



Pneumofore



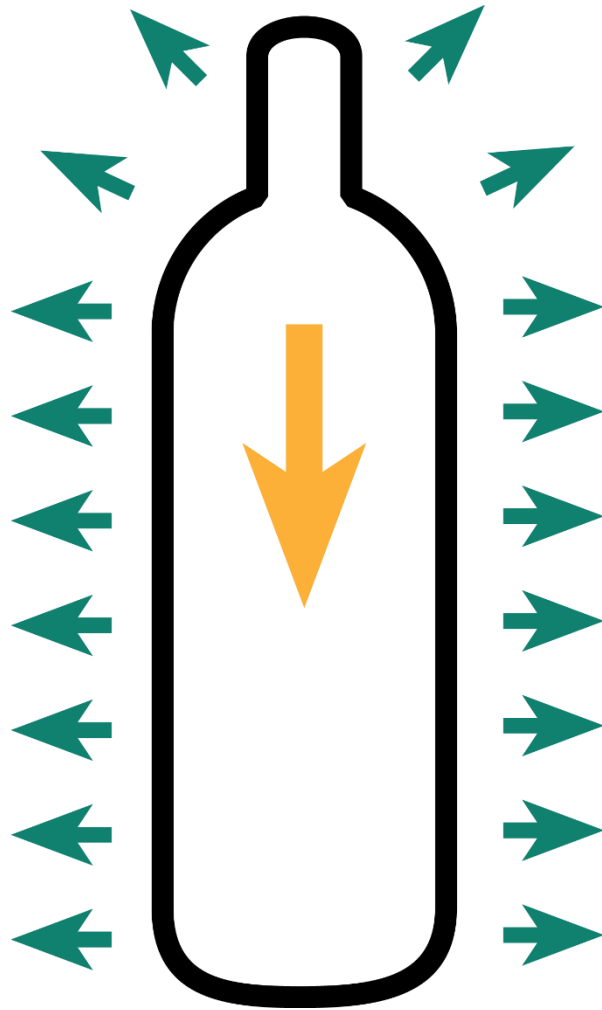
ENERGY SAVINGS IN GLASS MAKING: THE IMPORTANCE OF VACUUM SETTING

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CEO

VACUUM AND COMPRESSED AIR IN GLASS PRODUCTION



PNEUMATIC ENERGIES IN GLASS MOULDING



Benefits of exact pressure value:

Productivity

- Superior heat evacuation
- Higher forming speed
- More bottles / day

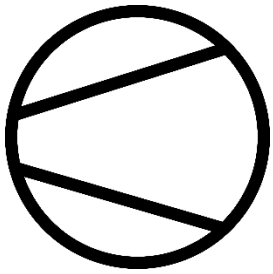
Quality

- Better 3D engraving
- Sharper corners / shoulders
- Lower rejection rate
- Lighter bottle

Energy Saving

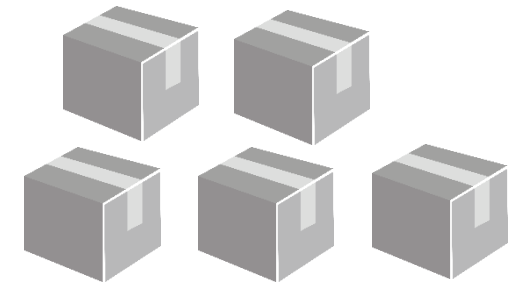
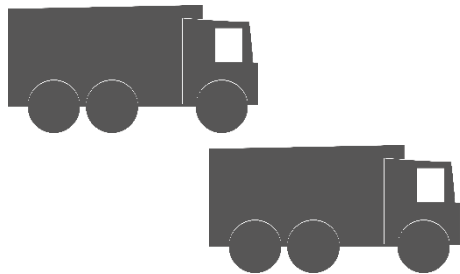
- Correct set-up between air and vacuum leads to energy saving

