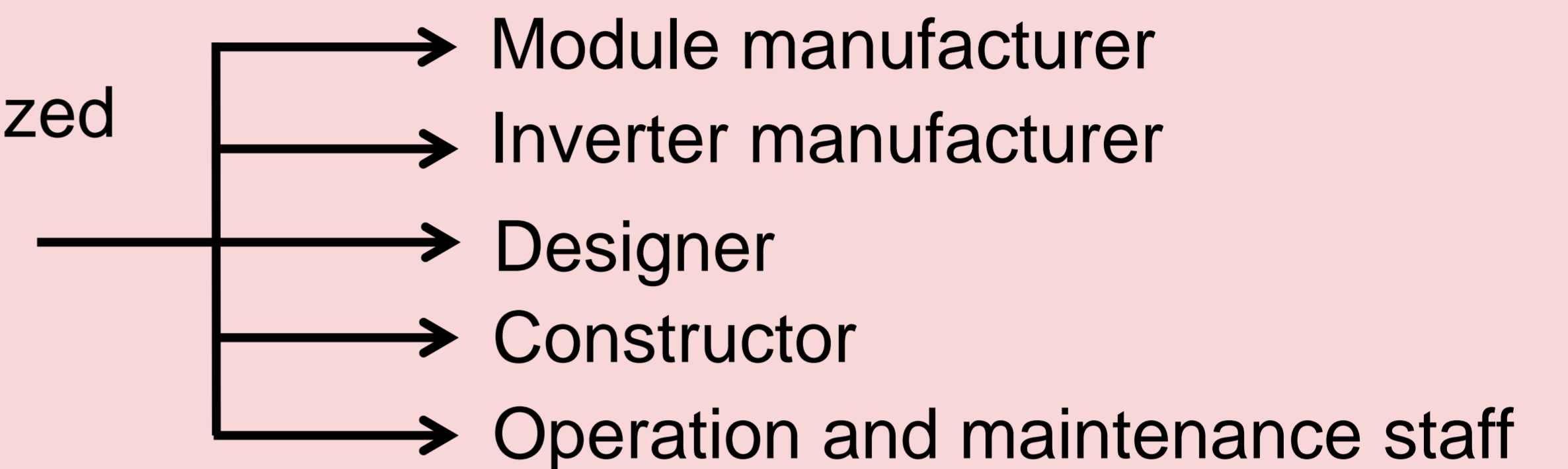


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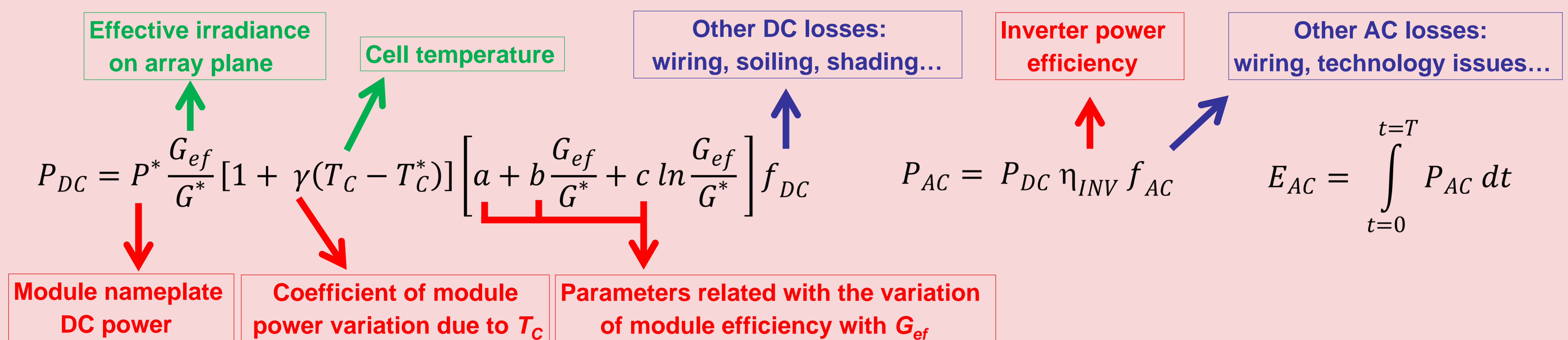
1. INTRODUCTION

- Large grid-connected PV plants have become an interesting financial product all around the world:
 - The annual energy production should be maximized
 - The uncertainty of the investment and the risk of failures should be minimized
 - The responsible for a possible under performance must be easily detected
- Technical and financial issues should be linked
- PVCROPS project has developed:
 - A free software tool for the energy yield forecast (SISIFO)
 - A general proposal of technical specifications and the corresponding quality control procedures to check if they are fulfilled
 - Testing kits to perform the quality control procedures



2. ENERGY YIELD FORECAST

- SISIFO is a free software tool (www.sisifo.info) to simulate energy production that uses **a model based on parameters guaranteed by the manufacturers**, **a baseline losses scenario** and **operating conditions**.



- More accurate estimation of energy and lower uncertainty if
 - G_{ef} and T_C are measured with reference PV modules of the same technology.
 - P_M^*, γ, a, b and c of a representative sample of modules are measured (better than datasheet)

3. TECHNICAL SPECIFICATIONS AND QUALITY CONTROL PROCEDURES

- The technical specifications (TS) report about how the PV installation must be implemented
- The quality control procedures establish the tests that should be done to ensure the PV installation meets the TS
 - G_{ef} and T_C measured from reference PV modules (same angular, spectral, thermal, dirt response) → **Uncertainty reduced**
 - PV modules not only characterized at STC (P_M^*), but also behaviour with T_C (γ) and with G_{ef} (a, b and c) → **Uncertainty reduced**
 - Analysis of PR at Standard Test Conditions (PR_{STC} , not site-dependent nor time-dependent) → **Uncertainty reduced**
 - Real behaviour of PV plant: DC power characterization, inverter efficiency, AC power response (actual losses scenario) → **Uncertainty reduced**

We are looking you forward in the parallel event (Thursday 17th Sept 13:20–18:30):

“PVCROPS: Novel solutions for a high PV penetration in EU electrical networks with lower LCOE”

(At 17:00: Quality control procedures for the bankability of PV plants: Software and Hardware solutions)