# KELLENBERGER U300 Boule Pro

ID/OD Grinding




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## ID/OD Grinding




### SiC Market and end use applications

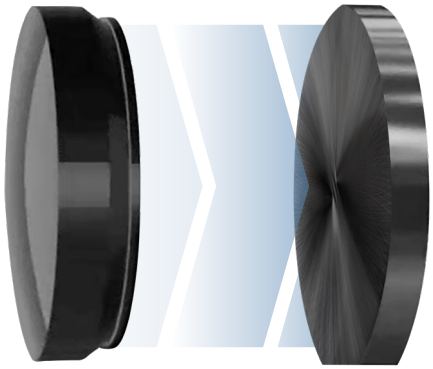
- Silicon Carbide is a semi-conducting or semi-insulating material used in many different types of electronic devices such as diodes, MOS-FETS, JFETS, etc.
- It is replacing Silicon based devices for applications that require high power density, high frequency, and high voltage applications
- Silicon Carbide is grown via a Physical Vapor Transport (PVT) process in high temperature furnaces and it takes 2-4 weeks to grow a crystal (boule) that is only a few kilograms in size
- Electric Vehicles and 5G are a major user of these types of devices
- The crystal then needs to be shaped into a wafer ready puck and then sliced into wafers for device makers to process
- It is this post growth processing step, taking the as grown boule to a wafer ready puck, for which KELLENBERGER U300 BoulePro has developed an innovative solution

# The KELLENBERGER Solution



Crystal Growth

## Boule to Puck Conversion



Raw Boule Finished Puck



Wafering

### Our experience with SiC

- Extensive experience machining SiC material meant for semiconductor applications – machines running at SiC producers today
- Automatically execute all major boule to puck process steps for 150mm and 200mm material – OD, Flat and Notch, Dome / Seed side removal
- Optimized all boule to puck process steps including XRD to determine and compensate for crystal orientation Single Step Dual plane Compensation (SSDC) capability
- Integrated into a single machine design that includes advanced workholding that negates the need for gluing the boule to any fixturing throughout the processing steps
- Provide SiC crystal producers with the most efficient and lowest cost solution to machine boules – extremely fast cycle time is the enabler



KELLENBERGER U300 BoulePro for SiC transformation from boule to puck

# Custom Options

**Functionality That Can Be Added To The Machine:**

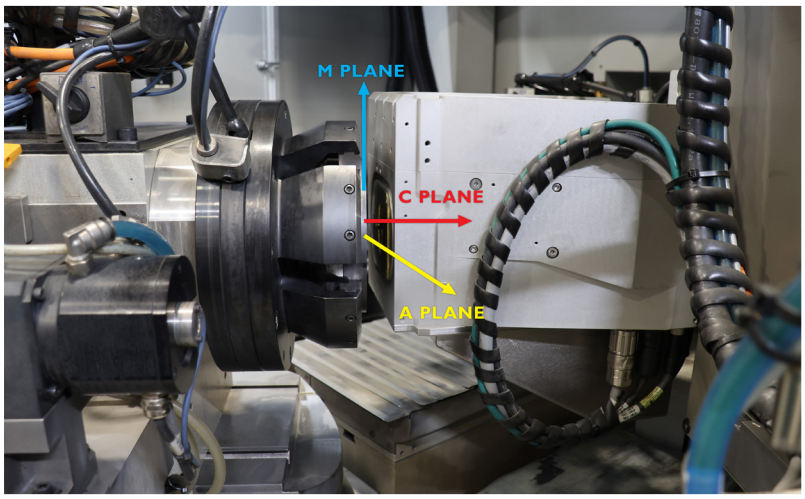
**A – Automation:** The machine is fully automated to receive a SiC boule and create a wafer ready SiC puck.

**X – X-Ray Diffraction (XRD) capable:** The crystal structure of the SiC boule must be identified so to correctly orient the crystal in the finished SiC puck and the XRD Single Step Dual plane Compensation (SSDC) capability allows this to be completed.