IMPACT OF UTILITY COSTS

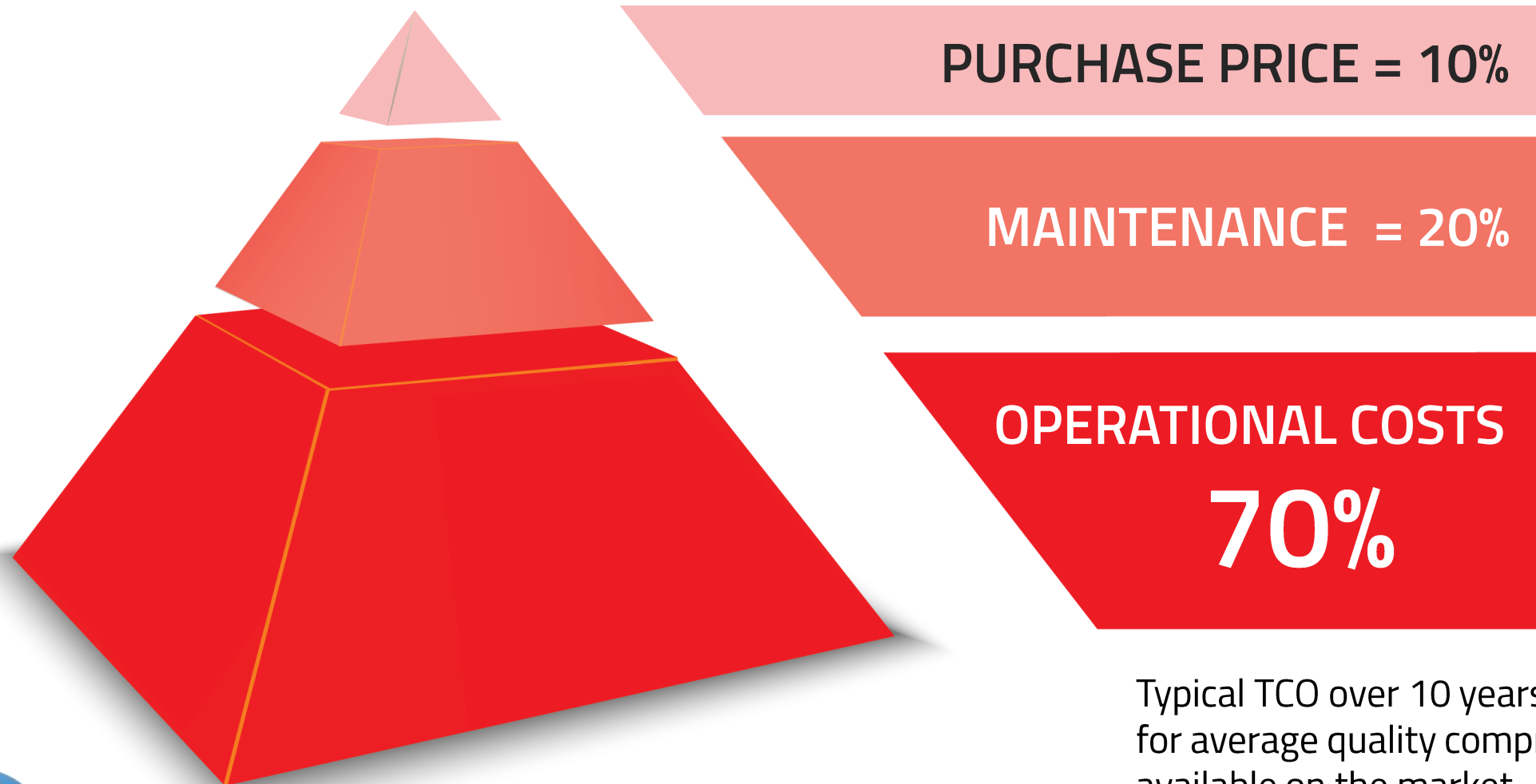


PNEUMATIC ENERGY
IMPACT ON TOTAL
ENERGY COSTS

UP TO
50%

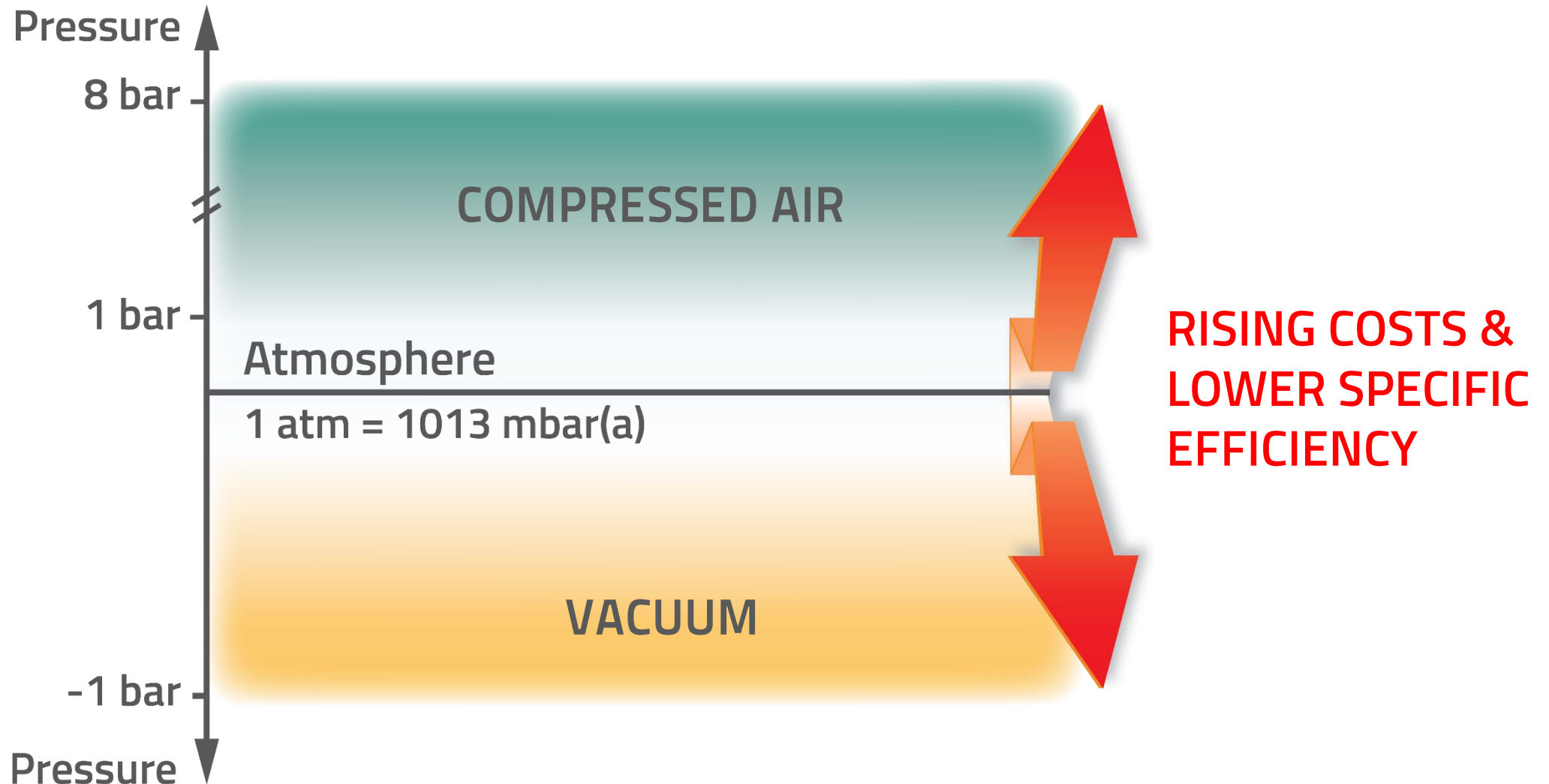


TOTAL COST OF OWNERSHIP

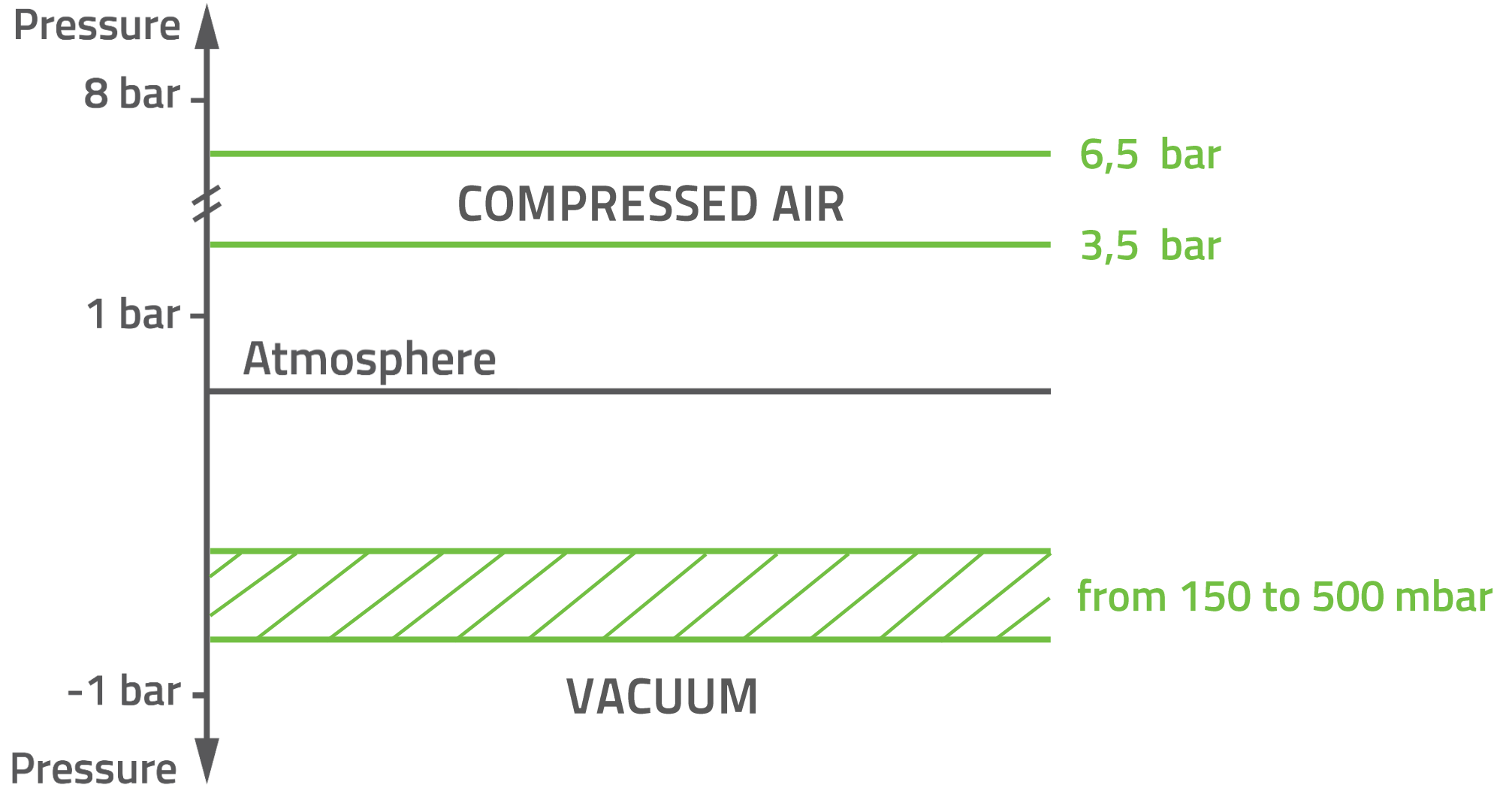


Typical TCO over 10 years
for average quality compressors
available on the market

