

Developing climate relevant award criteria for “Uninterruptible power supply (UPS)” and “Computers” for eco-labelling and GPP

Scope, climate-relevant impacts, comparative analysis
(Day 2)

Tobias Schleicher & Siddharth Prakash
Baan Amphawa, February 2014



Overview

- 1** GW1: Definitions and Scope of the Product Group
- 2** GW2: Identification of climate relevant impacts
- 3** GW3: Comparative analysis of climate-relevant criteria in selected policy documents

Basic Information

Uninterruptible Power Supplies (UPS)

- provide emergency instantaneous power to critical devices computers, data centers, and telecommunications equipment
 - in the event of a power failure through energy that is typically stored in a battery.
- supplies this power temporarily to allow for proper equipment shut down (e.g., computers) or standby power generator start up (e.g., at data centers).
- are able to protect from input power problems such as power surges, voltage drops, and frequency distortions.



Typology

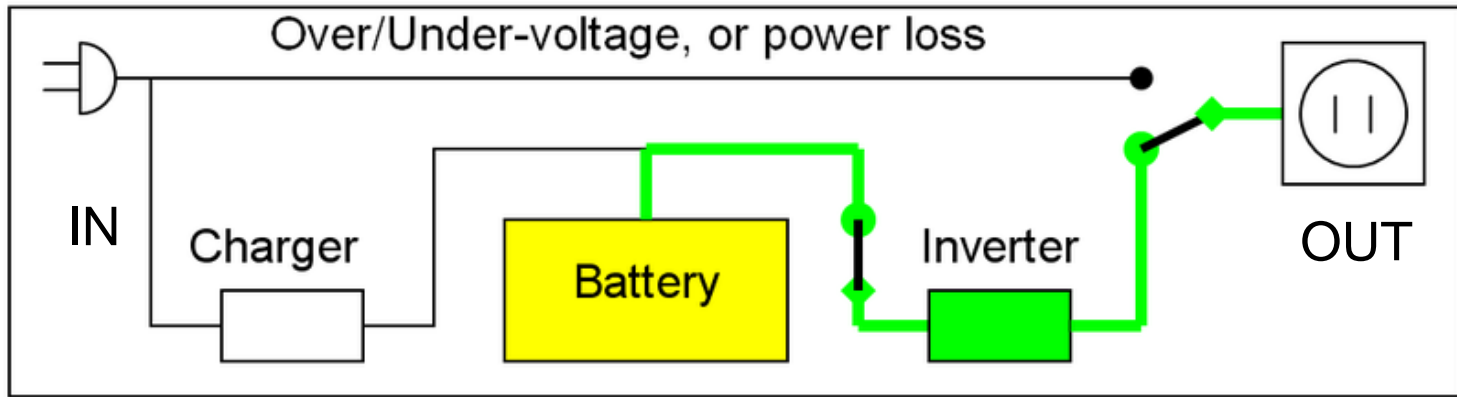
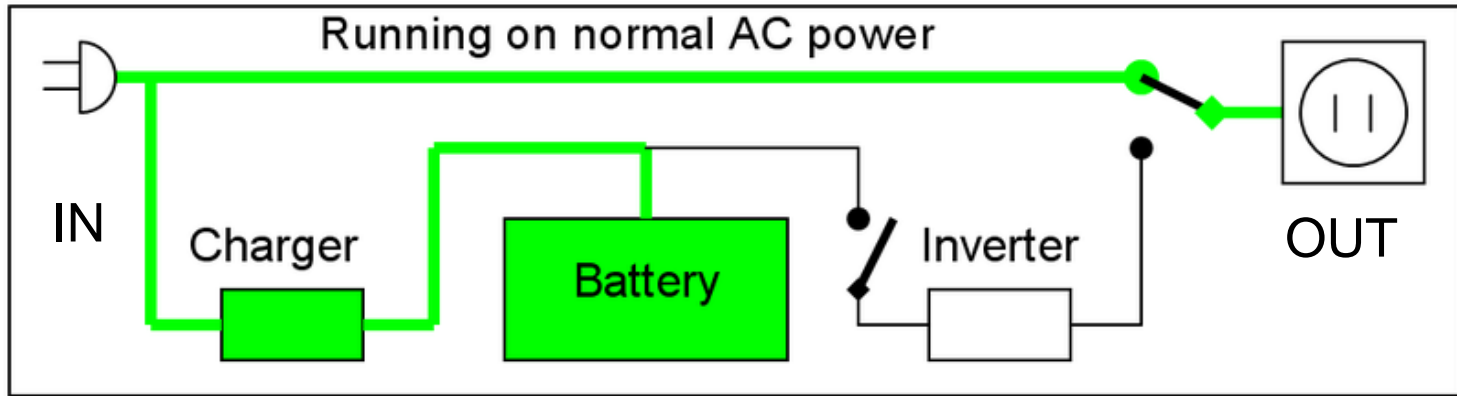
UPS can be divided in 3 types according to IEC-Classification (EN 62040-3)

