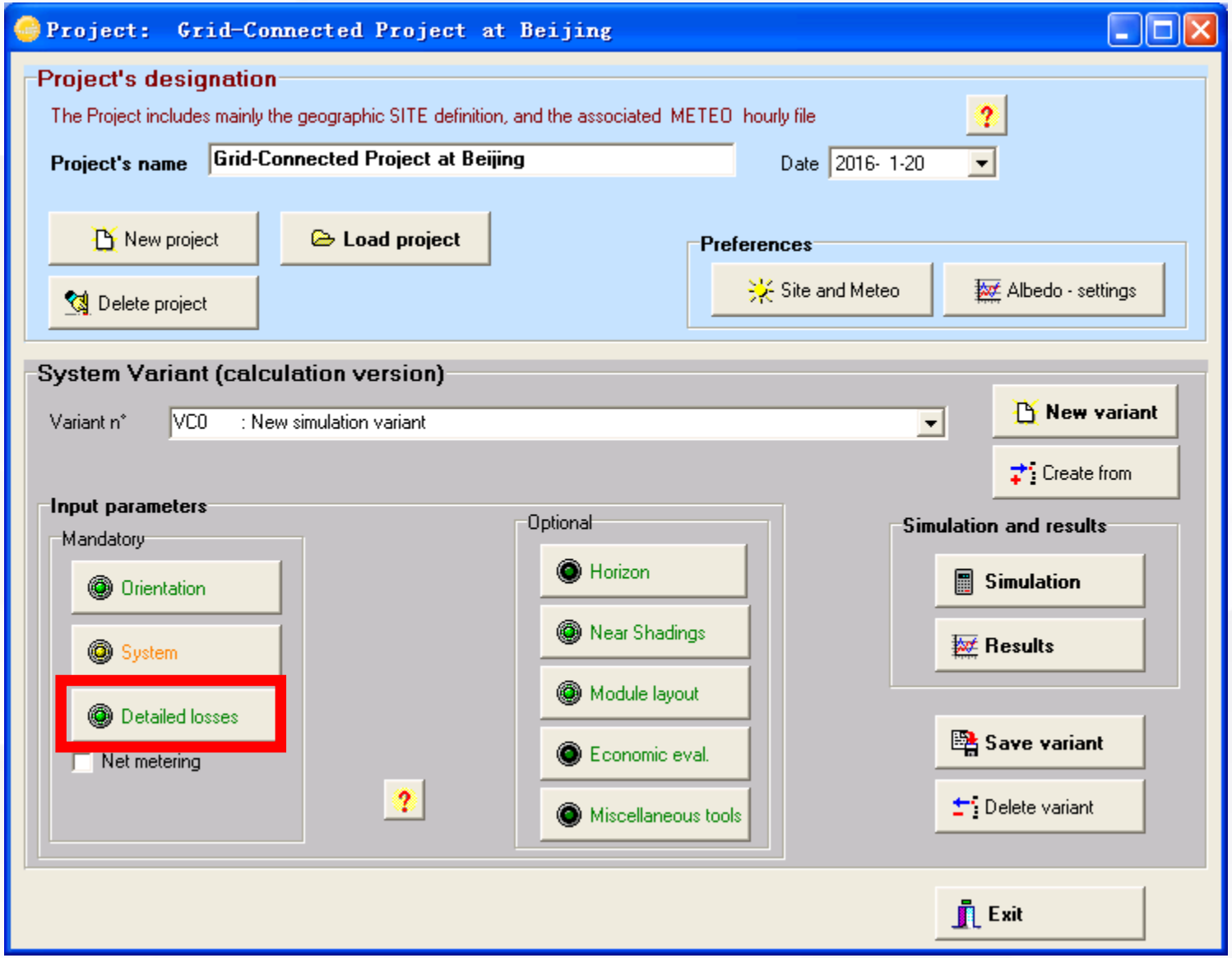