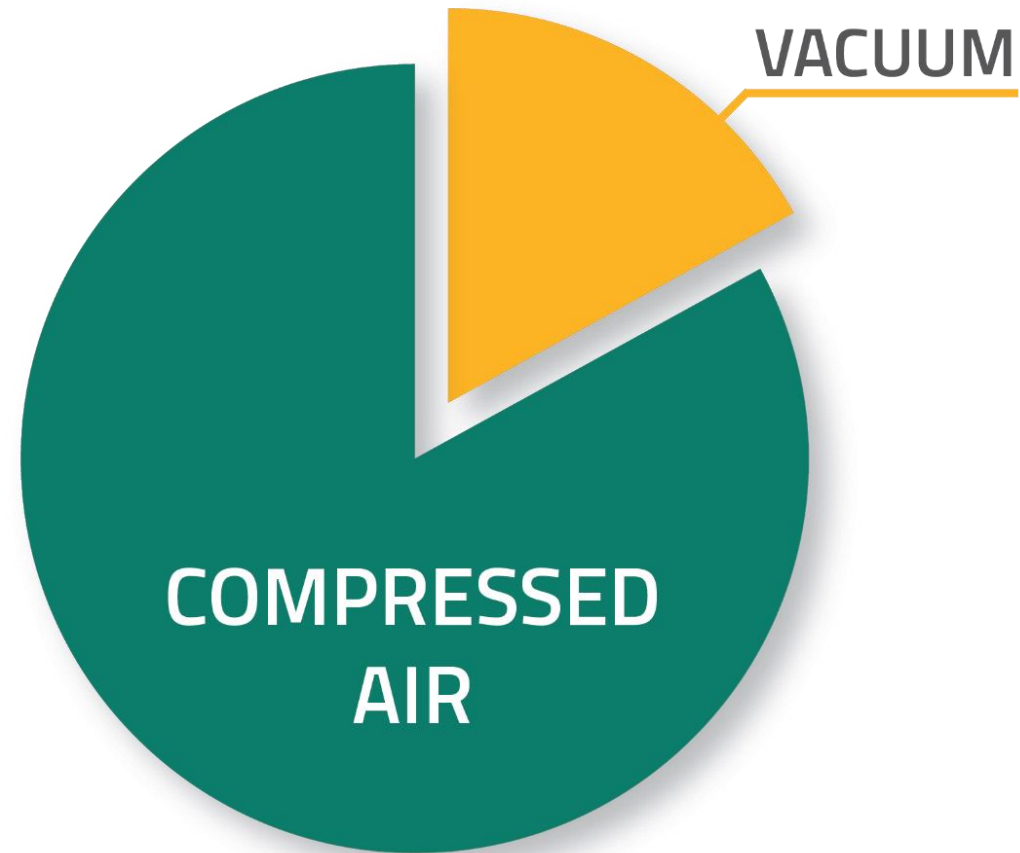
DEVIATION FROM ATMOSPHERE CONDITIONS



TYPICAL USE FOR HOLLOW GLASS

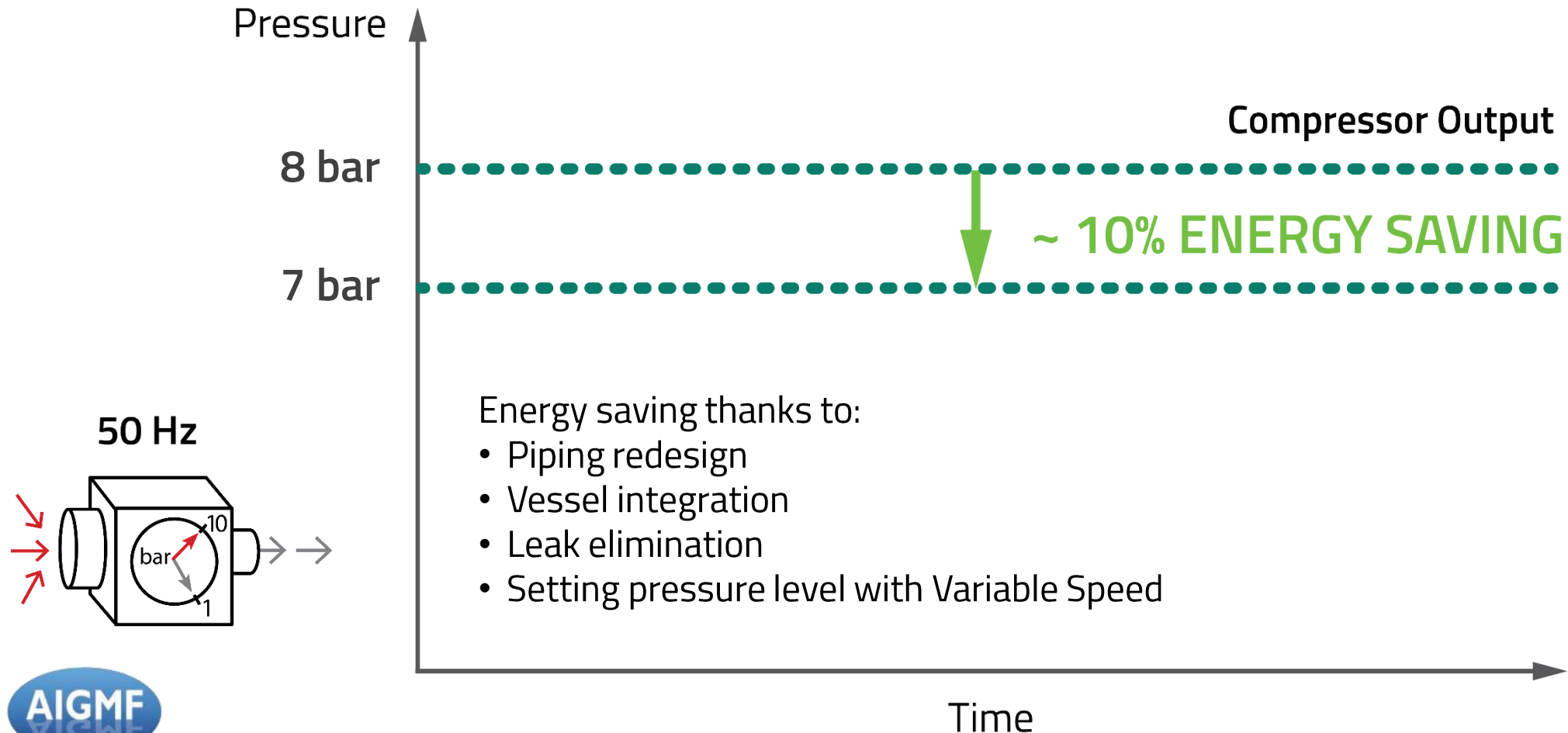


ENERGY CONSUMPTION COMPRESSED AIR vs VACUUM

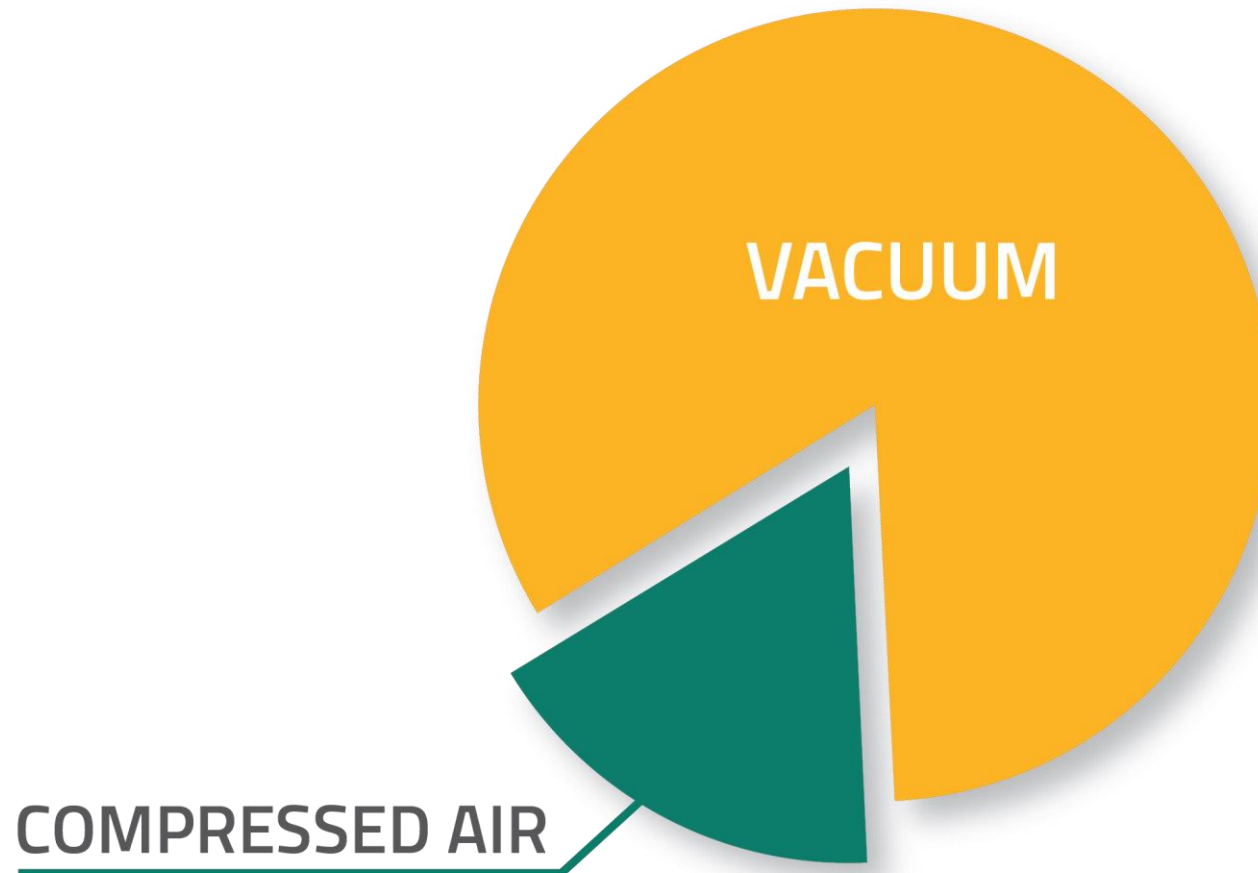


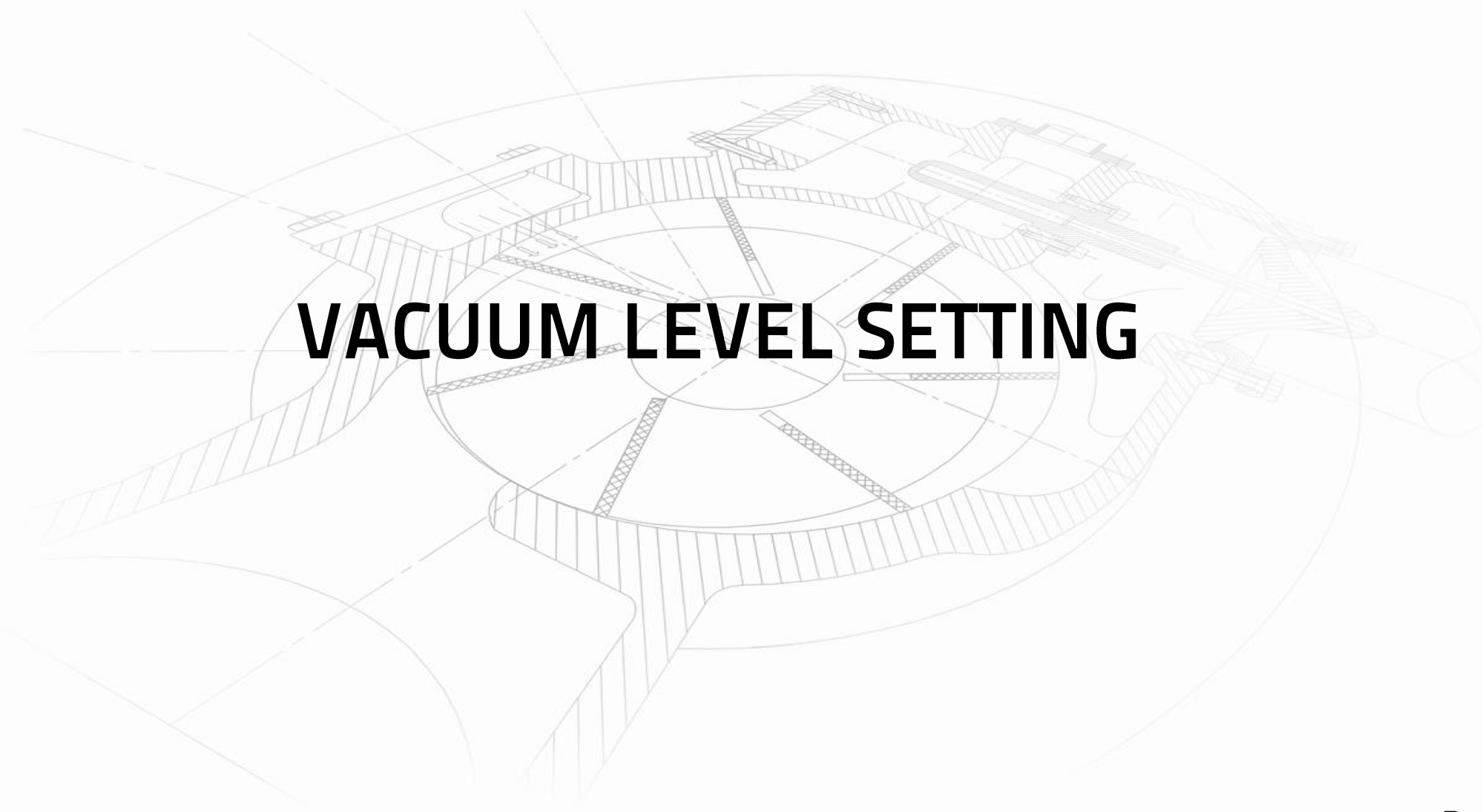
