



INDTECH2018

Innovative industries for smart growth

29-31 October, 2018
Vienna, Austria

www.indtech2018.eu
[@IndTech2018](https://twitter.com/IndTech2018)
[#IndTech2018](https://twitter.com/IndTech2018)

PILLAR 1

Session 1.2

**Advanced materials and processes
for photovoltaics**

Simon Perraud

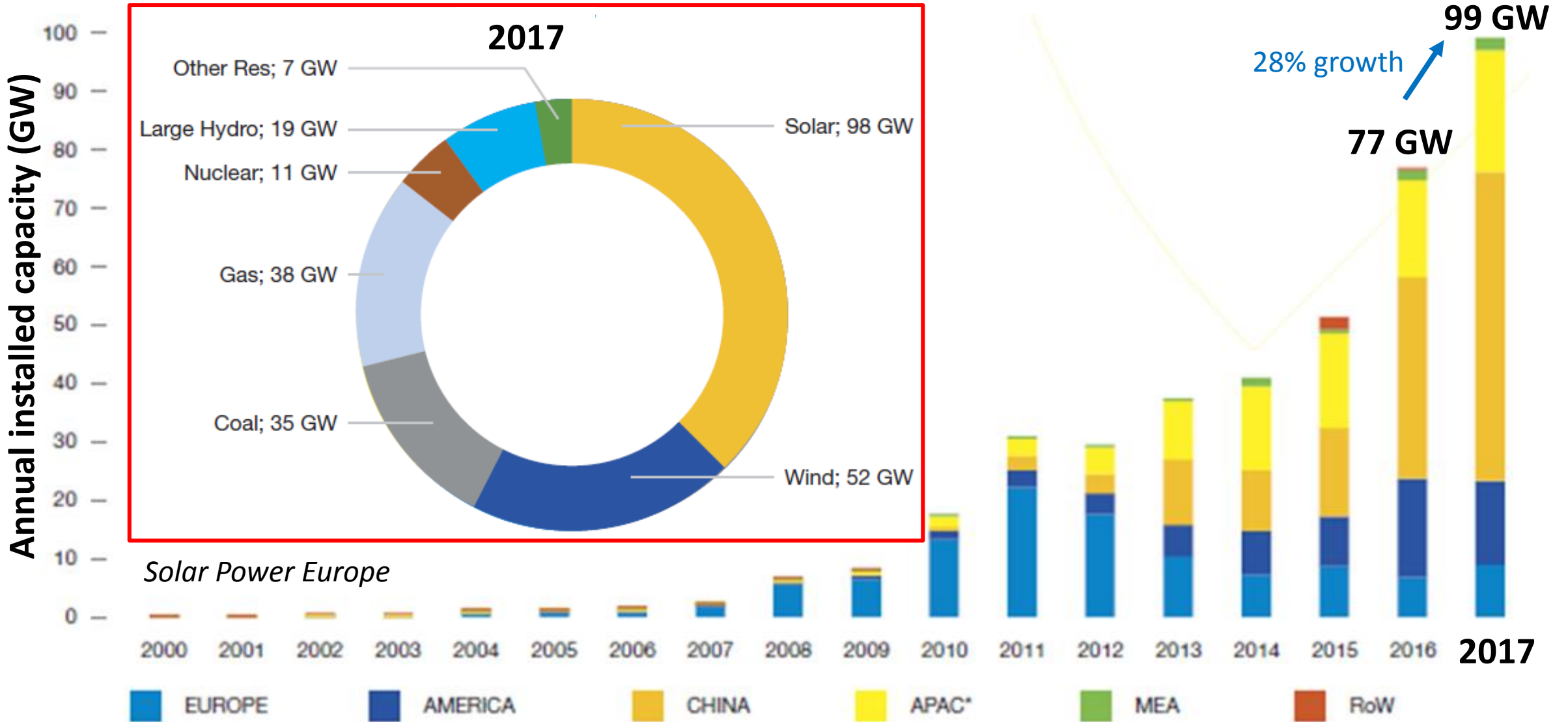
CEA Liten, France

30 October 2018





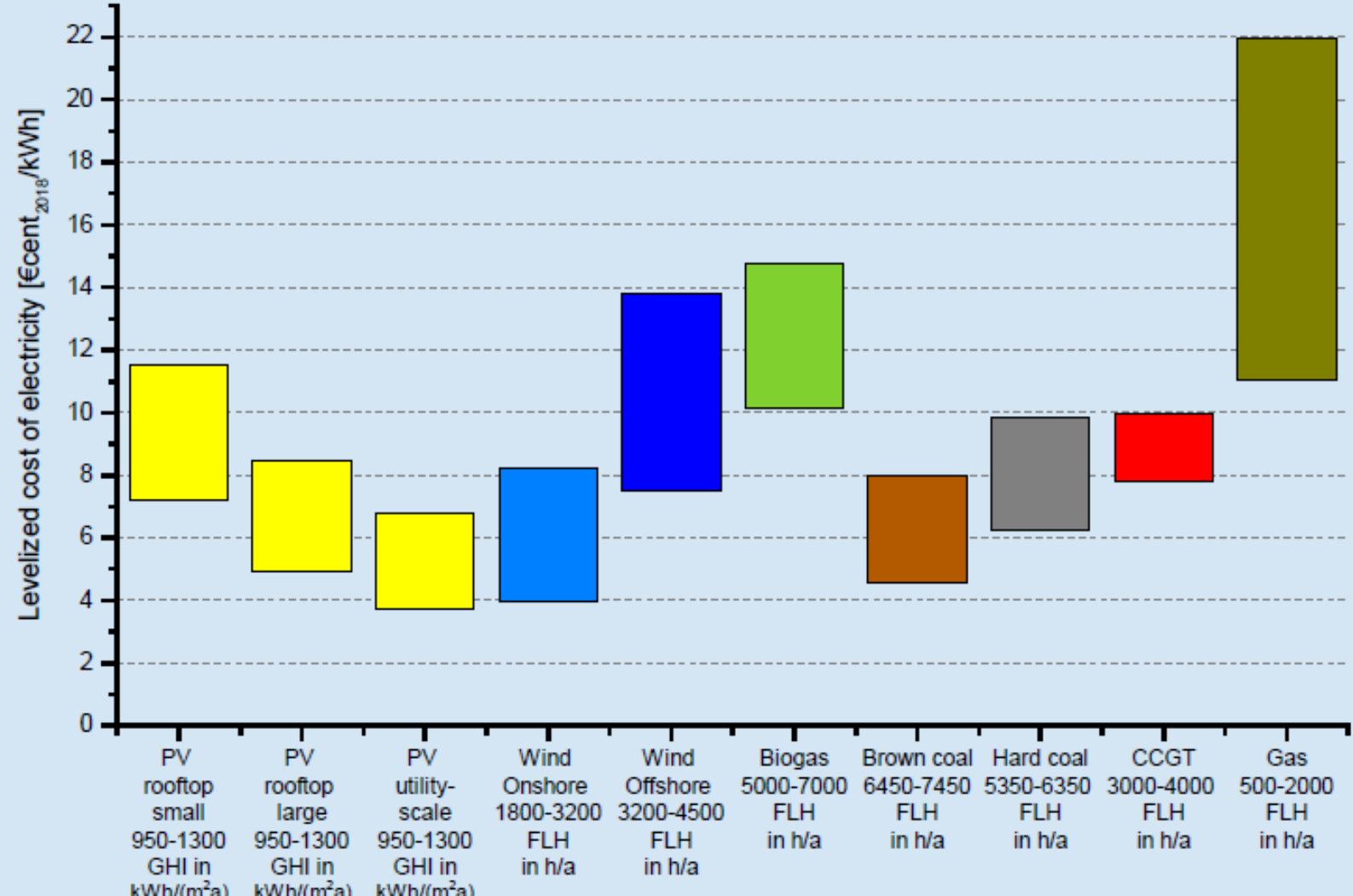
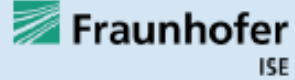
PHOTOVOLTAICS IS THE FASTEST GROWING POWER GENERATION TECHNOLOGY





