

suncup[®] – smart plating single side / backside dry processing

nb technologies
consulting engineers



NBT's **suncup[®]** is the key enabler for **smart plating** concepts in the field of solar cell metallisation and offers the opportunity to first validate processes before investing in expensive production tools. The **suncup[®]** works in a fountain type configuration with the process side face down. Wafers are processed single side, the backside keeps dry during wet process. Beside of plating, all wet processes can be performed without restrictions from the backside.

The **suncup[®]** reactor is modular and provides high flexibility to process different wafer sizes in various contacting setups, which can be easily changed (automatically in production). The overflow top piece containing the contacts is linked to the cup body with an easy snap & click mechanism. There is no wafer chuck needed, wafers are fixed and self-aligned on the cup, the handling is performed with dry backside and least chemical drag out. Crack detection on the fly can be integrated in the handling cycle. As a result, the wafer breakage rate is minimised. Contacts can be easily deplated, if necessary. In some solar cell plating concepts, contacts are not getting wet and do not need any deplating step. Chemical processes can be assisted with light, which is optionally integrated in the **suncup[®]** configuration. The **suncup[®]** provides excellent flow condition uniformity.



suncup[®] applications

- Plating of solar cell metallisation (front side/backside; plating on seed/directly on silicon)
- Silicon direct plating, e.g. in combination with porous silicon
 - o silicide formation without emitter shorting
 - o single cycle of dry/wet/dry (silicide after full stack plated)
- Plating on high ohmic emitters
- Wet chemical / electrochemical processes such as texturation, cleaning, anodisation, etching

NBT offers **suncup[®] lab versions** for plating or etching processes like porous silicon formation.

- **suncup**, tank (25l), direct heating system, HF concentration sensor, flow meter, pH-Meter, backside contact (dry), light integration, pump & plumbing (easy drain/easy startup)

suncup[®] main benefits

- single side/backside dry processing
- no need for backside protection -> high flexibility in chemical processing
- processing with up to 25% HF, e.g. porous silicon in the range of 5% to 25% HF
- modular tool setup (anode cassette, flow body, crown for different wafer sizes, contacting)
 - o change the wafer size and contacting configuration with snap & click (automated in production tool)
- capable of light enhanced processing
- excellent and uniform flow conditions
- contacts easy to deplate or kept dry
- dry wafer handling, options for crack detection on the fly
- lab tool version
 - small foot print fits into standard exhaust
 - very suitable for engineering and process fine tuning
- lean manufacturing and scalability for production tool

Ask for suncup[®] lab version!

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