SYSTEM CONFIGURATION

COMPRESSED AIR EXAMPLE



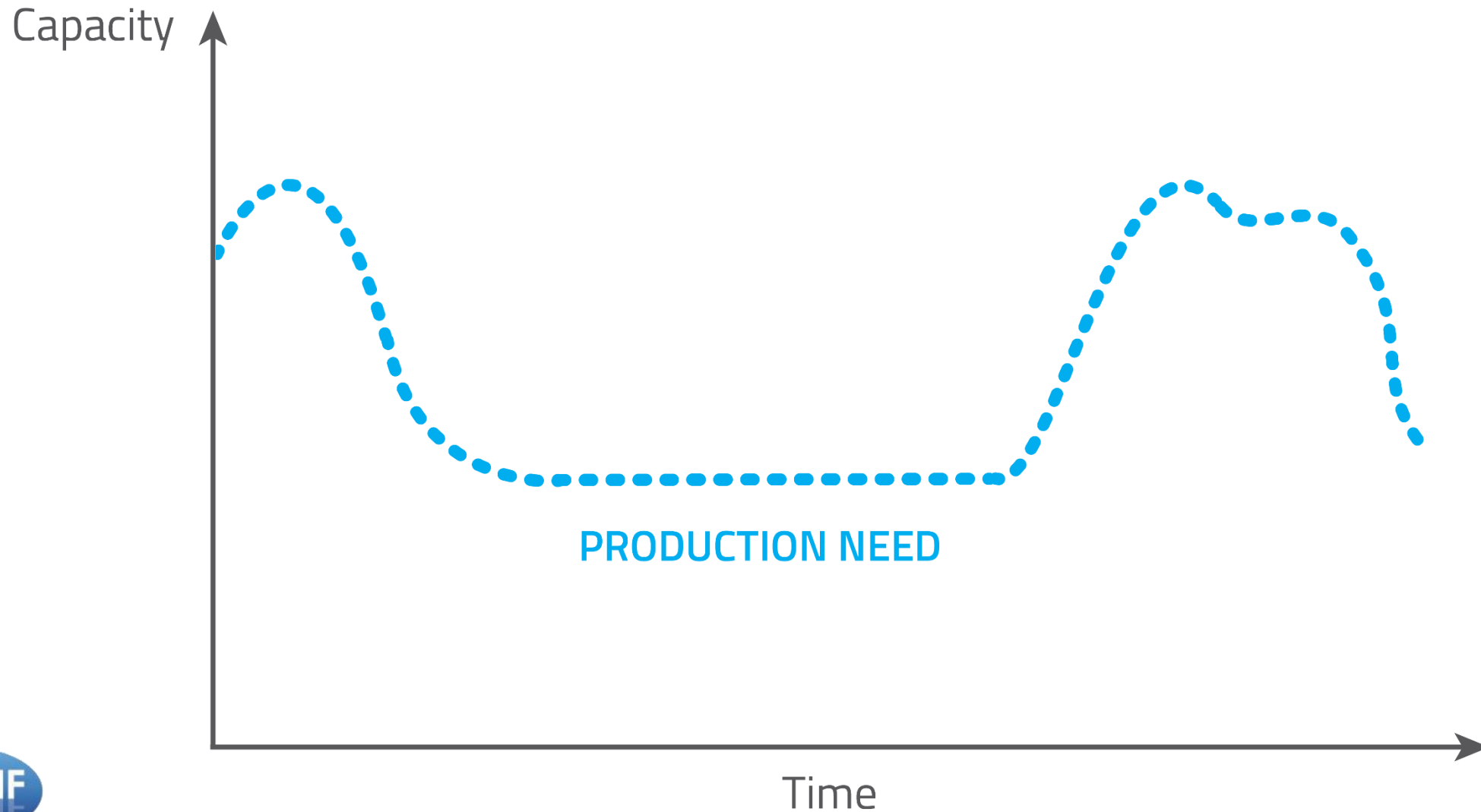
POTENTIAL ENERGY SAVINGS COMPRESSED AIR vs VACUUM



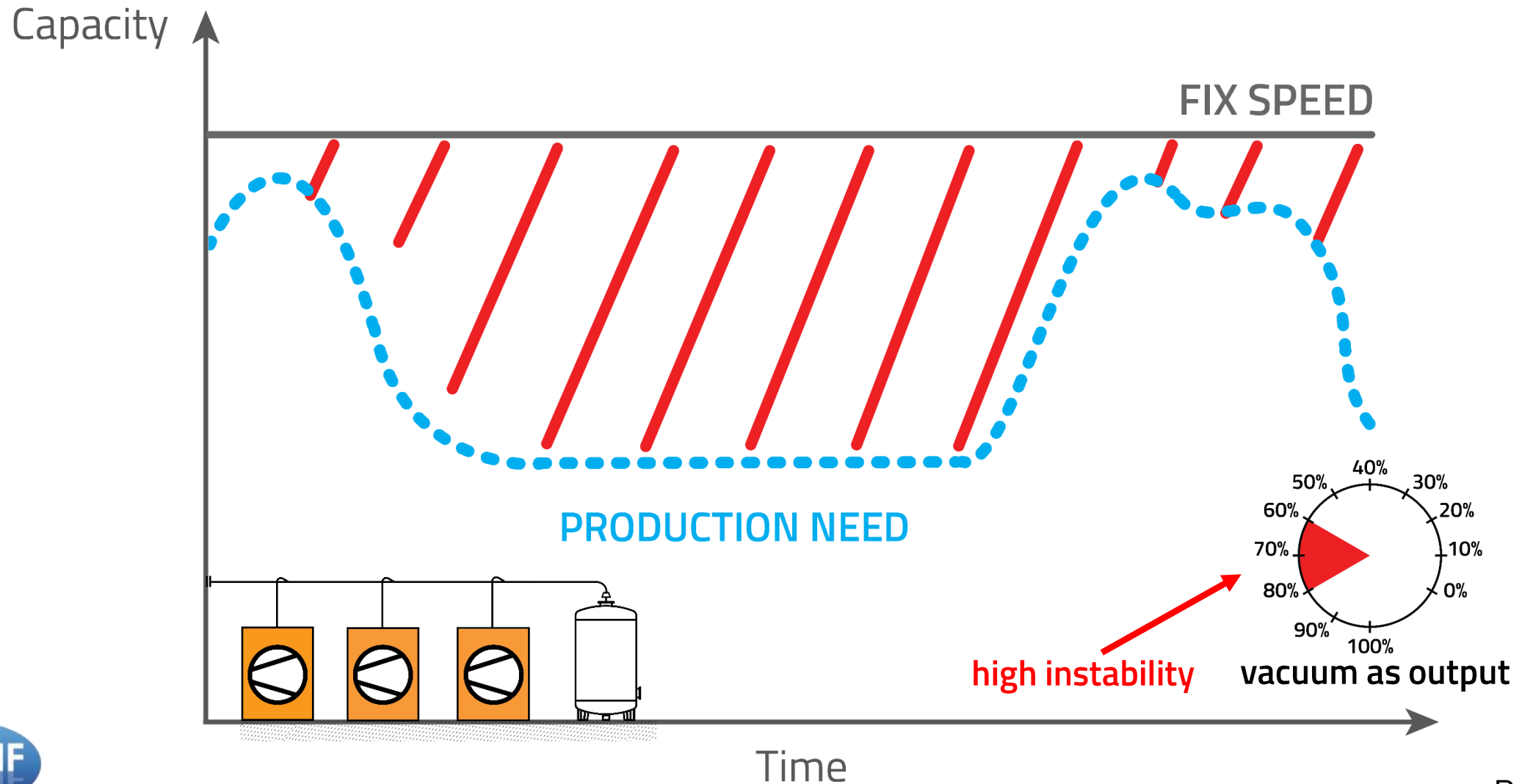


VACUUM LEVEL SETTING

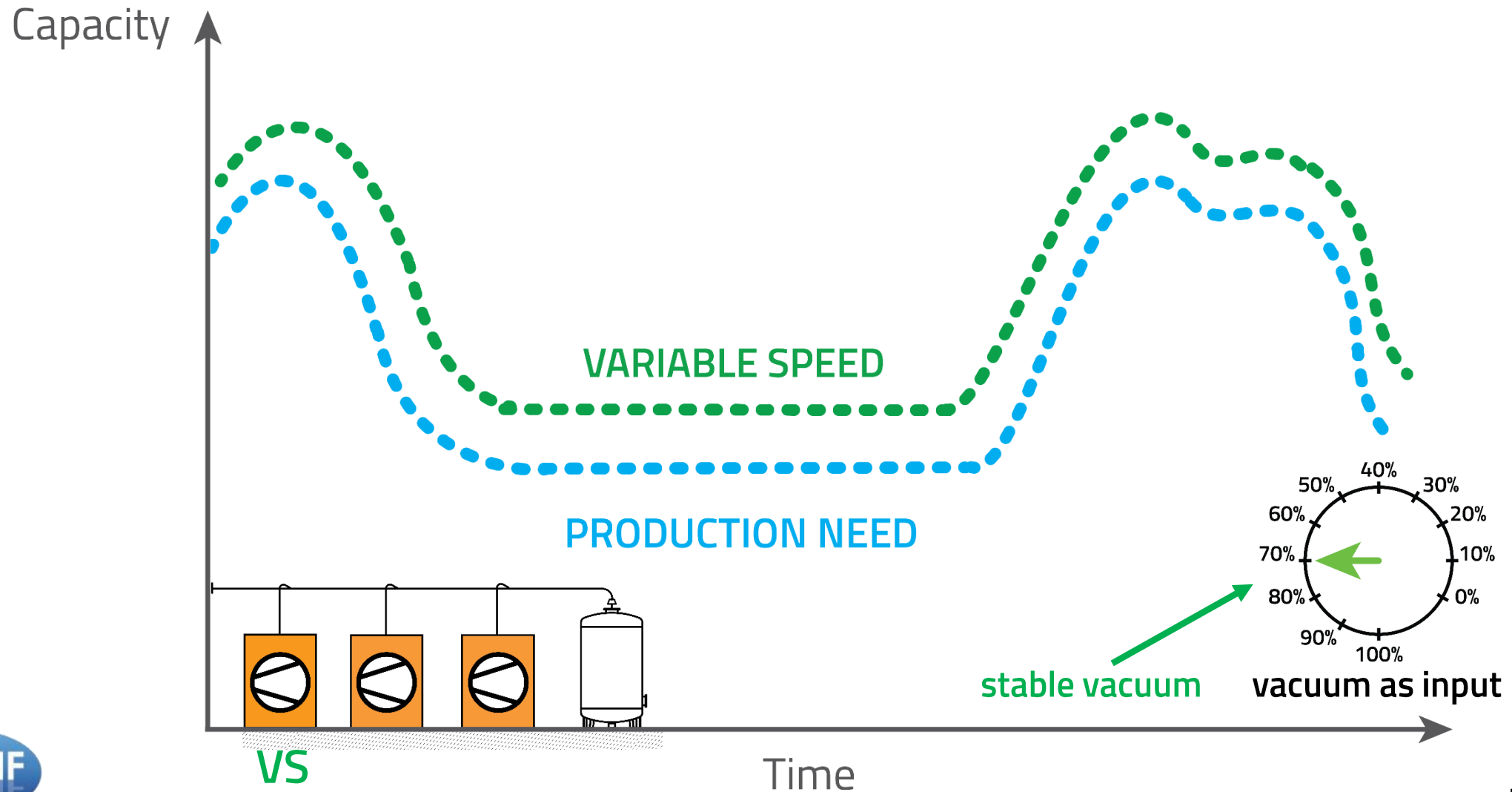
INSTABLE VACUUM NEEDS...