PHOTOVOLTAICS IS ONE OF THE CHEAPEST POWER GENERATION TECHNOLOGIES

Version: March 2018



Some examples of tenders in 2018:

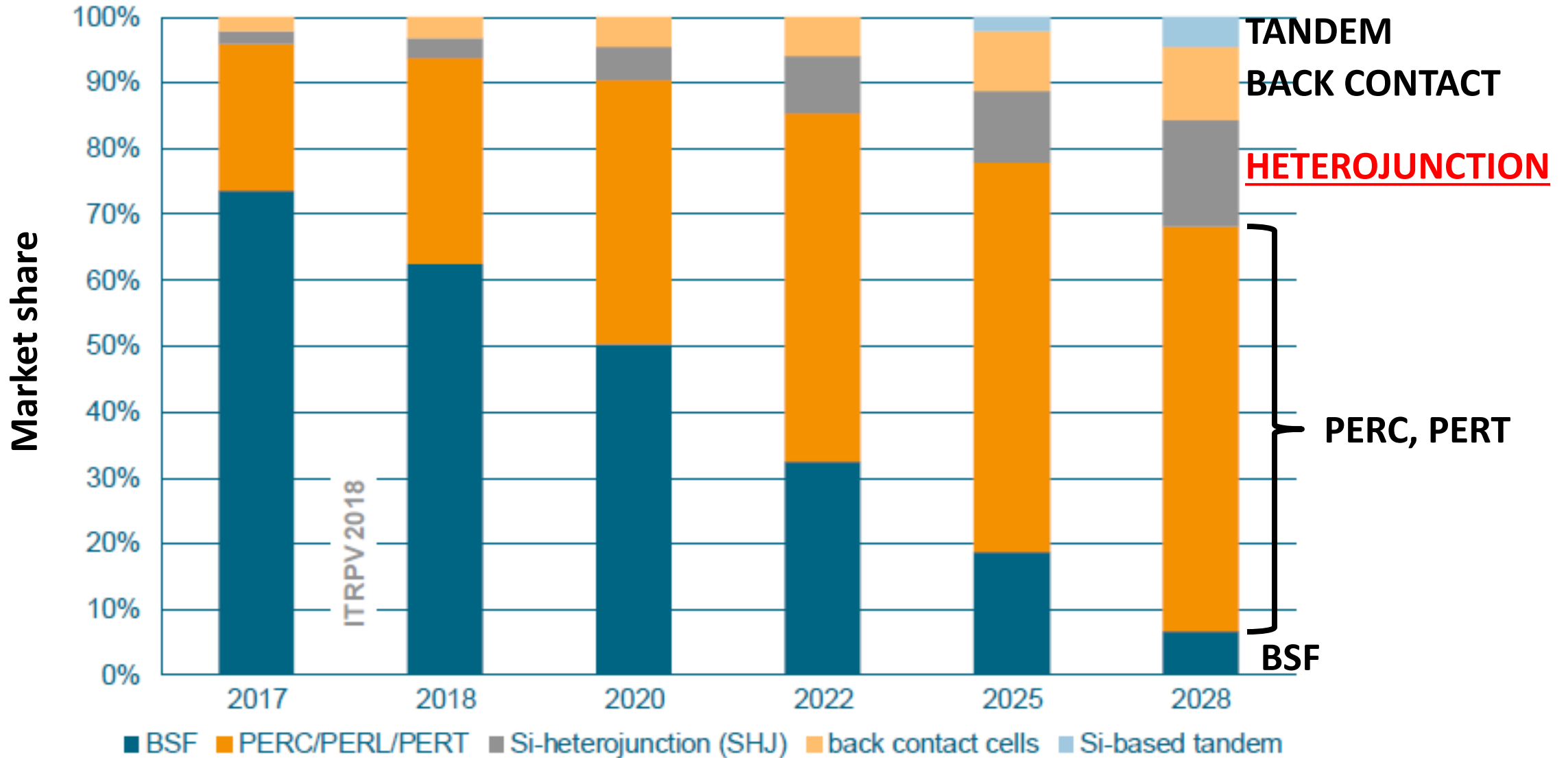
France (5 to 30 MW, Aug. 2018):
➔ 5.8 Euro cents/kWh (average)

