
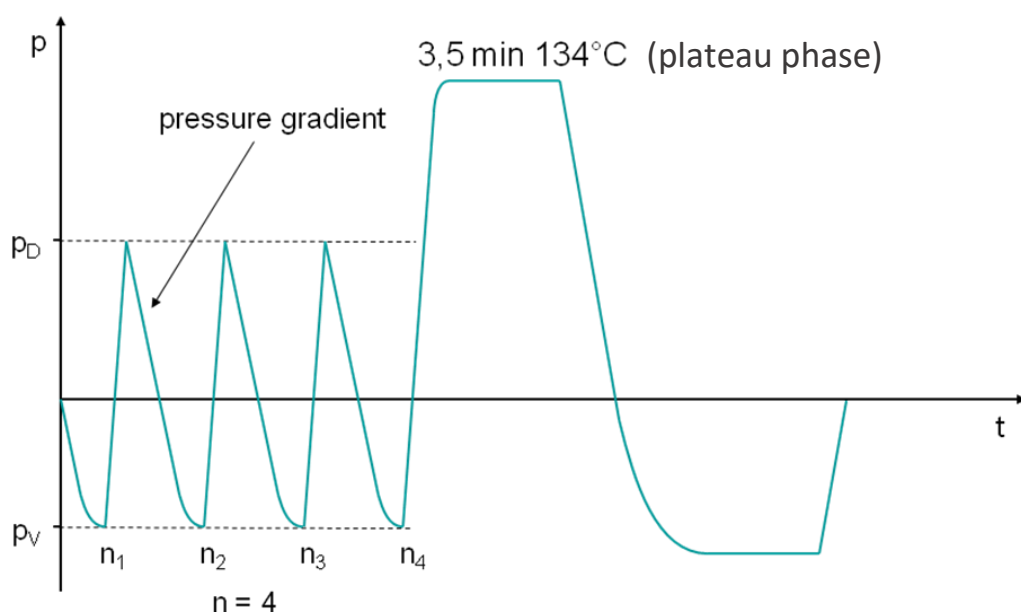



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|---|---|-------------------|------------|------------|
|  | <b>Technical Information</b>  | <b>730-094-EN</b> |            | <b>V06</b> |
|   | <b>Influences on the air removal performance of steam sterilization processes</b> | Created           | 06.06.2009 | DaK        |
|   |   | Changed           | 02.09.2021 | KP         |
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In steam sterilization processes the air removal performance of the used sterilization program depends on several parameters:

1. Number of air removal cycles  
The more air removal cycles are run during a sterilization process, the higher is the air removal performance of a sterilization process, but still dependent on the following points 2-5.
2. Upper pressure changing point  $p_D$   
The higher the upper pressure changing point  $p_D$ , the higher is the air removal performance of a sterilization process.
3. Lower pressure changing point  $p_V$   
The deeper the lower pressure changing point  $p_V$ , the higher is the air removal performance of a sterilization process.
4. Pressure gradient or pressure changing velocity during steam injection  
The lower the pressure changing velocity during steam injection, the higher is the air removal performance of a sterilization process.
5. Pressure gradient or pressure changing velocity during pressure decrease  
The lower the pressure changing velocity during pressure decrease, the higher is the air removal performance of a sterilization process.



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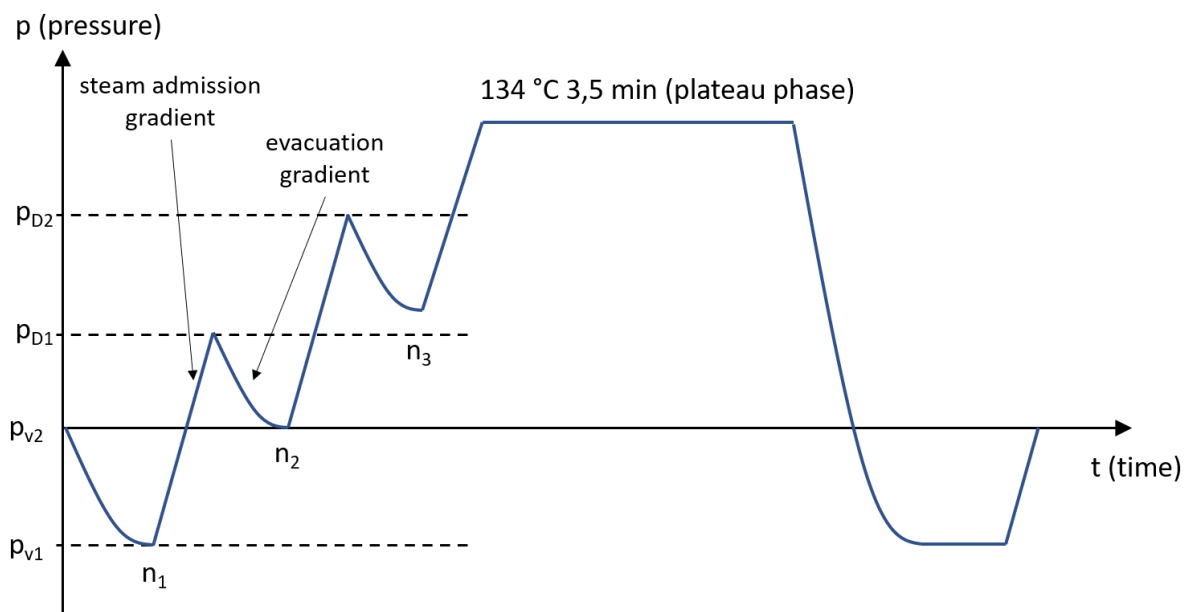
The five parameters mentioned above provide information about the performance of a program for removing the air from the chamber when the program starts. They do not provide clear information about the steam penetration and therefore about the success of the sterilization process, since the incoming steam may again introduce non-condensable gases (NCG).

There are several reasons for NCG in steam:

1. dissolved air in the feeding water, which is released during heating
2. air in steam pipes between steam generator and sterilizer at start of operation
3. hydrogen carbonates in the feeding water (hard water), which decompose into incrustation (white coating) and CO<sub>2</sub> gas during heating
4. there may also be a leakage

These additional possible reasons for an unsuccessful air removal or steam penetration cannot be evaluated on the basis of the pressure-time diagram alone and must be tested separately using a GKE test set.

In addition to the above diagram with identical air removal cycles, often processes with different air removal cycles are used.



Their air removal capacity can be difficult to predict and should be checked with a suitable GKE test set.