...WITH STABLE VACUUM CAPACITY

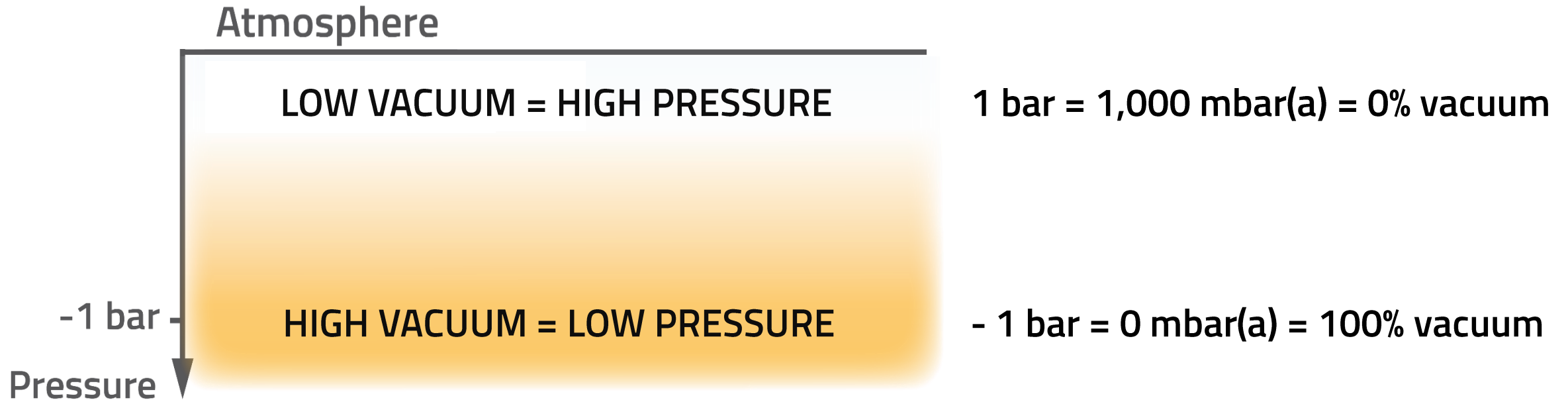


VARIABLE SPEED IMPLEMENTATION

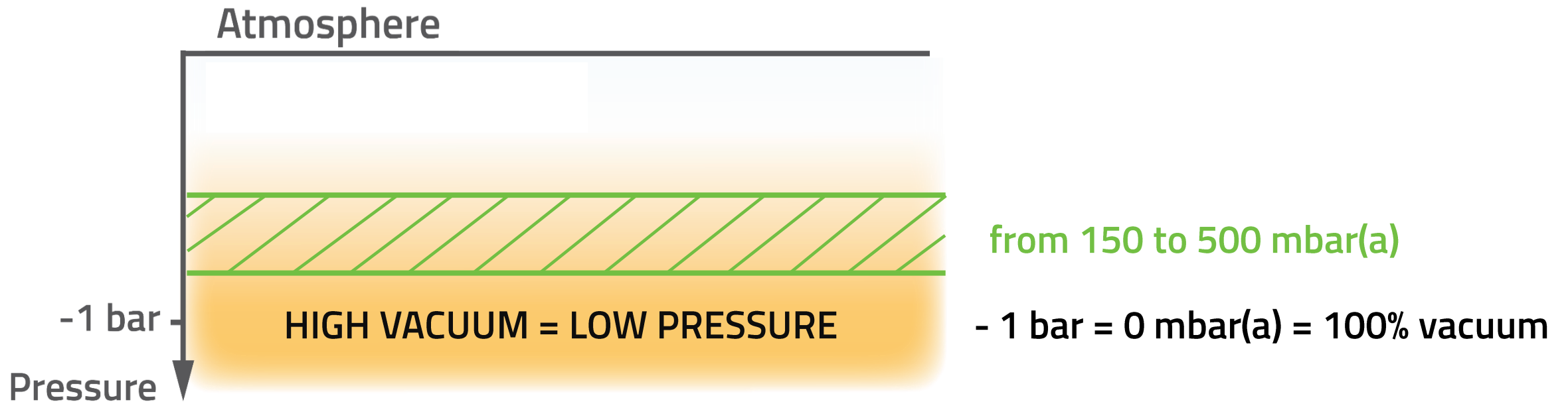


COST EFFECTIVE SETTING
MORE IS NOT ALWAYS THE BEST CHOICE

VACUUM LEVEL CORRECT WORDING



VACUUM LEVEL CORRECT WORDING



REQUESTED VACUUM LEVEL

In hollow glass, the vacuum level depends on the glass container shape

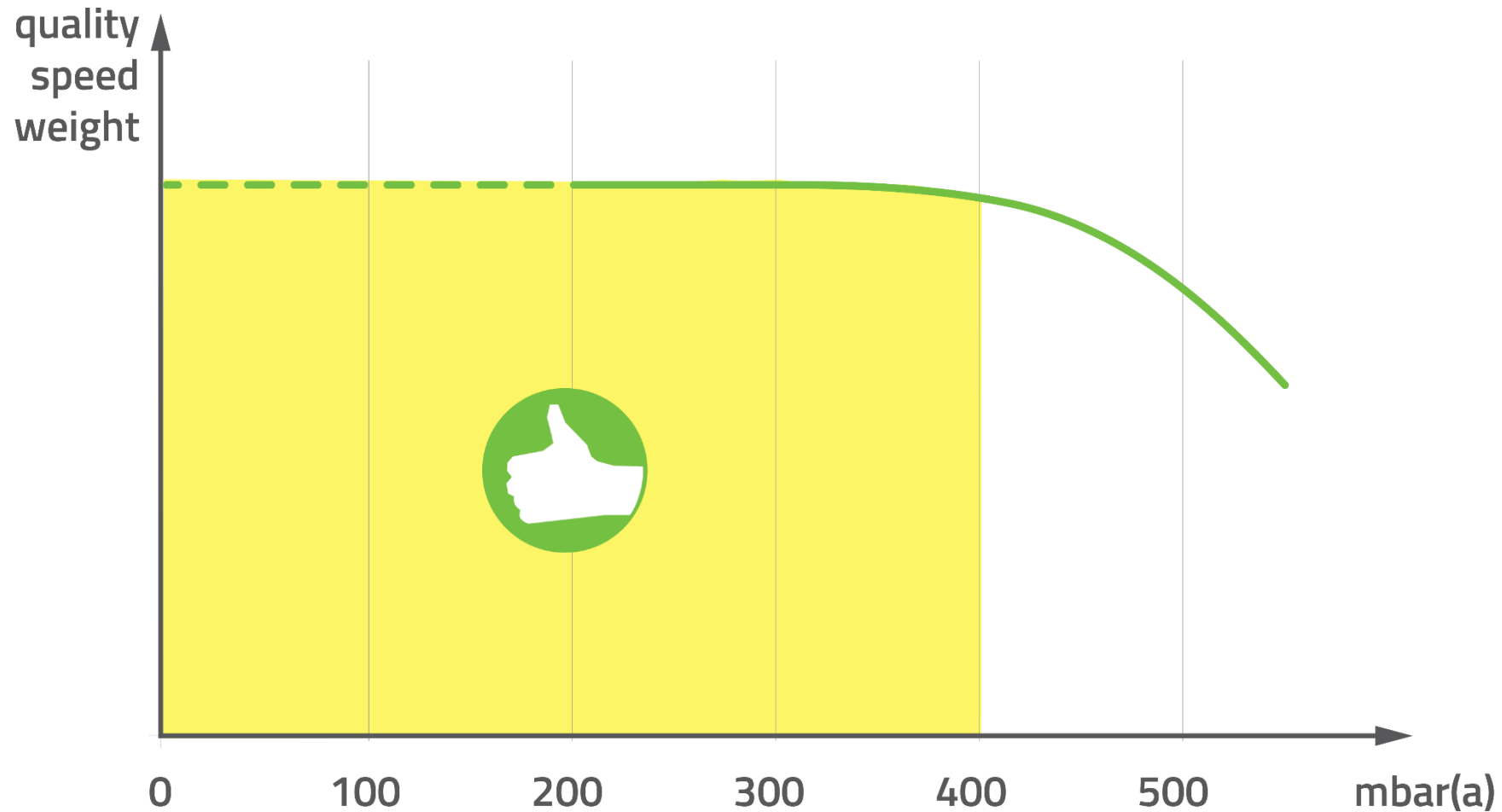
→ The vacuum level has to be defined in practice

- High enough to meet the production need, but...
- ... with a moderate approach, in order to be cost effective