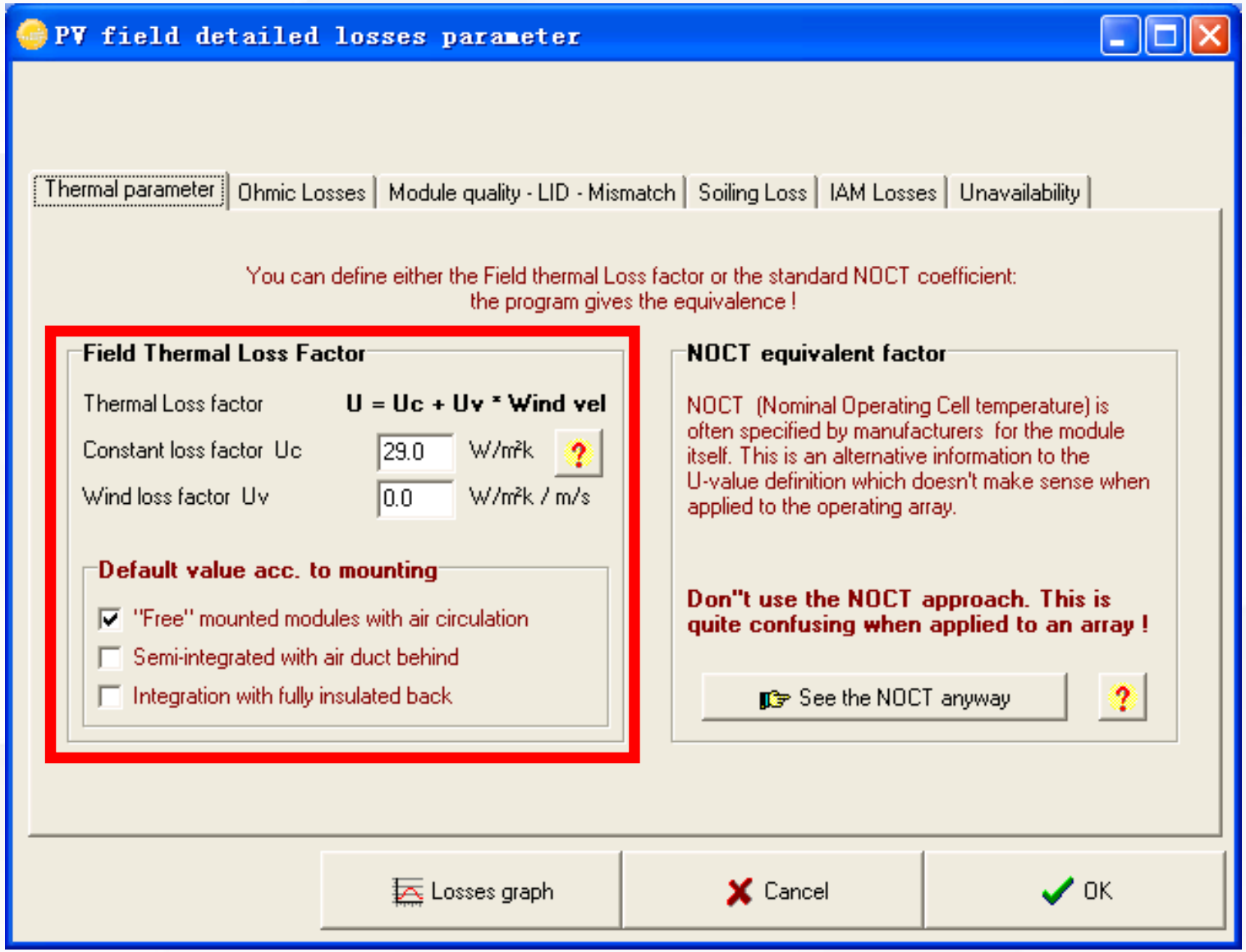
# PVsyst
# 系统热损失设置及原理

