

ILF Consulting Engineers (Asia) Ltd
Working Group: RE-Hybrid Systems on Islands



Frank Zimmermann, 18th October 2016

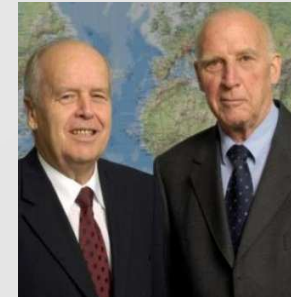
Working Group: RE-Hybrid Systems on Islands

The ILF Group



■ ILF at a Glance

- **1967** leading enterprise for engineering, consulting, and project management
- **100%** Private ownership and independent
- **2,000+** Employees worldwide
- **40+** Office locations



■ ILF Asia

- Regional presence for ASEAN in Bangkok, Thailand
- Focus on photovoltaic, hydropower and grid integration



■ Dipl.-Ing. MBA Frank Zimmermann



Business Development Manager South East Asia for Renewable Energies
Senior Project Manager Photovoltaics
based in Bangkok



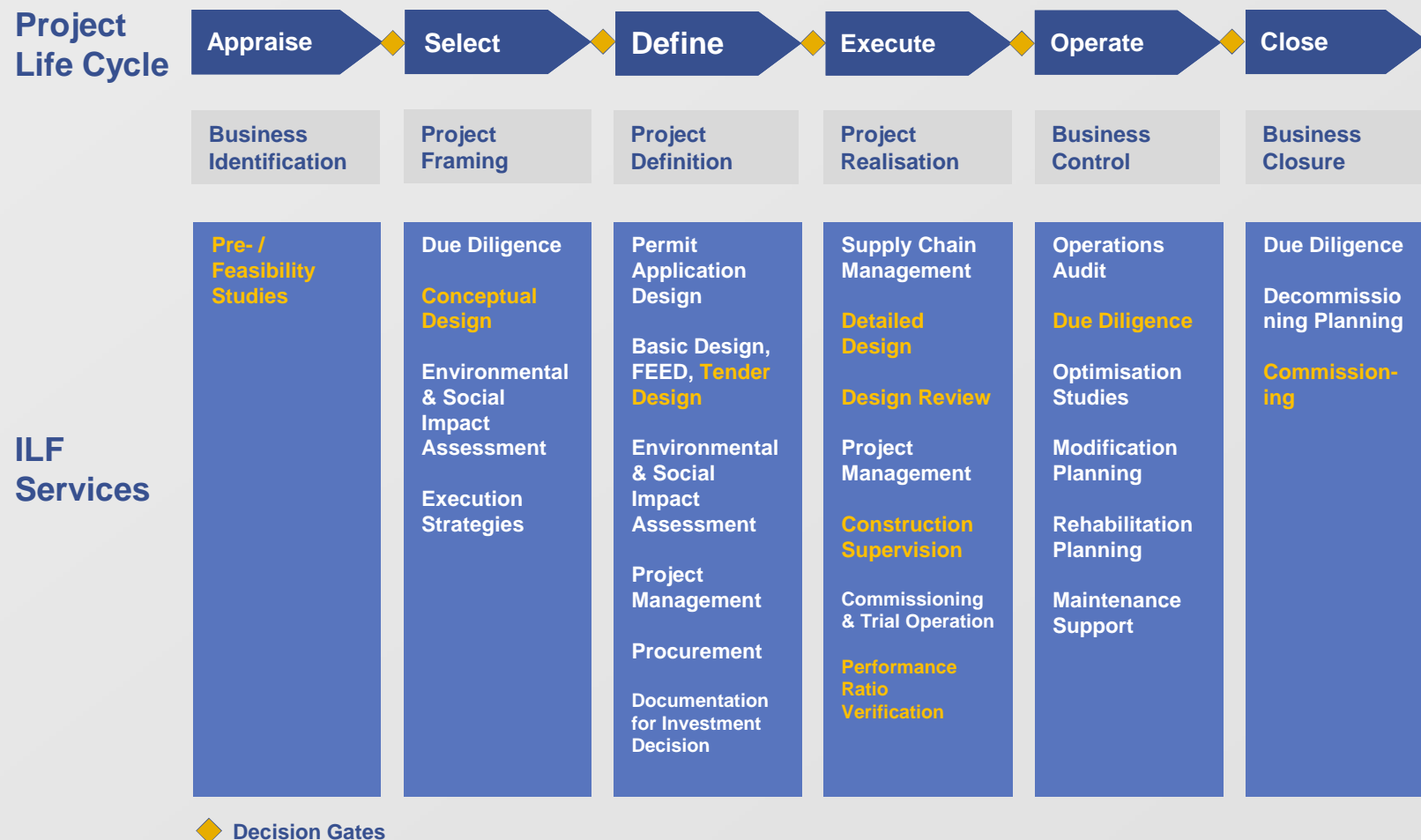
Sachverständiger für Photovoltaik (TÜV)
Certified Expert for Photovoltaic Equipment (TUV)

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■ Service Portfolio



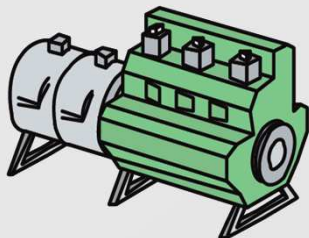
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General Explanation

■ What is Hybridization?