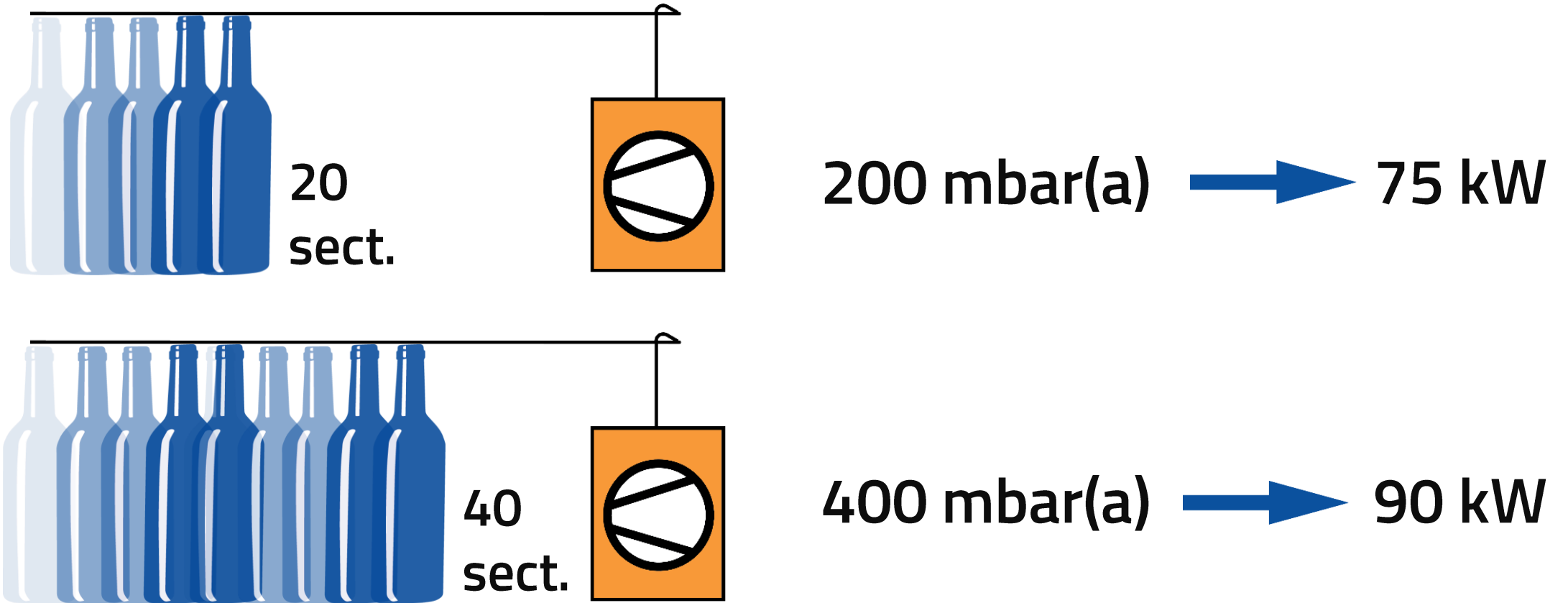
Let see it in practice

BENEFITS OF VACUUM

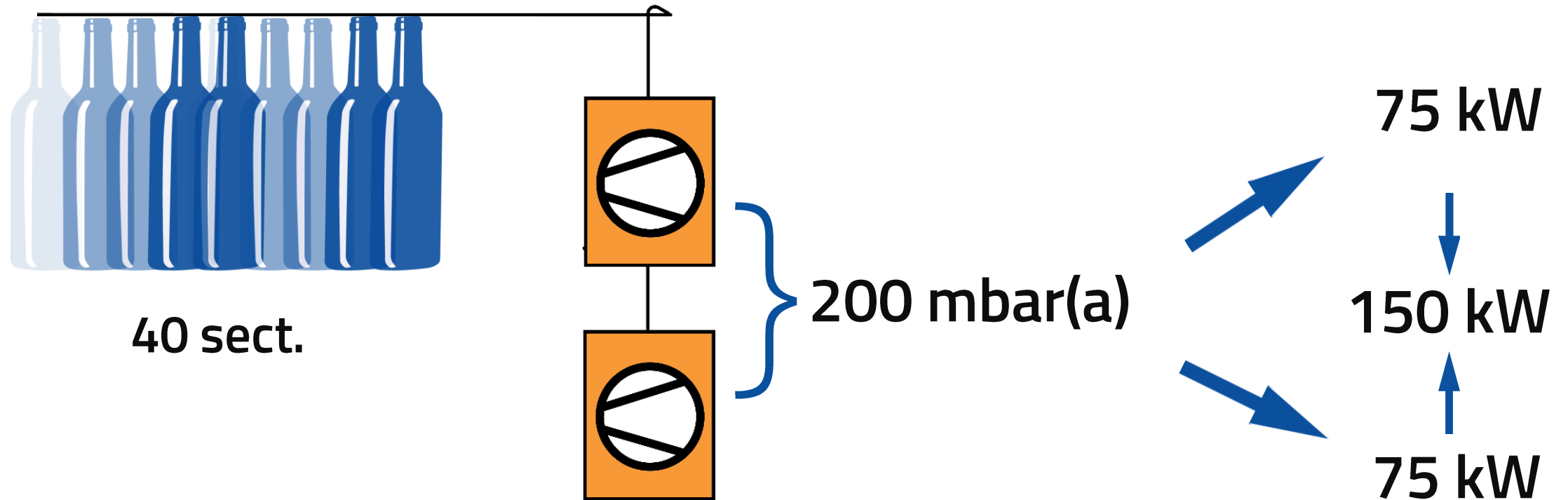
PRODUCTION SPEED, BOTTLE QUALITY AND WEIGHT



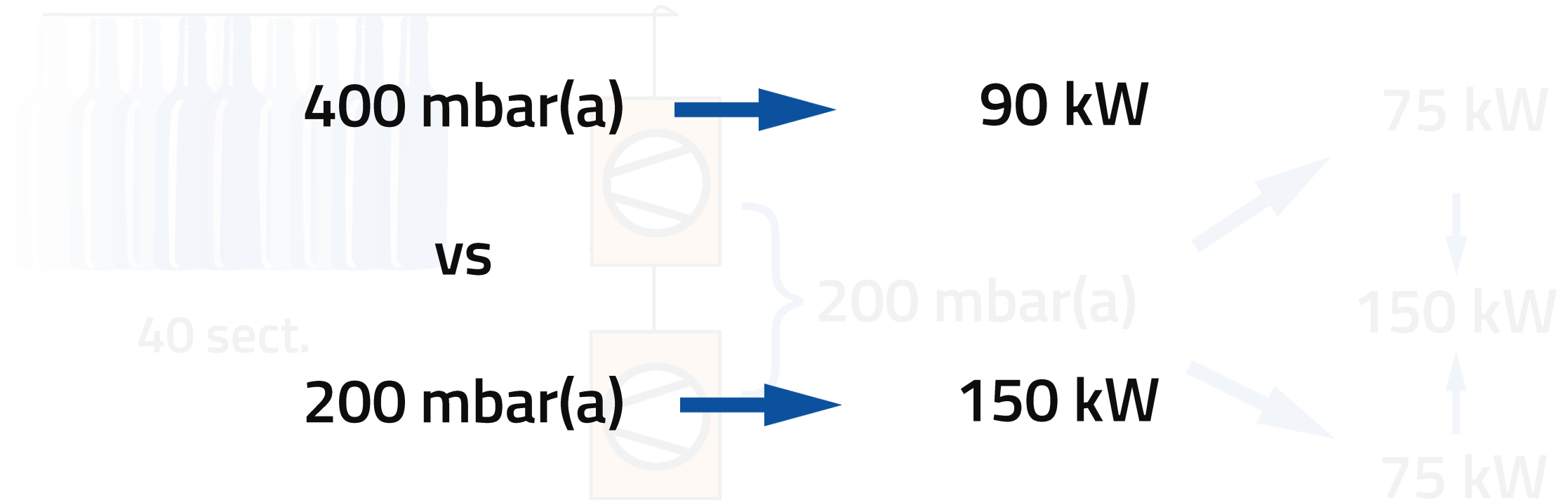
VACUUM LEVEL RELATED TO PRODUCTION NEEDS