讲师：杨威

CANDELA

坎德拉学院

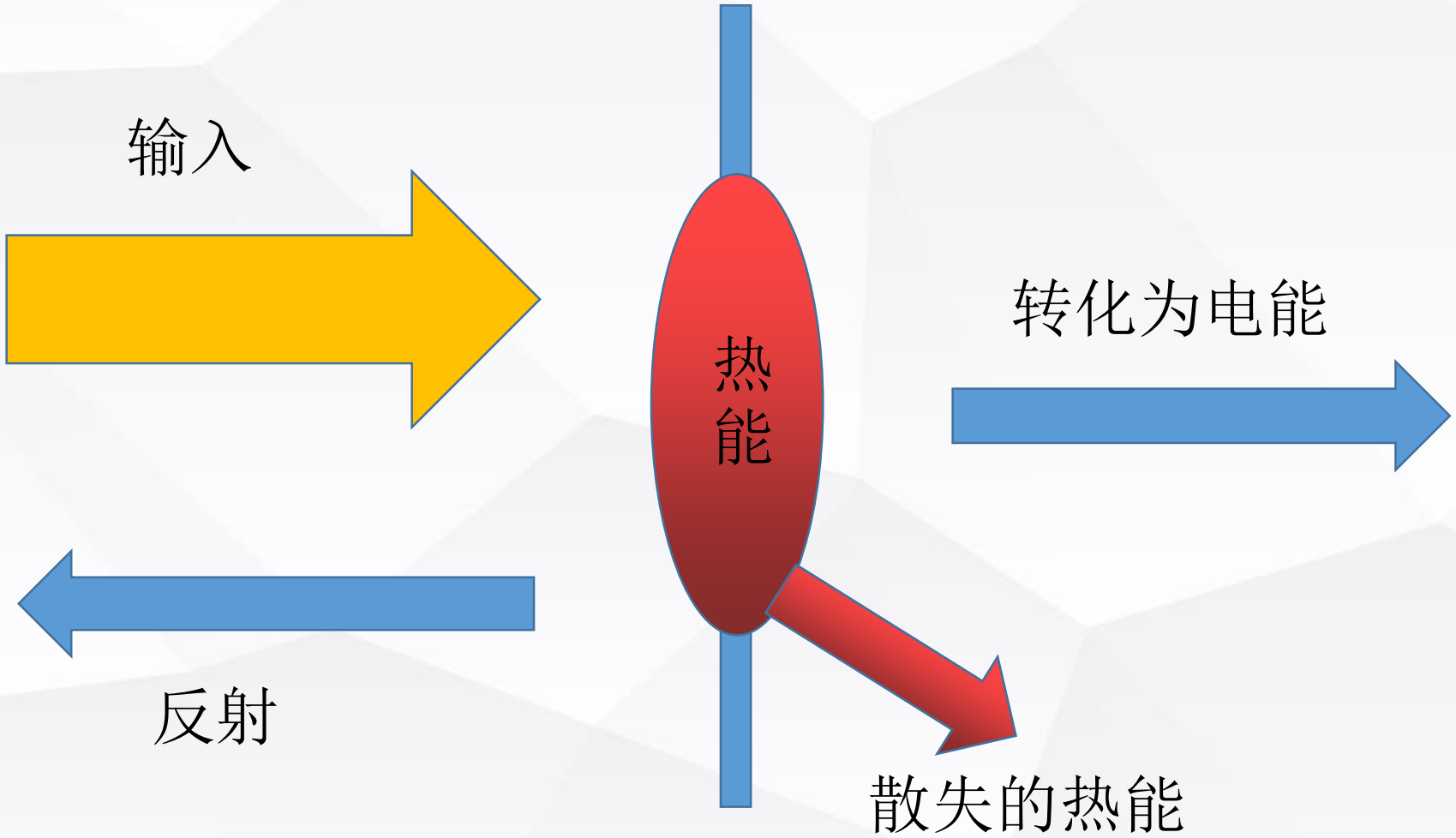

Project: Grid-Connected Project at Beijing
Project's designation
The Project includes mainly the geographic SITE definition, and the associated METEO hourly file
Project's name
Grid-Connected Project at Beijing
Date
2016- 1-20
New project
Load project
Delete project
Preferences
Site and Meteo
Albedo - settings
System Variant (calculation version)
Variant n°
VC0 : New simulation variant
New variant
Create from
Input parameters
Mandatory
Orientation
System
Detailed losses
Net metering
Optional
Horizon
Near Shadings
Module layout
Economic eval.
Miscellaneous tools
Simulation and results
Simulation
Results
Save variant
Delete variant
Exit