- Voltage and Frequency Dependent (VFD); “offline-UPS”
- Voltage Independent (VI)
- Voltage and Frequency Independent (VFI); “online-USV”

UPS Topology Typically Referred To As:	Referred To In ENERGY STAR Specification As:	Typically Sized Up To:	Typically Used For:
<ul style="list-style-type: none"> • Passive • Offline • Standby 	Voltage and Frequency Dependent (VFD)	1,500 VA	small offices, personal home computers and other less critical applications
<ul style="list-style-type: none"> • Line Interactive 	Voltage Independent (VI)	5,000 VA	small business, Web, and departmental servers
<ul style="list-style-type: none"> • Online • Continuous • Double Conversion 	Voltage and Frequency Independent (VFI)	1,000 kVA	data centers

Voltage and Frequency Dependent (VFD)

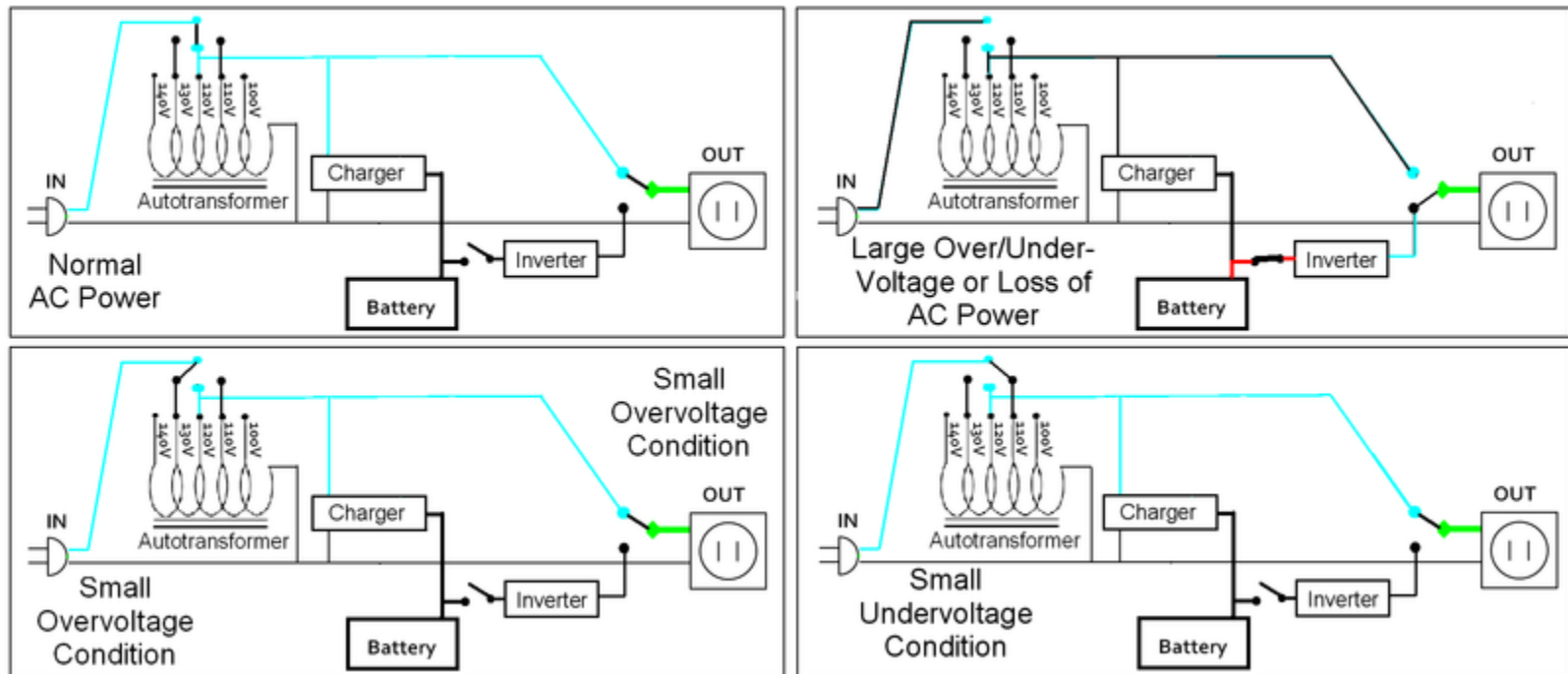
“offline-UPS” (standby UPS)