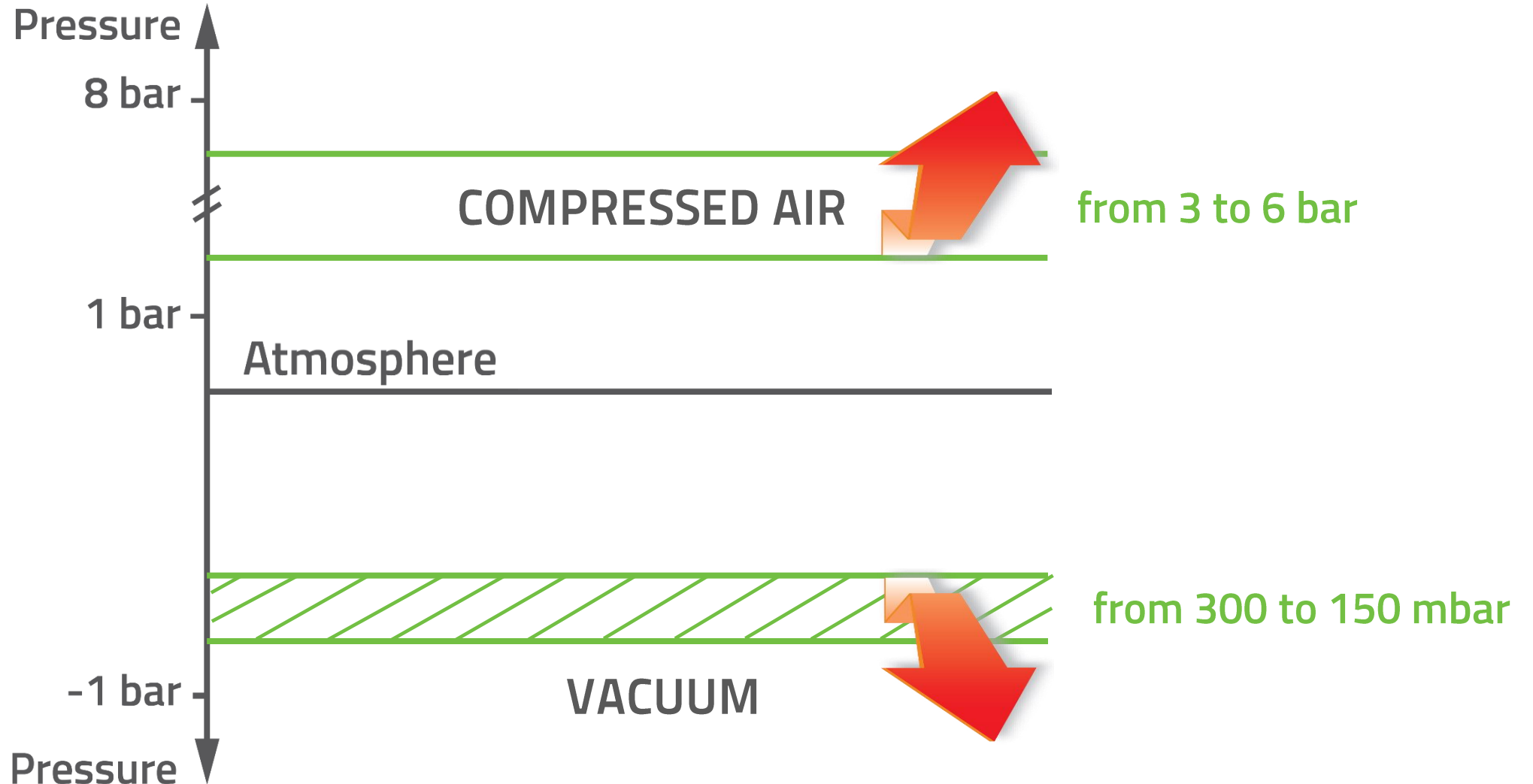
REQUESTED VACUUM LEVEL REDUCTION BY CONSTANT PRODUCTION



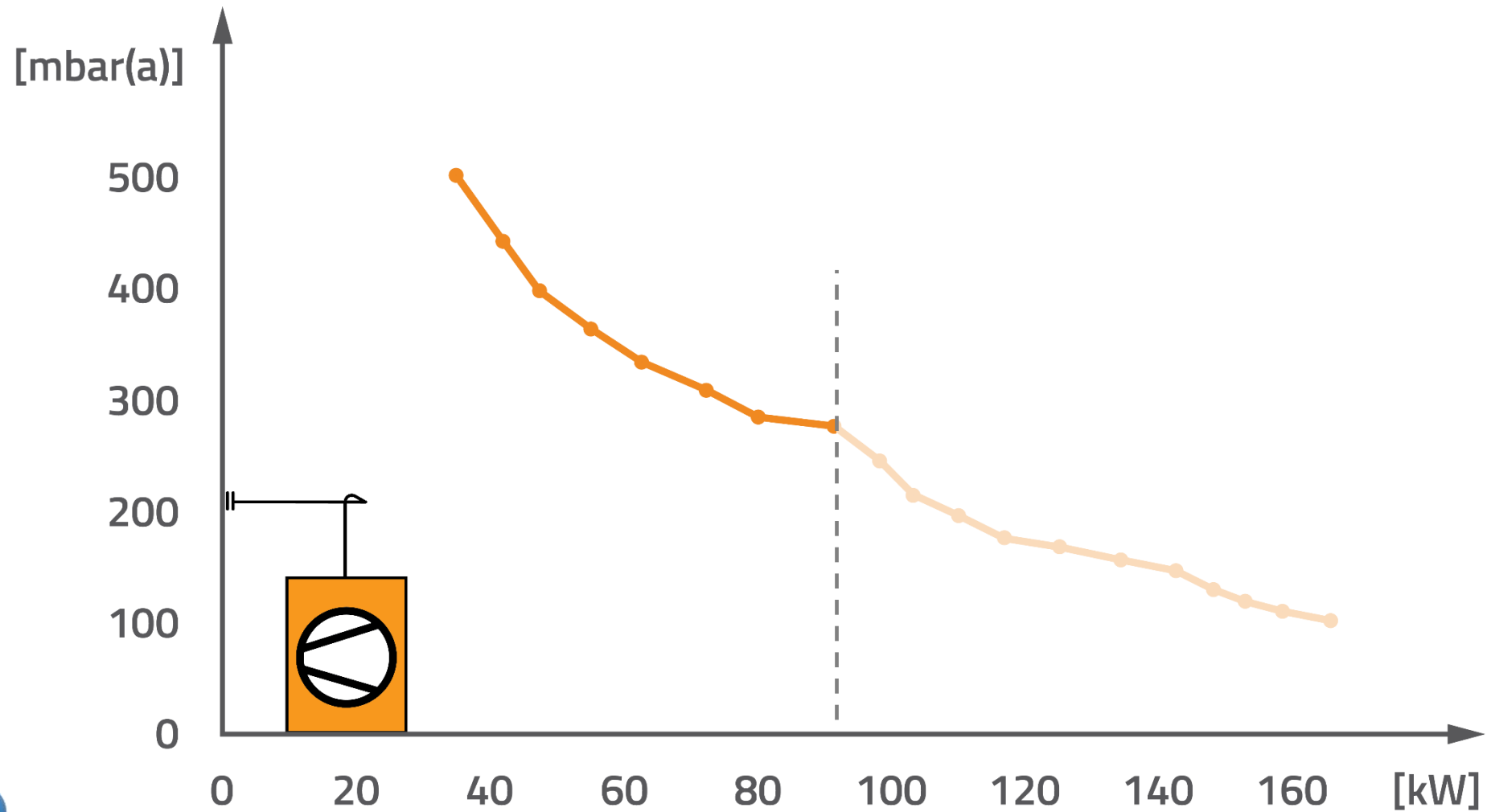
REQUESTED VACUUM LEVEL REDUCTION BY CONSTANT PRODUCTION



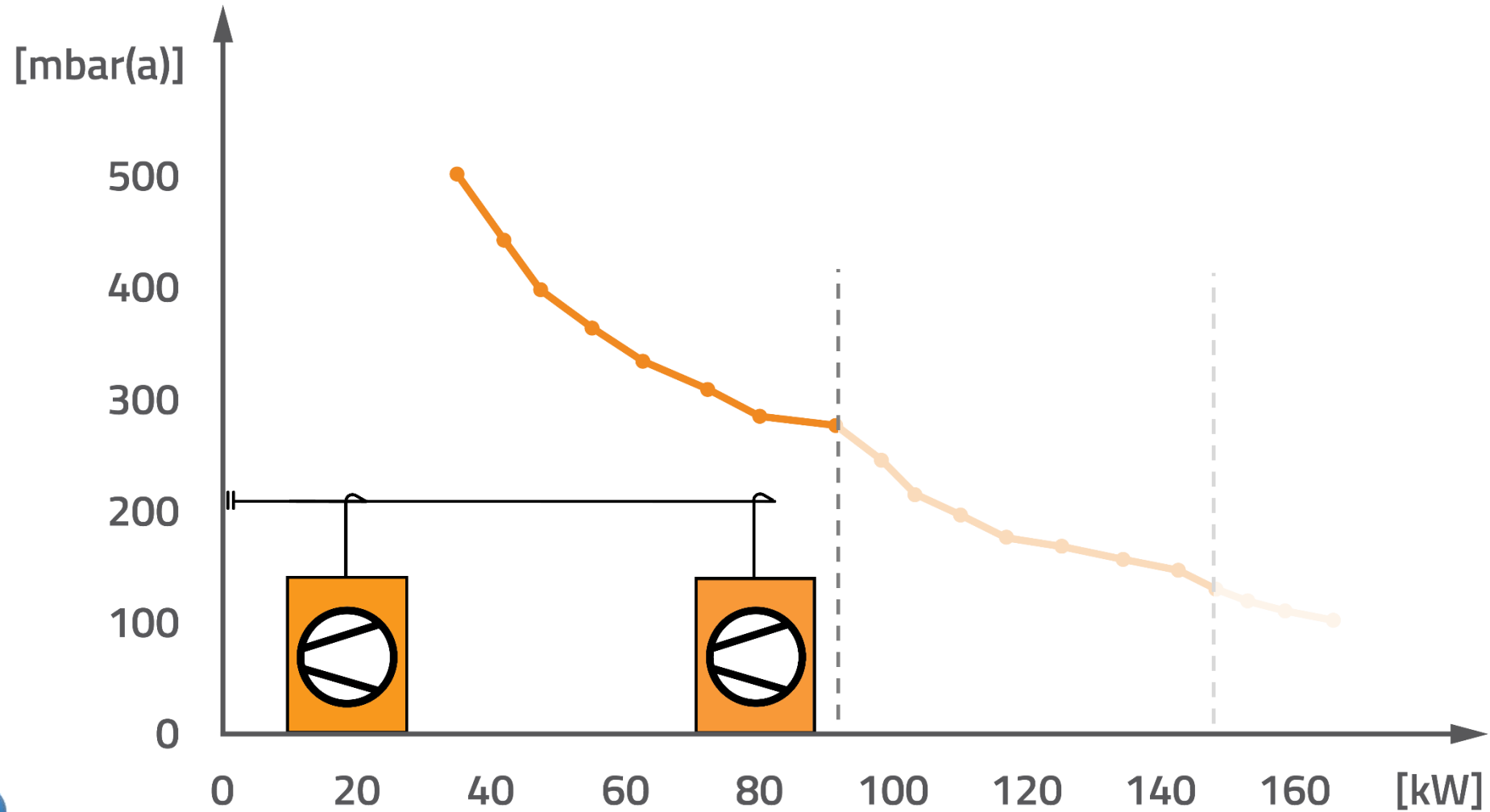
PRESSURE VARIATIONS