What to hybridize:

- Diesel
- Gas
- Heavy fuel oil
- Waste-to-energy
- Biomass-to-energy



Hybrid system types:

- Stand-alone (islands)
- Mini-grid
- Micro-grid



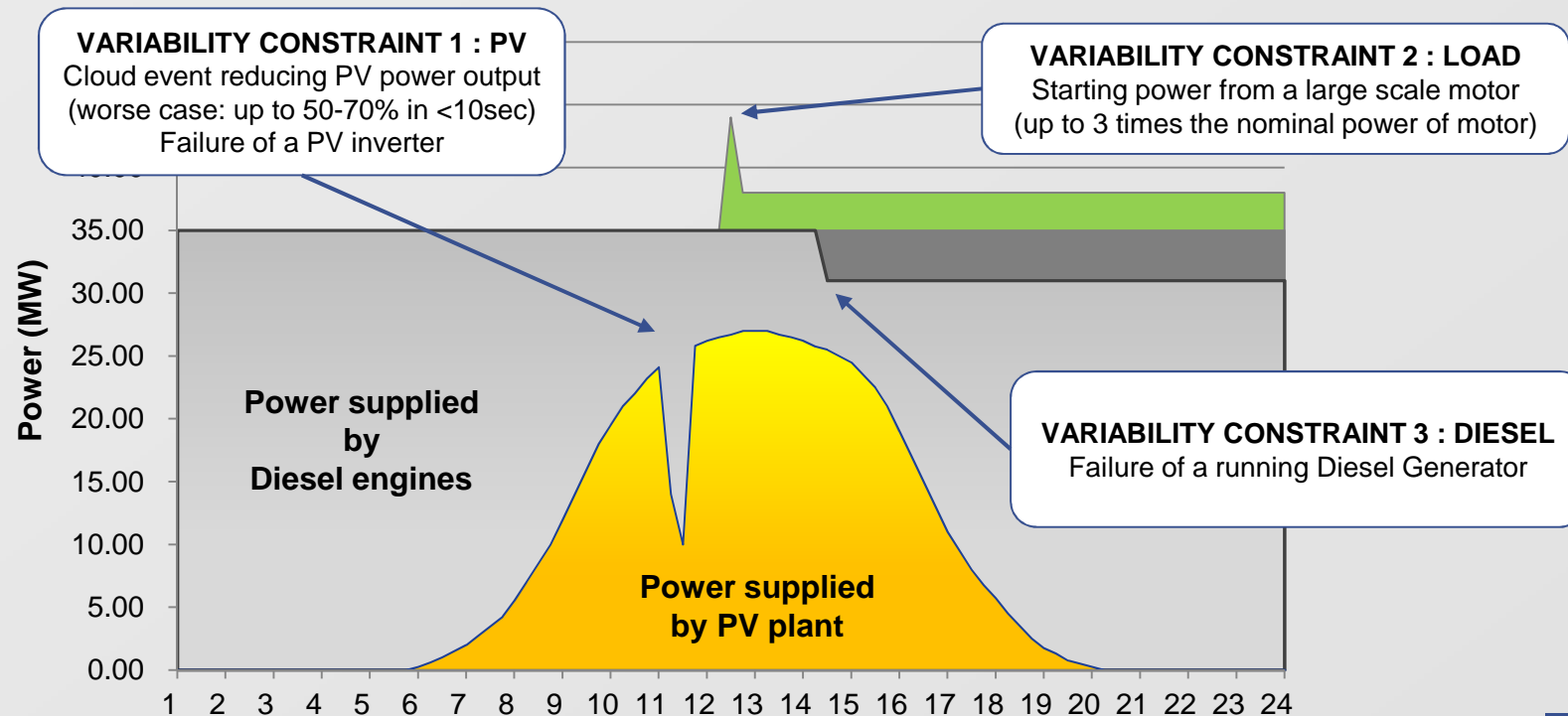
How to hybridize:

- Photovoltaics (PV)
- Wind
- Hydropower
- Storage (various Battery technologies, Hydrogen)



■ ENERGETIC RESULTS - Grid stability considerations (without battery)

- Reliable Energy Management System to ensure grid stability is key



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Selected References



■ PV hybrid power plants for 166 islands, Maldives

Time frame: 2016 – 2020, status: fixed order

Data:

- Implement hybrid systems and mini-grids on 166 islands
- Technology: PV, battery storage, diesel generators

Services:

- Feasibility study
- Conceptual design
- Tender design
- Site and construction supervision
- Commissioning
- Project Management



ILF Consulting Engineers (Asia) Ltd.

Thank you for your attention!



Frank Zimmermann

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