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Training agenda

Day 1 – Basics of Photovoltaics and inverter technology

- Company introduction
- Basics of Photovoltaics – PV Plant Design
 - Current/voltage characteristic curve of a PV cell
 - Surface requirements of different module types
 - Medium power Portfolio (MOW)
- Pulse Width Modulation – PWM
- Topologies – Inverter with and without transformers
 - Electrical connection: AC side
 - Electrical connection: DC side
 - Grid monitoring – Inverter with transformer
 - Overvoltage protection – STP special features
 - Intelligent cooling – OptiCool®
 - Grounding/potential equalization
 - Efficiency Comparison
- Grid management
- Monitoring & Controlling
 - Monitoring products
 - Standard communication with RS485
 - Standard communication with SMA Bluetooth® Wireless Technology
- SMA Service
- SMA solutions for large scale PV-plants
 - Why SMA ? – New product portfolio
 - Large scale PV plants with Sunny Tripower TL-10



- Large scale PV plants with Sunny Central
- Why SMA ? - Harsh environment tests
- Sunny Central CP XT - Cooling Concept Opticool
- Sunny Central CP XT - Impact of direct sunlight
- Sunny Central CP XT - Efficiency
- Sunny Central CP-XT - Components
- Protective devices
- Optiprotect - Yield curve
- Transformer Compact Station (TCS)

Day2 – Off-grid solutions and PV-Diesel-Hybrid systems

- Comparison PV Off-Grid System / Power Distribution Grid
 - DC Coupling
 - AC Coupling
- Product Portfolio
- Application Examples
 - Kooki - Electrification project in Uganda
- Bi-directional Battery Inverter
 - Schematic of a three phase Off-Grid System
 - Planning the Installation
 - IP classification - IP 54
- Battery Technology
 - Battery Design
 - Charge control
- Communication in Island Systems
 - Remote Access Sunny WebBox
- Dimensioning
- PV-Diesel-Hybrid Systems for Industrial Applications
 - It makes sense to combine Diesel systems with PV



- A detailed cashflow analysis clearly shows the financial attractiveness of PV-Diesel-Hybrid
- Industrial loads in remote areas are typically supplied by conventional Genset systems
- The SMA Fuel Save Controller enables intelligent communication between PV, gensets, and load
- How a typical day could look like
- Workshop Sunny Design

Yours sincerely

SMA Solar Technology AG

A handwritten signature in black ink, reading 'J. Zibuschka' in a cursive script.

i. A. Jörg Zibuschka