**U – UV light detection:** When SiC boules are placed under a UV light, certain foreign polytypes (wrong kind of SiC crystal) will show as a different color. 4H is the polytype desired to grow and 6H is a foreign polytype grown inadvertently in some cases. The UV light shows the location of the 6H grown crystal and the machine removes it so the final SiC puck contains only the desired 4H polytype.

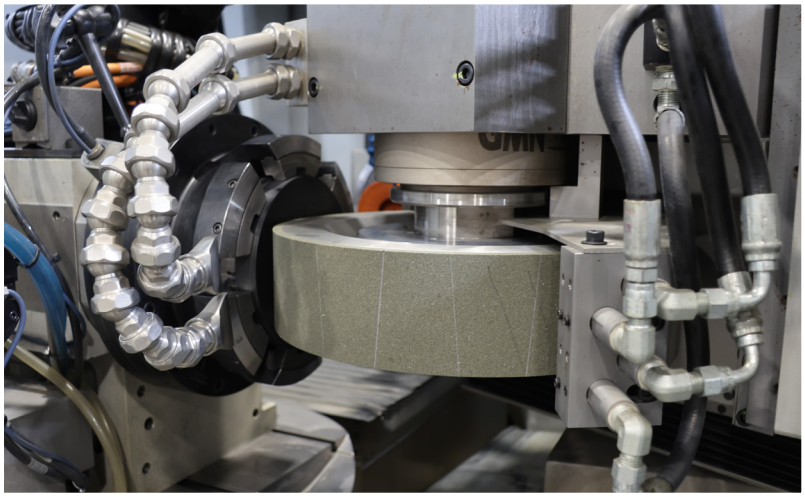
**L – Laser scribing:** The ability to make a laser scribe on the finished SiC puck surface can be added so the customer can appropriately track the lot #, boule #, etc. for material tracking purposes.

**V – Vision system:** The vision system can take high end photos of the boule or puck as the customer desires at any stage of the process.

