# **3Sun Gigafactory: The evolution of solar technology** A route of innovation and sustainability

## Thin-film technology

- I Module efficiency: capacity of converting sunlight into electricity  $\approx 10\%$
- **Monofacial Module**
- 25-year lifespan

☆ About 7 million thin-film modules produced at 3SUN between 2011 and 2017

- GLASS
- OXIDE - AMORPHOUS SILICON
- MICROCRYSTALLINE SILICON
- BACK ELECTRODE



DIRECT SUNLIGHT



For further information visit the web page

Heterojunction technology (HJT)

- 1 20% module efficiency, double that of the thin-film module
- The HJT technology associated with bifaciality allows for higher performance and greater energy production
- More use of recyclable materials

1 35-year lifespan

for HJT cell and module manufacturing

**TRANSPARENT CONDUCTIVE** 

- METAL GRID
- TRANSPARENT CONDUCTIVE OXIDE
- AMORPHOUS SILICON
- -O CRYSTALLINE SILICON

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**REFLECTED AND DIFFUSED** SUNLIGHT

## **Bifacial Modules**

I Capable of capturing light from both sides, they produce +15% energy compared to single-sided modules I Higher robustness against harsh environment **1** 30-years lifespan

## HJT technology on large cells

- Incremental research and development to reach up to 23% module efficiency
- Silicon wafer size increased by 80%
- **Fully integrated** material traceability
- I Higher production processes efficiency

### Two records in the same year

- I Heterojunction solar cells broke the world record for commercial cells with an efficiency of 24.63%
- Achieved the 25% record of efficiency and the 95% record of bifaciality in laboratory
- The cells prove to have very high flexibility and mechanical resistance

## Green Power

- METAL GRID

- TRANSPARENT CONDUCTIVE OXIDE
- **PEROVSKITE: CAN CAPTURE** THE BLUE LIGHT **OFTHE SOLAR SPECTRUM**
- AMORPHOUS SILICON
- -• CRYSTALLINE SILICON: USES THE RED LIGHT OF THE SOLAR SPECTRUM

# 

- I Module efficiency above 28%
- I The use of perovskite, in tandem with silicon and bifaciality, will ensure an efficiency never achieved before
- I Increasingly sustainable technology: CO2 reduction; waste reduction; reuse of modules at the end of their life
- **I** 35-year lifespan