Senegal (60 MW, April 2018):
➔ 3.8 Euro cents/kWh

Saudia Arabia (300 MW, Feb. 2018):
➔ 2.34 US cents/kWh



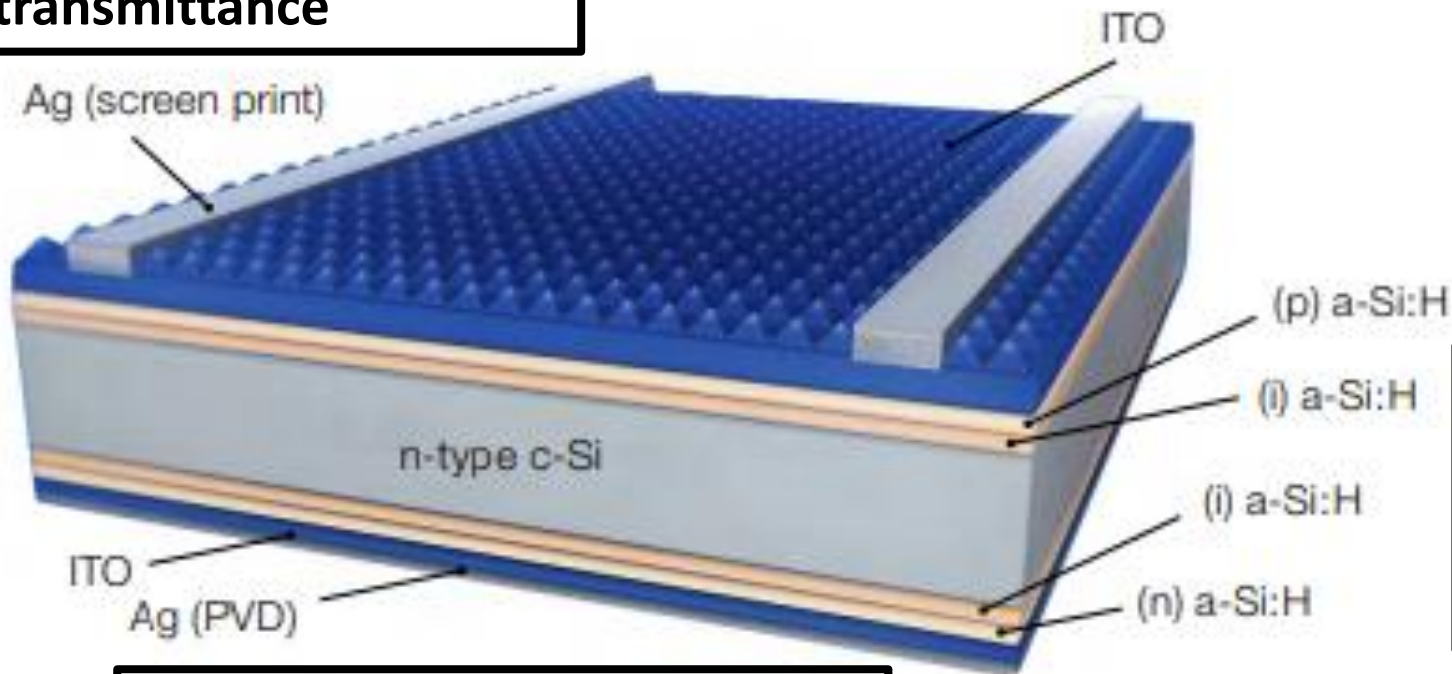
VERY HIGH EFFICIENCY IS THE FUTURE OF PHOTOVOLTAICS



ADVANCED MATERIALS AND PROCESSES ARE KEY TO INCREASE PERFORMANCES

Front and back contacts combining very high electrical conductance and optical transmittance