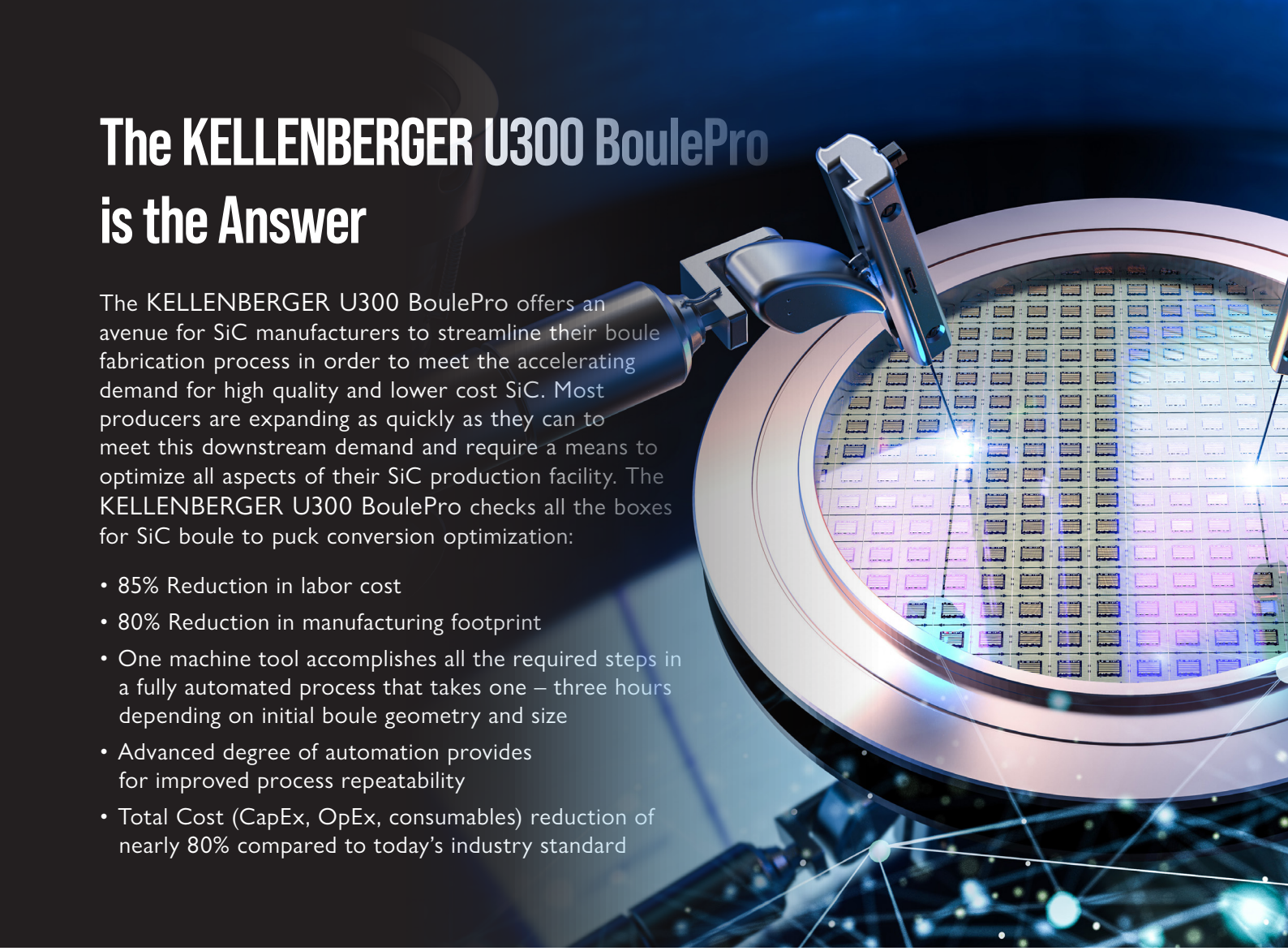






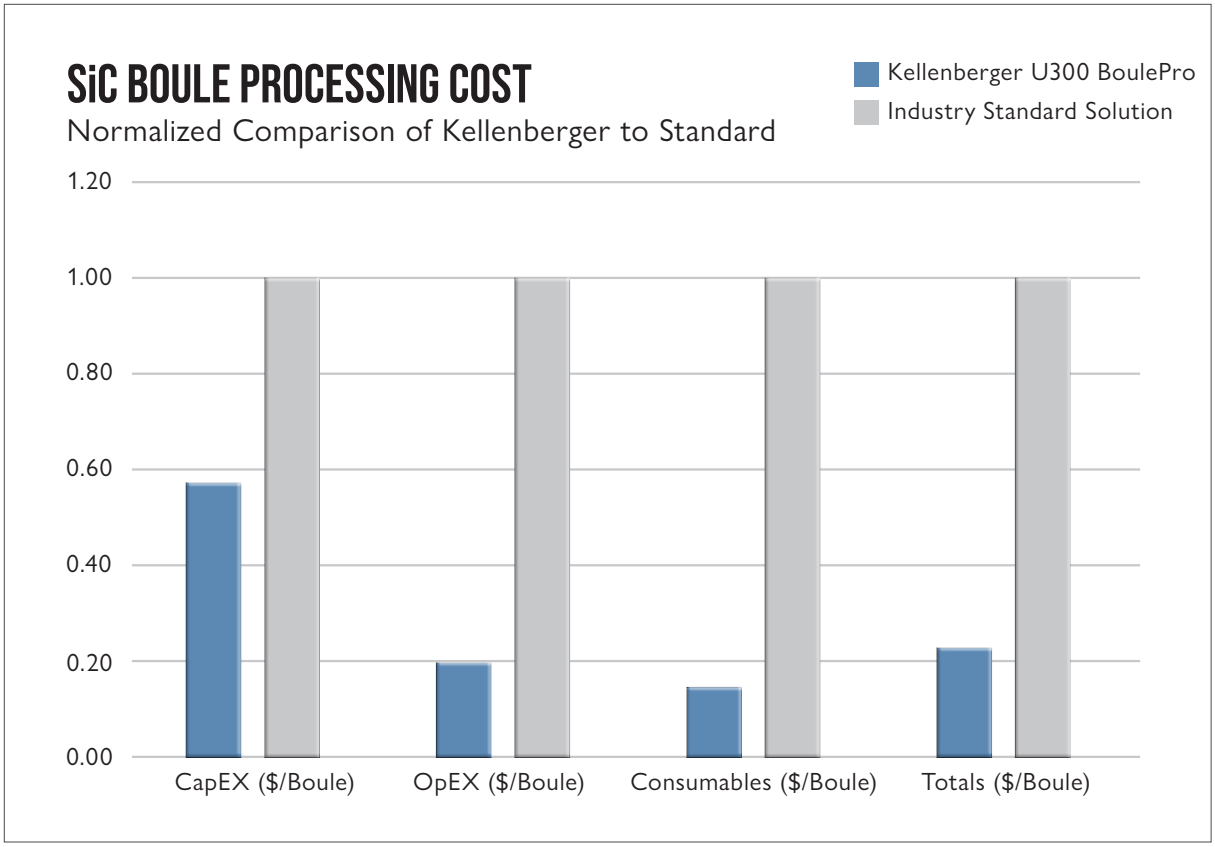



# The KELLENBERGER U300 BoulePro is the Answer



The KELLENBERGER U300 BoulePro offers an avenue for SiC manufacturers to streamline their boule fabrication process in order to meet the accelerating demand for high quality and lower cost SiC. Most producers are expanding as quickly as they can to meet this downstream demand and require a means to optimize all aspects of their SiC production facility. The KELLENBERGER U300 BoulePro checks all the boxes for SiC boule to puck conversion optimization:

- 85% Reduction in labor cost
- 80% Reduction in manufacturing footprint
- One machine tool accomplishes all the required steps in a fully automated process that takes one – three hours depending on initial boule geometry and size
- Advanced degree of automation provides for improved process repeatability
