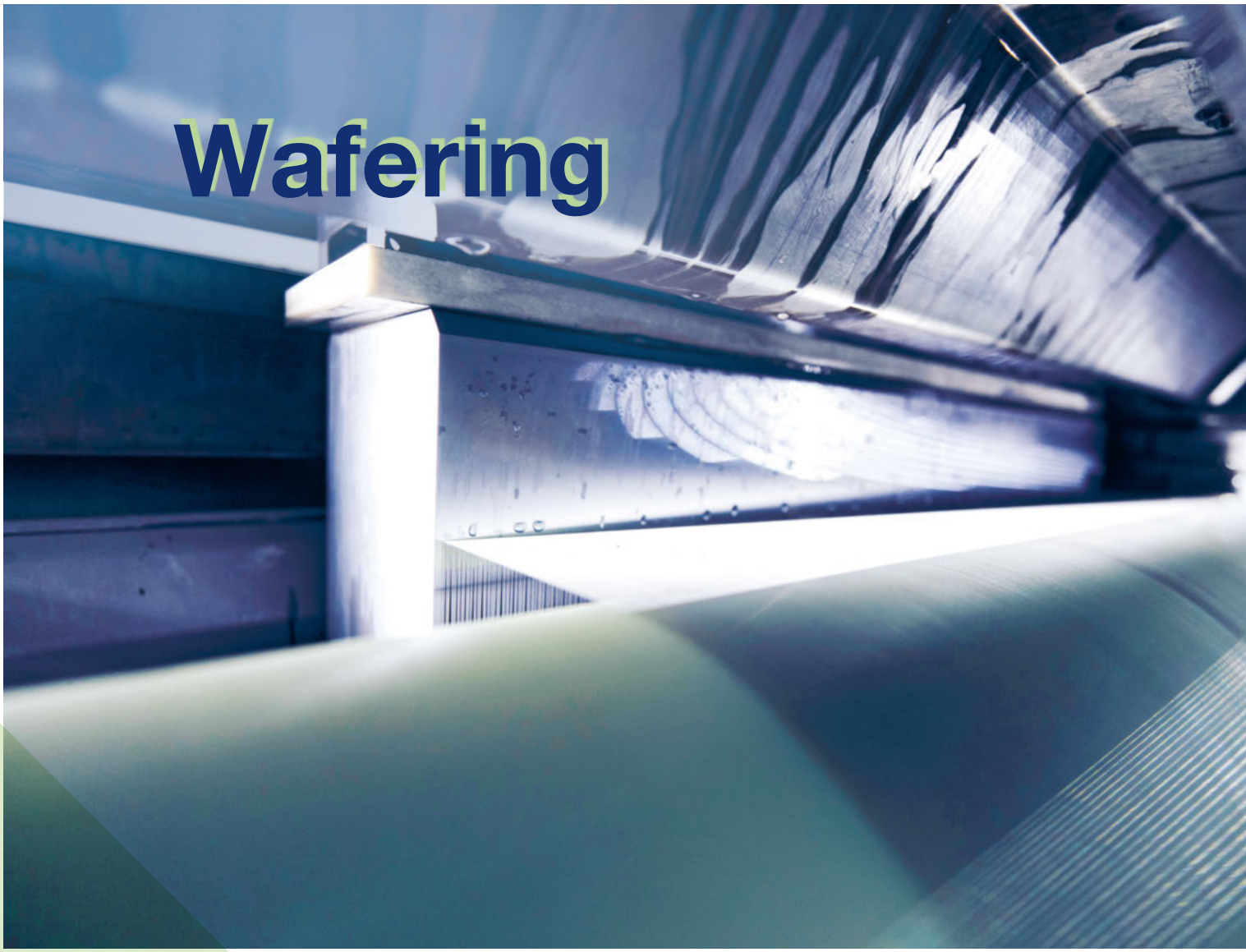
Wafering

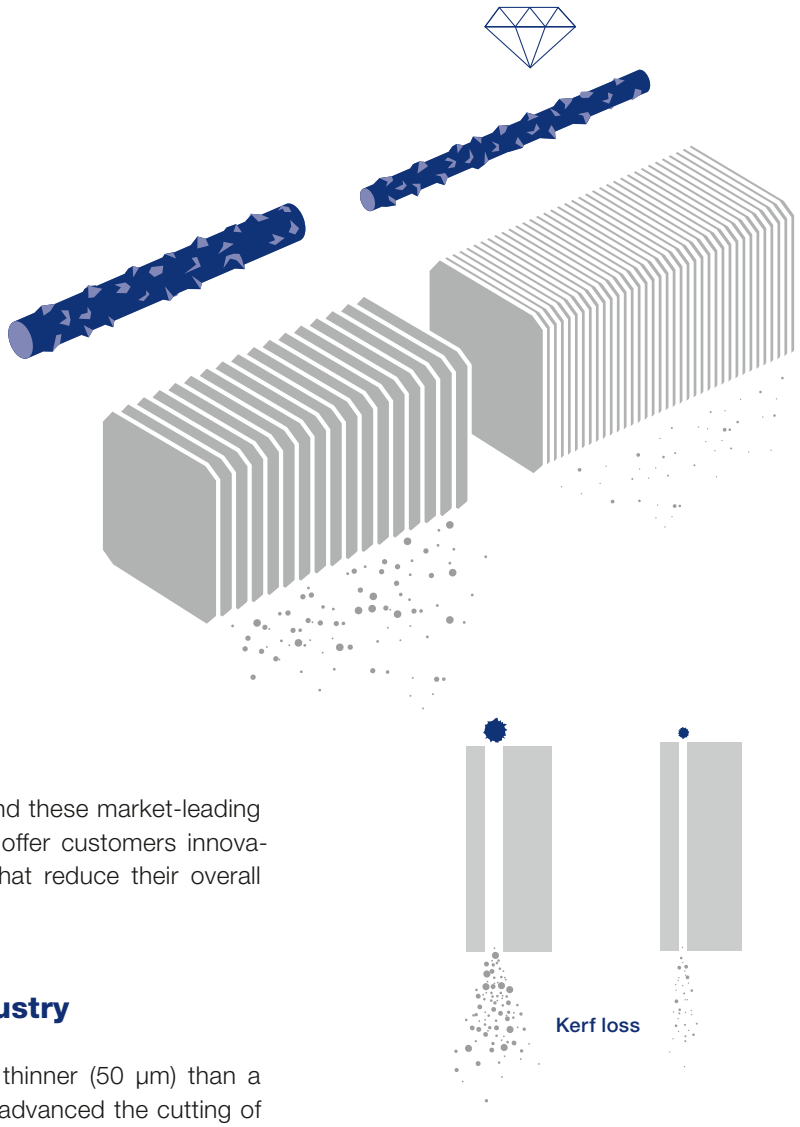


A piece of technology history comes to an end. Wafering or slicing technology, meaning the precise separation of hard and brittle materials, had a long tradition at Meyer Burger. With the sale of this division to the Precision Surfacing Solutions (PSS) Group expected to be at the end of March 2019, a piece of technology history at Meyer Burger is coming to an end. PSS will open a new chapter and continue the expertise of Meyer Burger.

Diamond wire cutting

Meyer Burger has set the technological standard for the cutting or separation of hard and brittle materials with the biggest possible material and cost savings. In the photovoltaic industry, the environmentally friendly and water-based diamond wire sawing process has helped to bring about ultra-thin, high-quality silicon wafers for the manufacture of highly efficient solar cells. Also outside the PV industry, a substantial growing list of applications use diamond wire saws.

With Meyer Burger's automated wire sawing solutions, diamond-coated wire is stretched over rollers to form a wire field that cuts material into wafers with minimal kerf loss. Higher cutting speed, a longer wire field and ultra-thin diamond wires enable increasing numbers of wafers to be cut faster, at top quality and with outstanding precision. Diamond wire is the principal cost factor



in the manufacture of wafers and these market-leading diamond wire-cutting systems offer customers innovative solutions and processes that reduce their overall operating costs.

Wafering in the PV industry

Using diamond wires that are thinner (50 µm) than a human hair, Meyer Burger has advanced the cutting of monocrystalline and multicrystalline silicon wafers in the PV industry. Silicon consumption is only around 2 g / watt peak, with a significant increase in production volume. At the same time, a sophisticated control system for process parameters such as wire tension ensures that the wafer quality fulfills the high requirements for subsequent cell coating processes.

With the DW 291 diamond wire saw, Meyer Burger launched its last wafering innovation for the PV industry, setting new standards for the production of silicon wafers. Depending on the application, the kerf loss resulting from the sawing process in standard practice is only 20–25% with the DW 291. Production volume is also increased because of the extended process window, shorter cutting times and the patented Diamond Wire Management System (DWMS) with its re-sharpening technology and optimised wire winding spacing which prolongs the life of the diamond wire in production.

Cutting technologies for special materials

Outside of the PV industry, there are also a growing number of applications that rely on diamond wire technology. This applies to the cutting of sapphire crystals, ceramics or quartz into wafers. Sapphire wafers are used, for example, in watch glasses, touch screens or light emitting diodes (LEDs). Silicon carbide also holds great potential for the future. Wafers made of this material are used in high-performance modules or as power semiconductors in the control modules of electric vehicles.