High-efficiency heterojunction solar cell



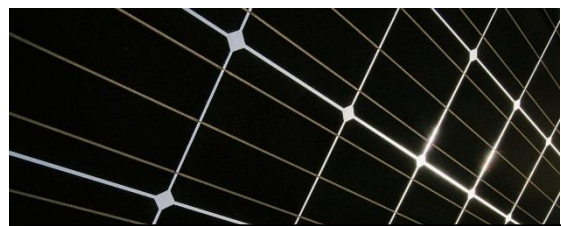
Excellent surface passivation by ultrathin amorphous silicon films

Bulk monocrystalline silicon with ultralow density of point defects and dislocations

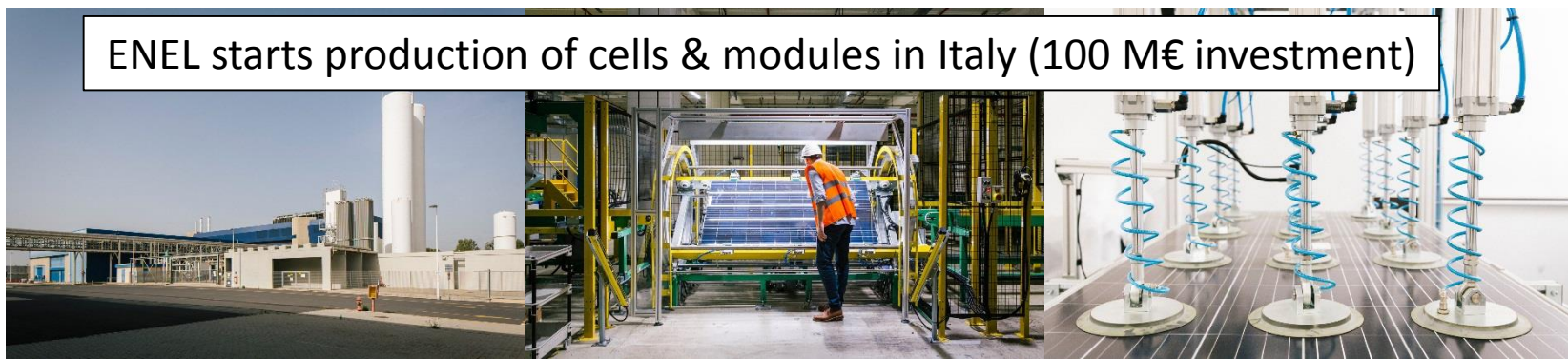
HETEROJUNCTION PHOTOVOLTAICS: THE EUROPEAN INDUSTRY HAS A ROLE TO PLAY!



CEA Liten pilot line in Chambéry, France (2,400 wafers per hour)



CEA Liten & Meyer Burger achieve a record 72-cell module @ 410W (23.4% cell eff.)



ENEL starts production of cells & modules in Italy (100 M€ investment)

KEY MESSAGES

- Photovoltaics is the fastest growing power generation technology
- Photovoltaics is one of the cheapest power generation technologies
- Very high efficiency is the future of photovoltaics
- Advanced materials and processes are key to increase performances
- CEA Liten, Meyer Burger and ENEL are developing a very high efficiency heterojunction photovoltaic technology (cell efficiency higher than 23% obtained in 2018 at the pilot scale)
- ENEL starts production in Italy (200 MW capacity)

THANK YOU VERY MUCH FOR YOUR ATTENTION!