PV field detailed losses parameter
Thermal parameter
Ohmic Losses
Module quality - LID - Mismatch
Soiling Loss
IAM Losses
Unavailability
You can define either the Field thermal Loss factor or the standard NOCT coefficient:
the program gives the equivalence !
Field Thermal Loss Factor
Thermal Loss factor
U = Uc + Uv * Wind vel
Constant loss factor Uc
29.0
W/m²k
Wind loss factor Uv
0.0
W/m²k / m/s
Default value acc. to mounting
"Free" mounted modules with air circulation
Semi-integrated with air duct behind
Integration with fully insulated back
NOCT equivalent factor
NOCT (Nominal Operating Cell temperature) is often specified by manufacturers for the module itself. This is an alternative information to the U-value definition which doesn't make sense when applied to the operating array.
Don"t use the NOCT approach. This is quite confusing when applied to an array !
See the NOCT anyway
Losses graph
Cancel
OK

| 指标 | 单位 | 参数 |
| --- | --- | --- |
| 峰值功率温度系数 | %/℃ | -0.410 |
| 开路电压温度系数 | %/℃ | -0.330 |
| 短路电流温度系数 | %/℃ | 0.059 |

组件的性能和温度相关。温度升高功率降低。

组件都提供STC条件下的参数及相关的温度系数。知道组件中电池的工作温度，即可计算组件的实际工作状态，从而得到热损失的大小。


输入
热能
转化为电能
反射
散失的热能

热损失系数　　环境温度　　辐照度

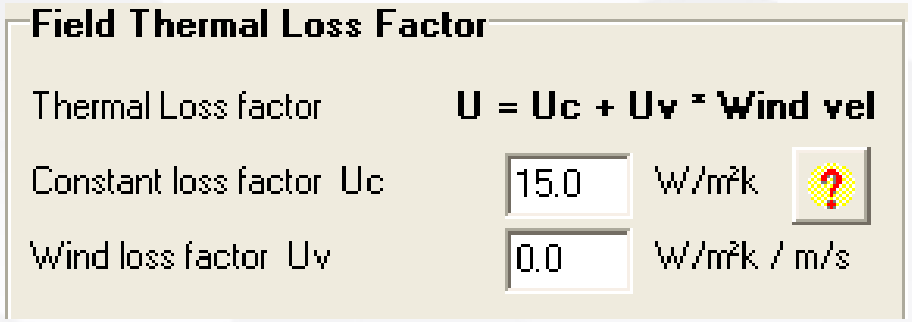
$$U \cdot (T_{cell} - T_{amb}) = Alpha \cdot G_{inc} \cdot (1 - Effic)$$

电池温度　　辐射吸收率　　光电转换率

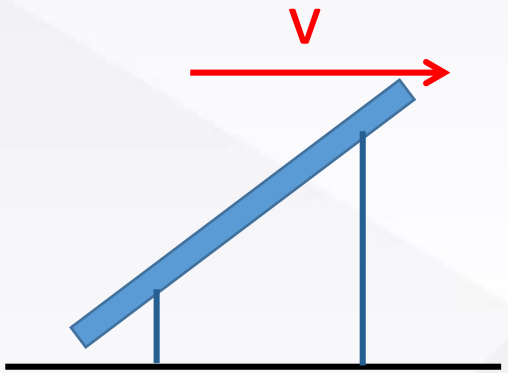
$$U = Uc + Uv \cdot v$$

由于风有助于散热，降低组件与环境的温差，且风速越高散热效果越好。因此热损失系数U又可分解为固定参数Uc和与风速相关的参数Uv。

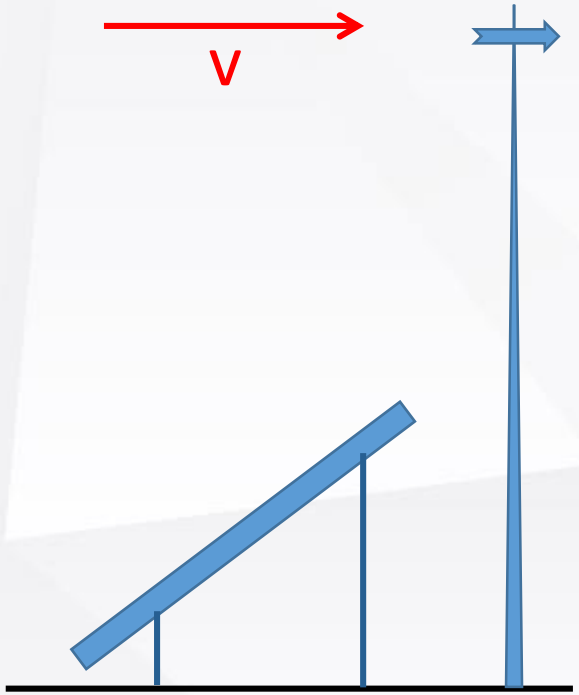
式中：U和Uc的单位是$W/m^2 \cdot k$;
Uv的单位是$W/m^2 \cdot k/m/s$;
v的单位是m/s。



