

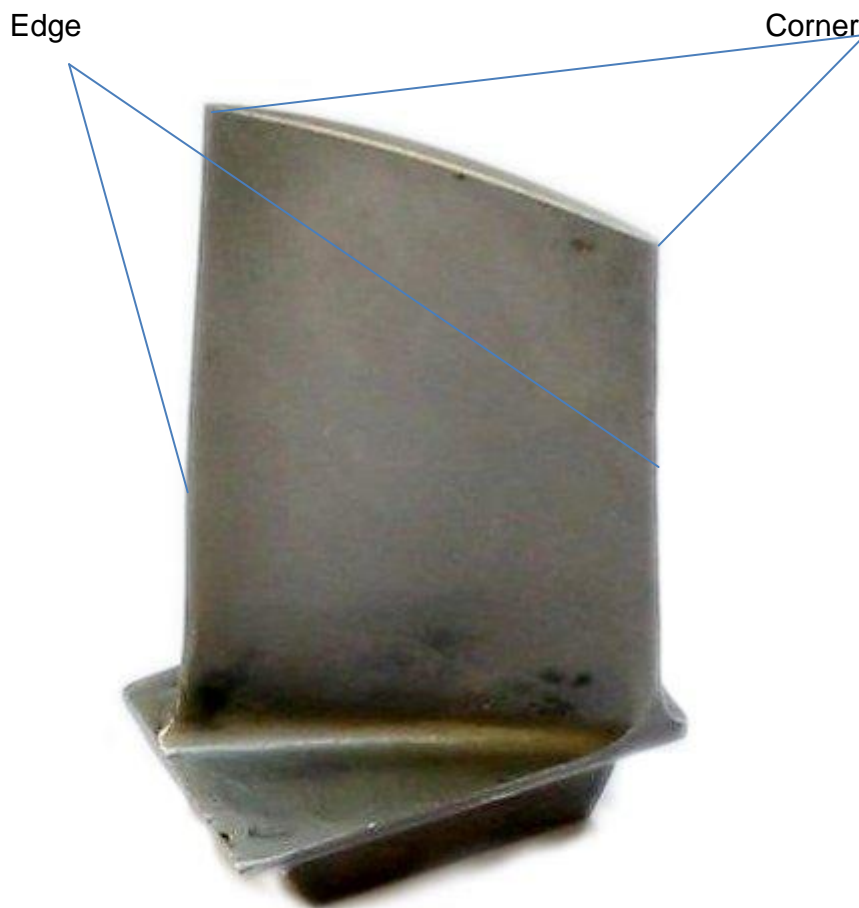
## Processing of turbine blades

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Turbine blades are available in various designs, sizes and materials, including of nickel-titanium or tungsten-molybdenum alloys. They are forged, machined or manufactured with the new laser sintering process. All of them need a surface treatment after production, since the roughness is too large or the edges are too sharp.

There are two tasks:

- 1) Homogeneous smoothing the surface: in general to  $Ra < 0.4 \mu\text{m}$ , with blades made of titanium alloys often under  $Ra 0.25 \mu\text{m}$ . It is particularly necessary to ensure that the shape of the blade is not strongly affected.
- 2) Rounding the edges to a defined dimension: it may be that at the edges of the blade the rounding should be different. Conventionally, this rounding is made by CNC machines or by hand. However, since the thickness of the blade along the edge may be different, this is not an easy task. The big problem here is that the blades could be too strongly rounded at the corners.



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### Processing in OTEC SF machines

The blades are fixed in a way that the corners point upwards during the process and almost are not covered by media. Mostly we use KM 6. During the process the blade is aligned in the flow direction and moved back and forth at a predetermined angle (for example,  $\pm 30^\circ$ ) in order to achieve uniform processing. The process times are generally 15-30 minutes.

