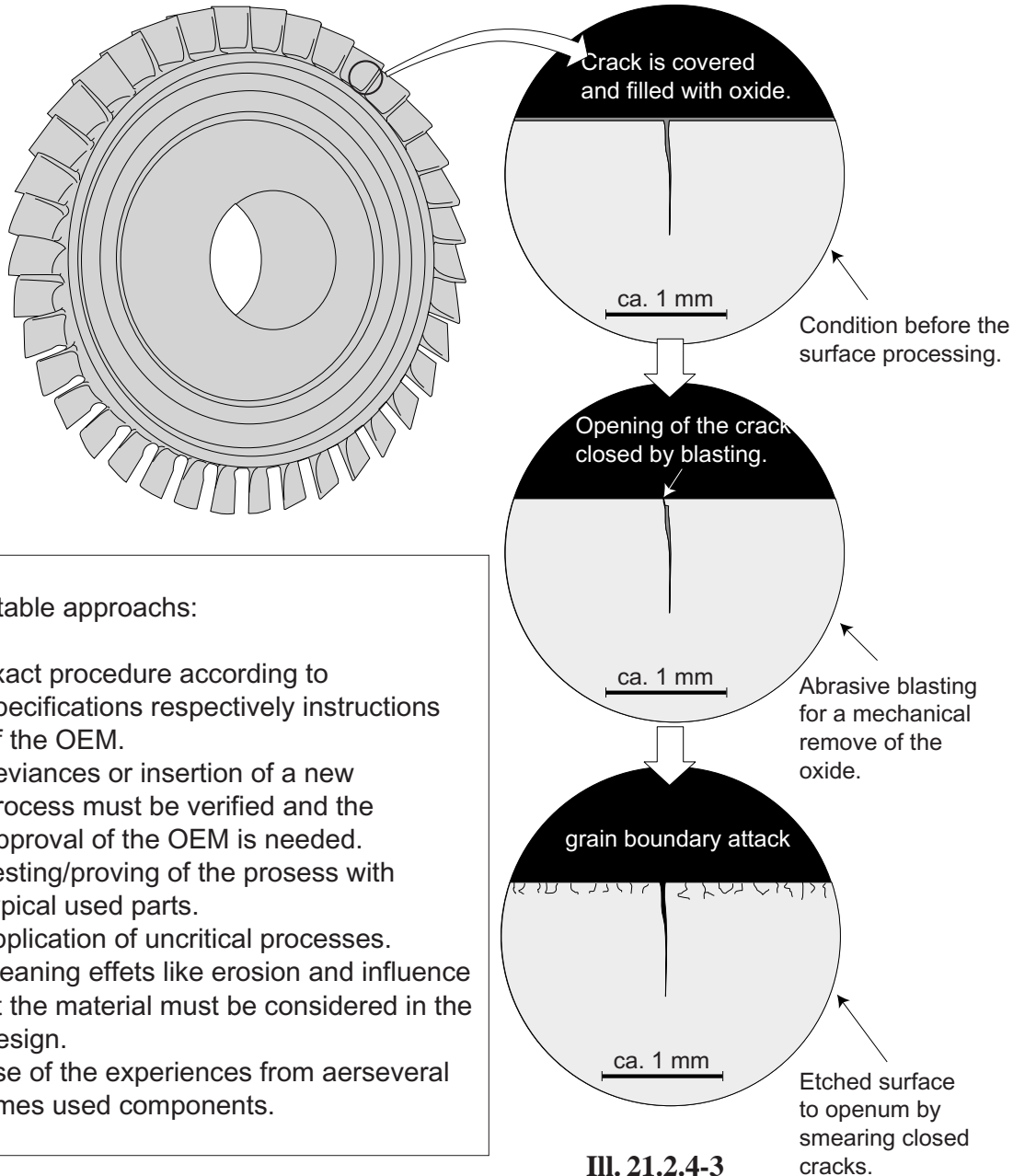


Abrasive blasting and etching before a penetrant inspection can lead into a dilemma.