- Total Cost (CapEx, OpEx, consumables) reduction of nearly 80% compared to today's industry standard

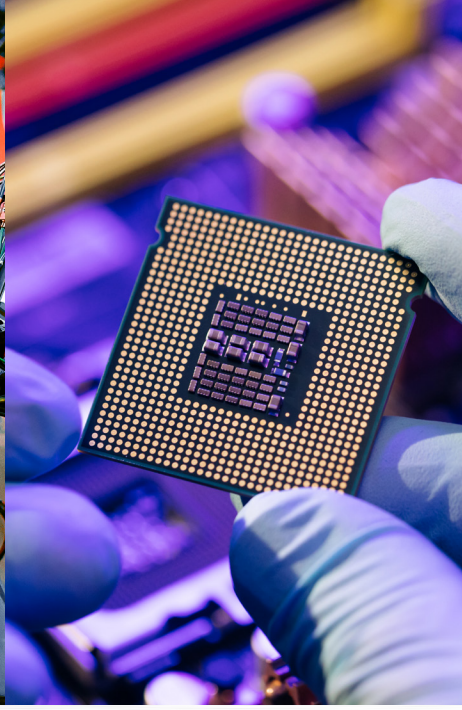


# Technical Data

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|---|---|
| Dimensions | 220” x 169” x 130” (5600 x 4300 x 3300 mm) |
| Weight, approximately (in basic configuration) | 25,000 lbs. (11,363 kg) |
| Required Power | 72A |
| Electrics | 480 V +/- 5%, 3 phase, 60 Hz Or 400 V +/- 5%, 3 phase, 50 Hz<br>Control voltage 24 VDC |

Above data may vary depending on application.





# SUPPORTING GLOBAL INDUSTRIES:

Kellenberger's product portfolio is ideally suited to support all major industries. Our technology continues to develop some of the world's most cutting edge solutions for companies across the globe.





All prices and details are subject to change without notice. 1/2026

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