早期PVsyst给出的经验系数为（空气流通良好）；



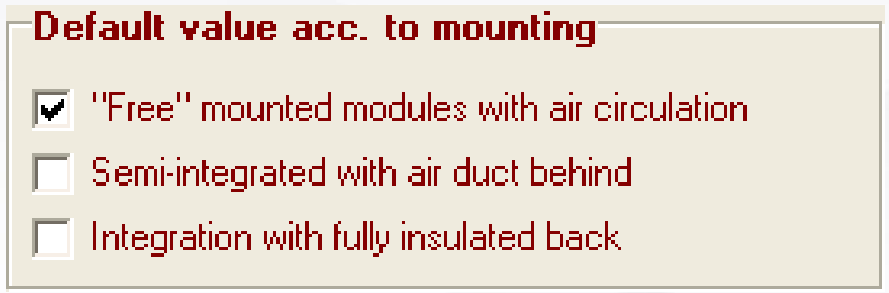

Uc = 20 W/m²·k ； Uv = 6 W/m²·k / m/s




调整后的经验系数为（空气流通良好）；

Uc = 25 W/m²·k ； Uv = 1.2 W/m²·k / m/s

如果没有风速数据，PVsyst会将Uv参数以默认1.5m/s的阵列上方风速（或3.3m/s的气象站风速）合并到Uc里。由此给出了三个默认的热损失参数设置：

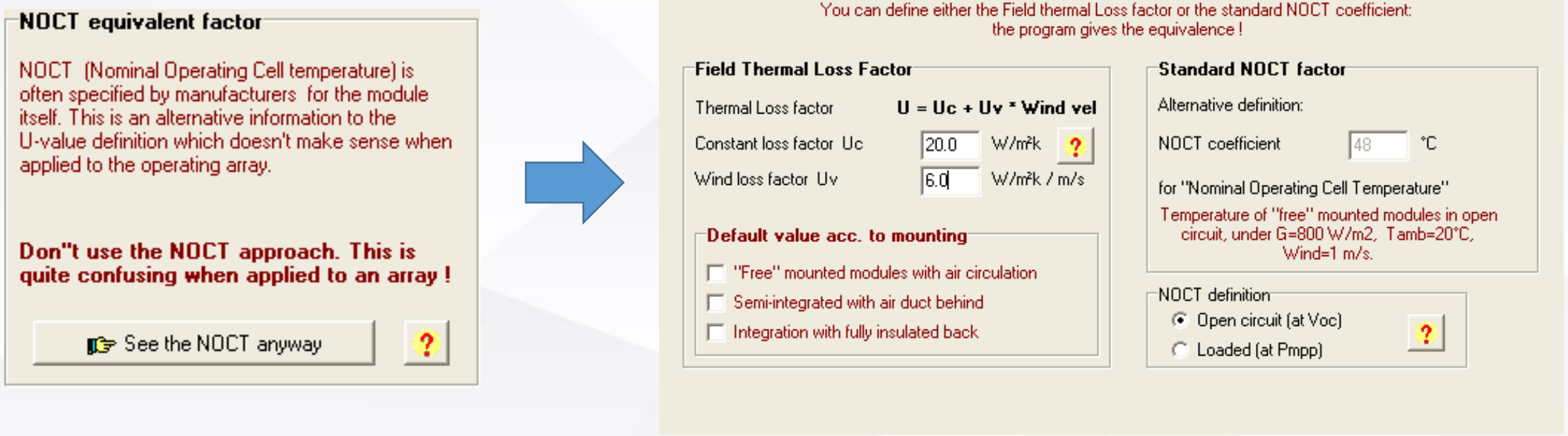



三种默认设置以方阵后通风条件区分：

1. 敞开式　　Uc=29W/m²·k
2. 半封闭式　Uc=20W/m²·k
3. 封闭式　　Uc=15W/m²·k

NOCT：敞开式支架；G=800W/m²；Tamb=20°C；v=1m/s；开路

$$(Uc + Uv \cdot 1m/s) \times (NOCT - 20^{\circ}C) = 0.9 \times 800\ W/m^2 \times (1 - 0)$$



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