Suitable approaches:

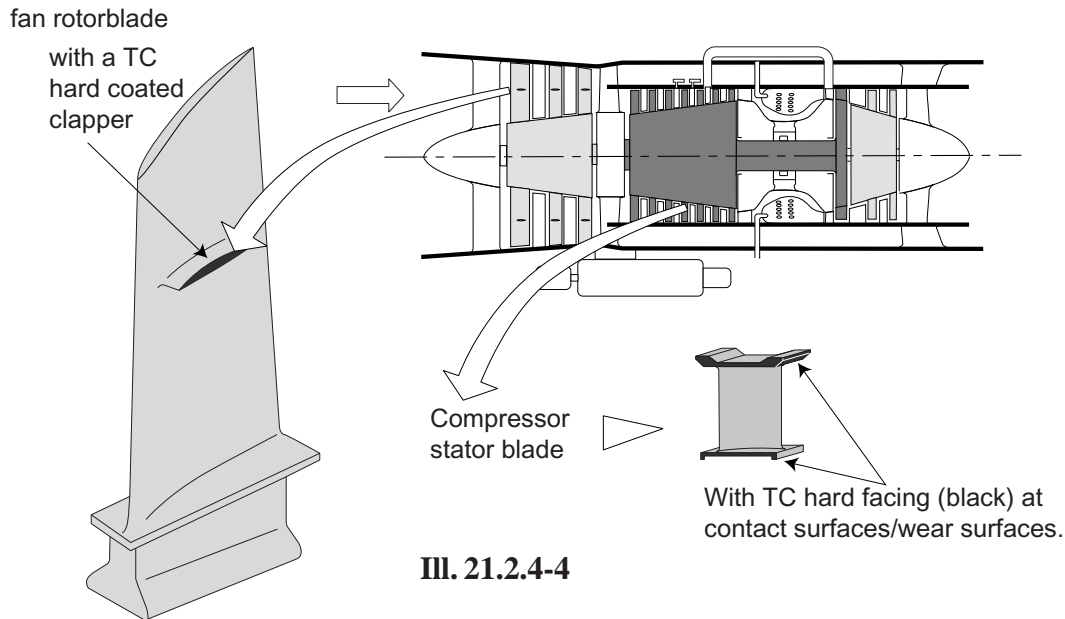
- Exact procedure according to specifications respectively instructions of the OEM.
- Deviances or insertion of a new process must be verified and the approval of the OEM is needed.
- Testing/proving of the process with typical used parts.
- Application of uncritical processes.
- Cleaning effects like erosion and influence at the material must be considered in the design.
- Use of the experiences from several times used components.

III. 21.2.4-3

*III. 21.2.4-3: There are different effects of surface treatments which can **affect the penetrant inspection** (volume 4, chapter 17.3). As well **abrasive blasting** as also **shot peening** can **close cracks and porosity** (detail middle).*

*With this the penetrant fluid can no more intrude as necessary for the testing process. A further effect is the **roughening of the surface**. It can trigger a „**background fluorescence**“. This covers optically the crack indication. This*

An aged or contaminated process bath can dangerously deteriorate/damage coatings/platings.



effect develops, when the rough surface if so with overlaps adheres penetrant fluid.

To open „smearings“ etching is used after blasting/peening. If this causes an increased roughness this can mean also disturbing background fluorescence.

Etching is used to remove covering oxide layers and oxidation in cracks (detail above) and pores before a penetrant inspection. Tereby a further problem in a crack like, mostly **intercrystalline attac** emerges (detail below, Ill. 21.1-12 and Ill. 21.2.4-2). This damage even in an already dangerous size not yet detectable with penetrant inspection.

Approaches for a **risk minimization** are contained in the frame at the left.

Ill. 21.2.4-4: Aged or contaminated process baths like etching baths and cleaning baths can dangerous damage materials, which they else don't attack. This danger of **repairs** is expecially high. The cause is, that used, possibly already at former times repaired parts in **contrary to new parts** can have unknown or undetected contaminations.

In the shown case in a short time period it failures occurred repeatedly at a multitude of parts during repair (volume 4, Ill. 16.2.1.7-8). Concerned was a proven process bath in which **TC/Co-wear protection coatings** are normally not attacked. These coatings are at parts of a tanium alloys from the compressor have been suddenly dissolved (?).

Investigations showed, that probably a **contamination with copper** was the cause for the aggressive behaviour of the bath.

Note: To a repair respectively repair development belongs also the **testing and the proof** of suitable **non destructiv testings** which guarantee the safety.