Voltage Independent (VI)

Similar in operation to a standby UPS

- Multi-tap variable-voltage autotransformer („Buck-boost transformer“)

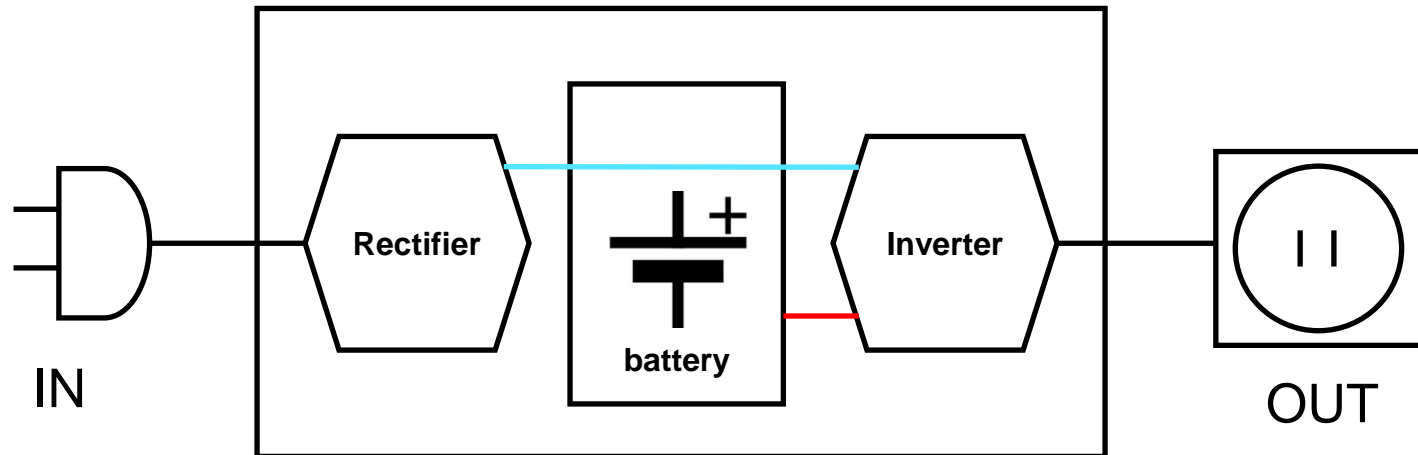


Voltage and Frequency Independent (VFI)

“online-UPS” (double conversion)

The supply voltage is transformed into direct current (DC) and re-inverted into alternating current (AC) permanently.

- Normal operation: all power fluctuations (voltage and frequency) can be equalized and batteries can be charged
- Short-cut: Battery operation



Voltage and Frequency Independent (VFI)

“online-UPS”

Advantages

- Uninterruptible pass of input voltage to the consumer (no switching, runs continuously)
- No delay in case of breakdown
- „electrical fire-wall“ between incoming power and sensitive equipment

Disadvantages

- Permanent transformation of AC into DC and reverse leads to lower efficiency
- More costly

Voltage and Frequency Independent (VFI)

Static USP



Dynamic USP (Rotary)



Computers – Definition

- Energy Star for Computers, Version 6.0

https://www.energystar.gov/products/specs/computer_specification_version_6_0_pd

GW1: Guiding Questions – Scope and Definitions

- Which products are covered?
 - Which are the different types product group (e.g. tablets, laptops, etc.)?
 - Are there technical thresholds (e.g. UPS >5kW)?
- Are the most relevant types (e.g. in terms of purchase volumes) of the Product Group for GPP in Thailand covered?

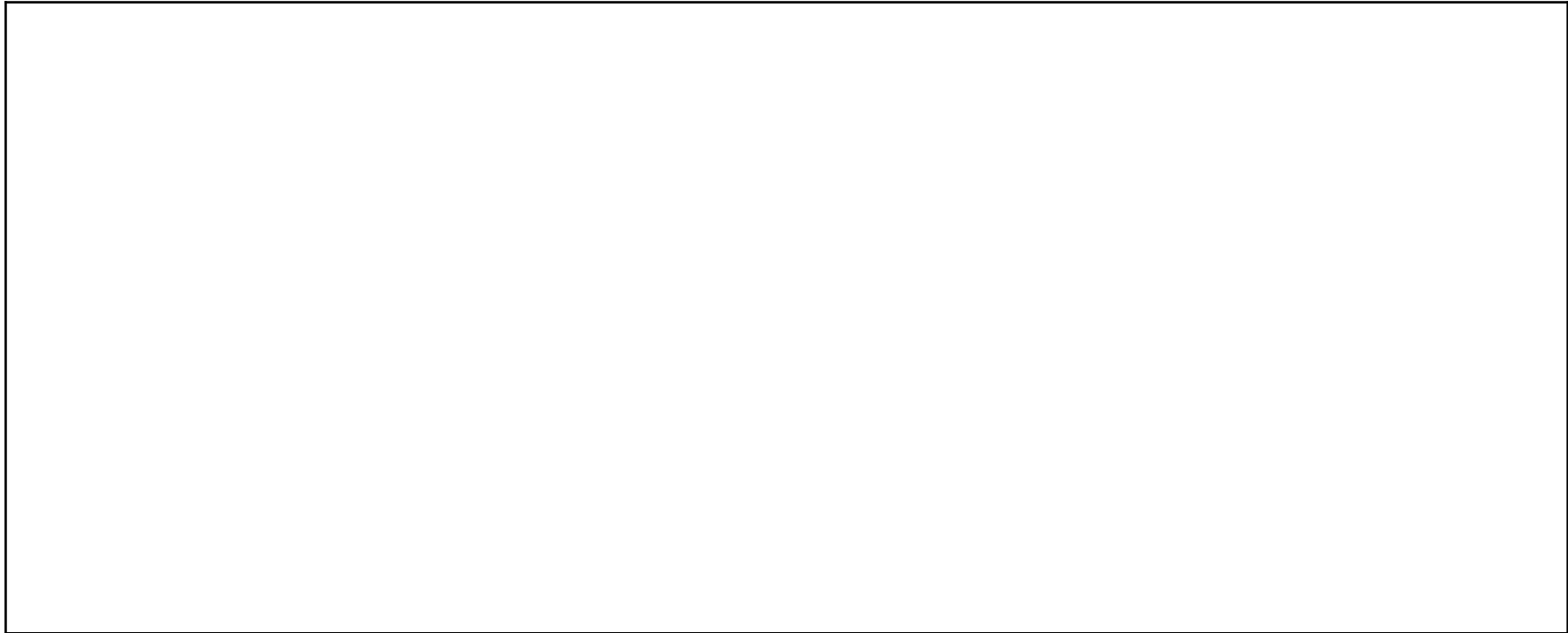
Scope	Document 1	Document 2	Document 3	Comparative analysis - summary
Which products are covered?				
Which products are not covered?				
Proposed scope for Thai GPP?				

GW2: Guiding Questions – Climate-relevant impacts

	Study 1	Study 2	Study 3	Comparative analysis - summary
What are the most relevant climate aspects of the product group during its life-cycle				
Which is the most relevant life-cycle phase with regard to Greenhouse Gas Emissions (e.g. electricity consumption during the use phase)? Please provide quantitative information (e.g. 90% of Greenhouse Gas Emissions in use-phase; xy kg CO ₂ e in the production phase etc.)?				
What kind of criteria is needed to tackle Greenhouse Gases in the identified life-cycle phase (e.g. efficiency criteria for the use phase)?				
Are there any reasons to include or exclude less important climate-relevant criteria (e.g. lifetime criteria excluded due to lack of test standards)?				

GW2: Climate-relevant Impacts

- Please provide a comparative overview of selected LCA studies in form of a graphs and illustrations, including a short two line interpretation of the graphs/illustrations:



GW3: Guiding Questions – Comparative Label Analysis

- By comparing labels, which label is the most ambitious with regard to each climate-relevant criterion?

	Document 1	Document 2	Document 3	Comparative analysis - summary
Climate Criteria n°1				
Climate Criteria n°2				
Climate Criteria n°3				

Contact

Siddharth Prakash
Senior Researcher

Oeko-Institut e.V.

Phone: +49 (0) 761 45295 244
E-Mail: s.prakash@oeko.de

Tobias Schleicher
Researcher

Oeko-Institut e.V.

Phone: +49 (0) 761 45295 277
E-Mail: t.schleicher@oeko.de