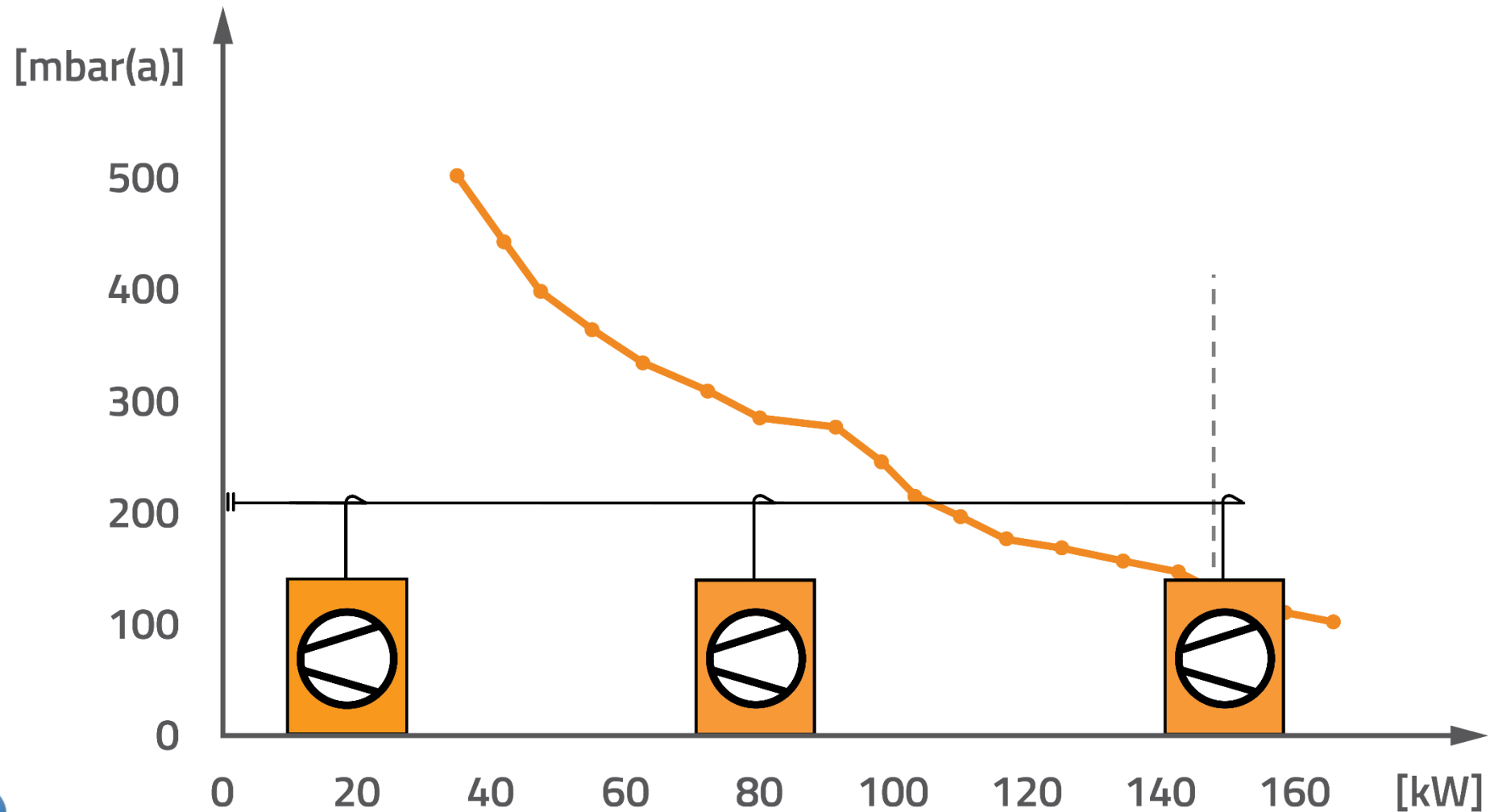
VARIABLE SPEED IMPLEMENTATION



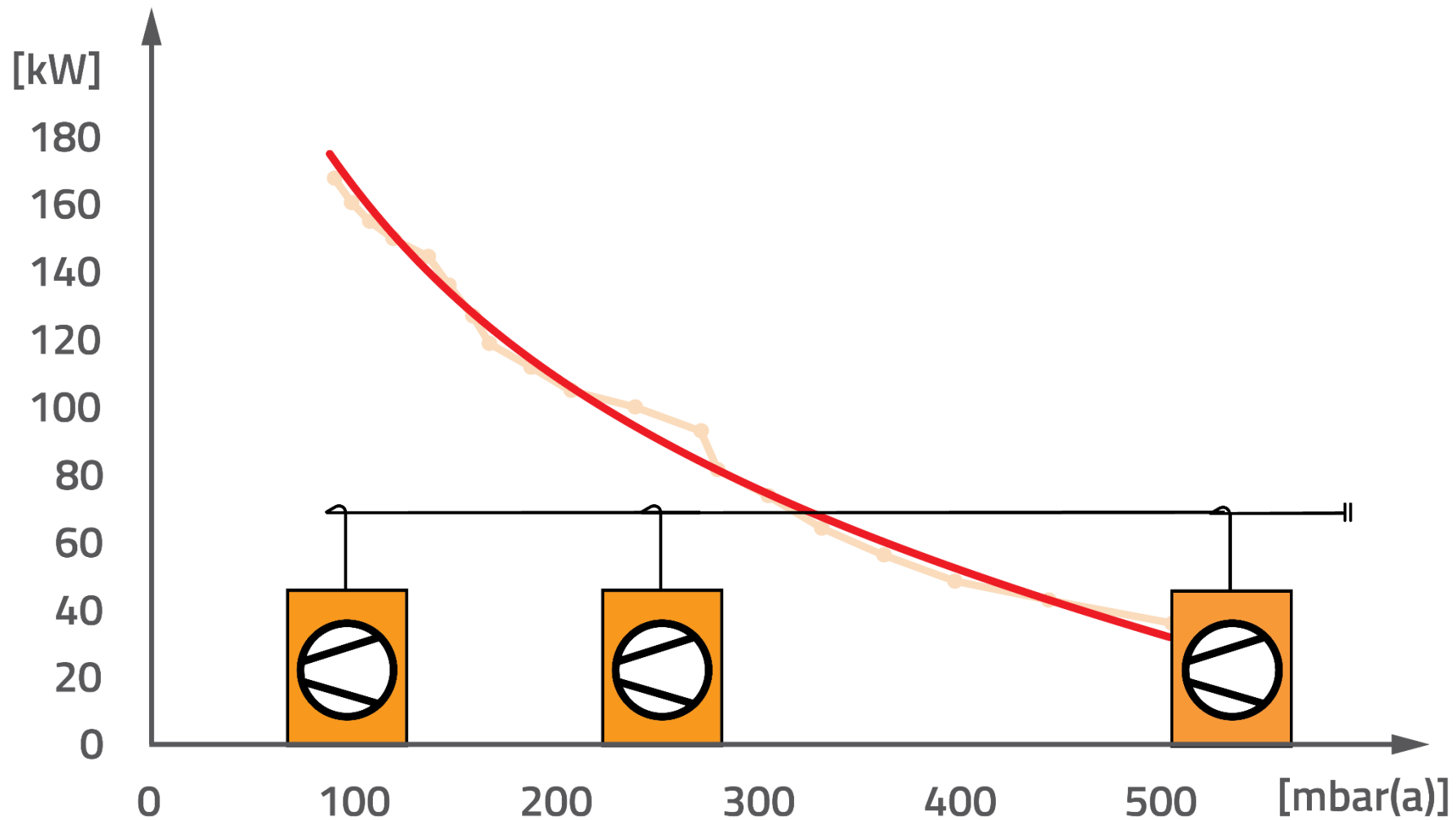
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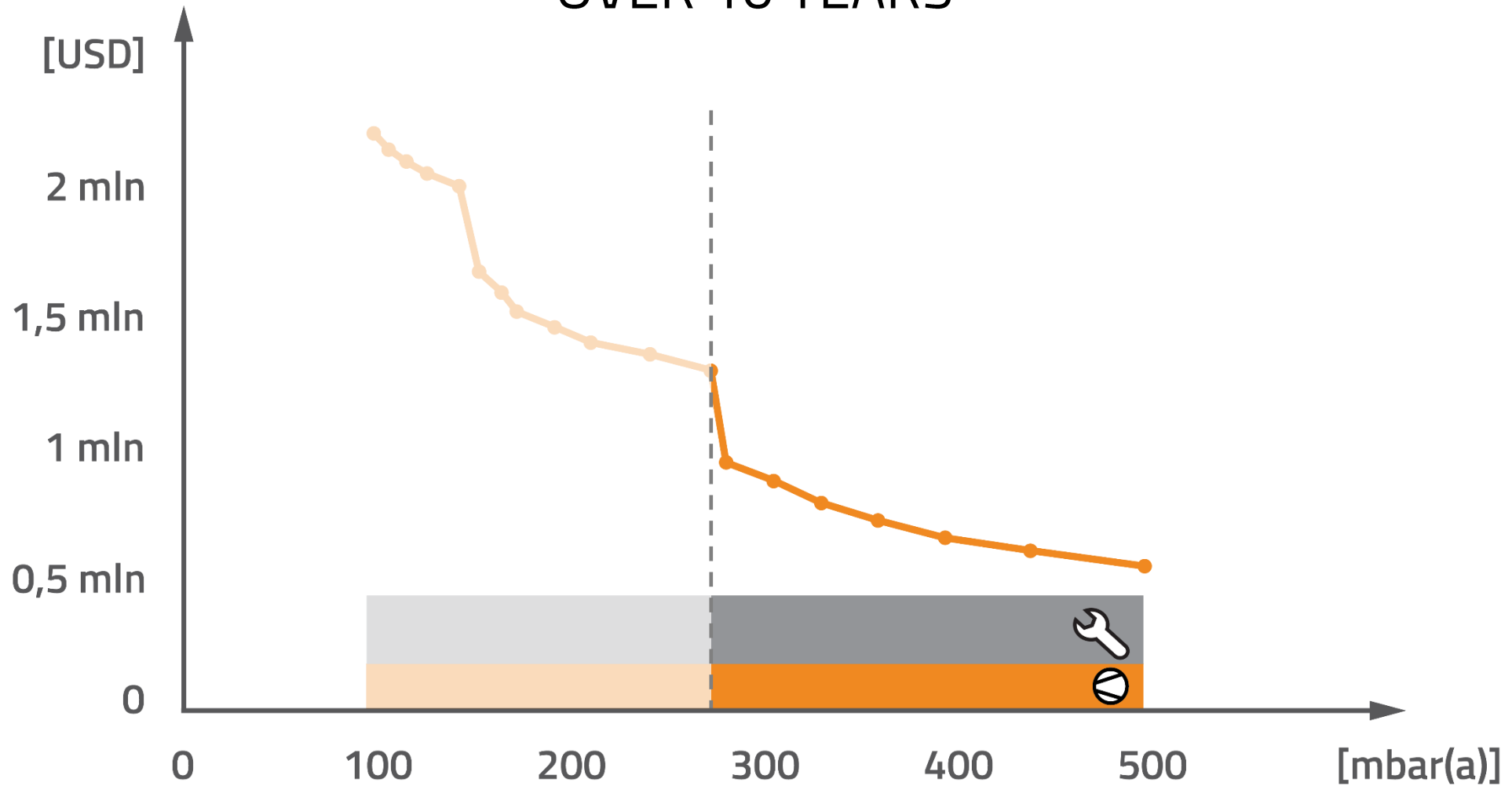
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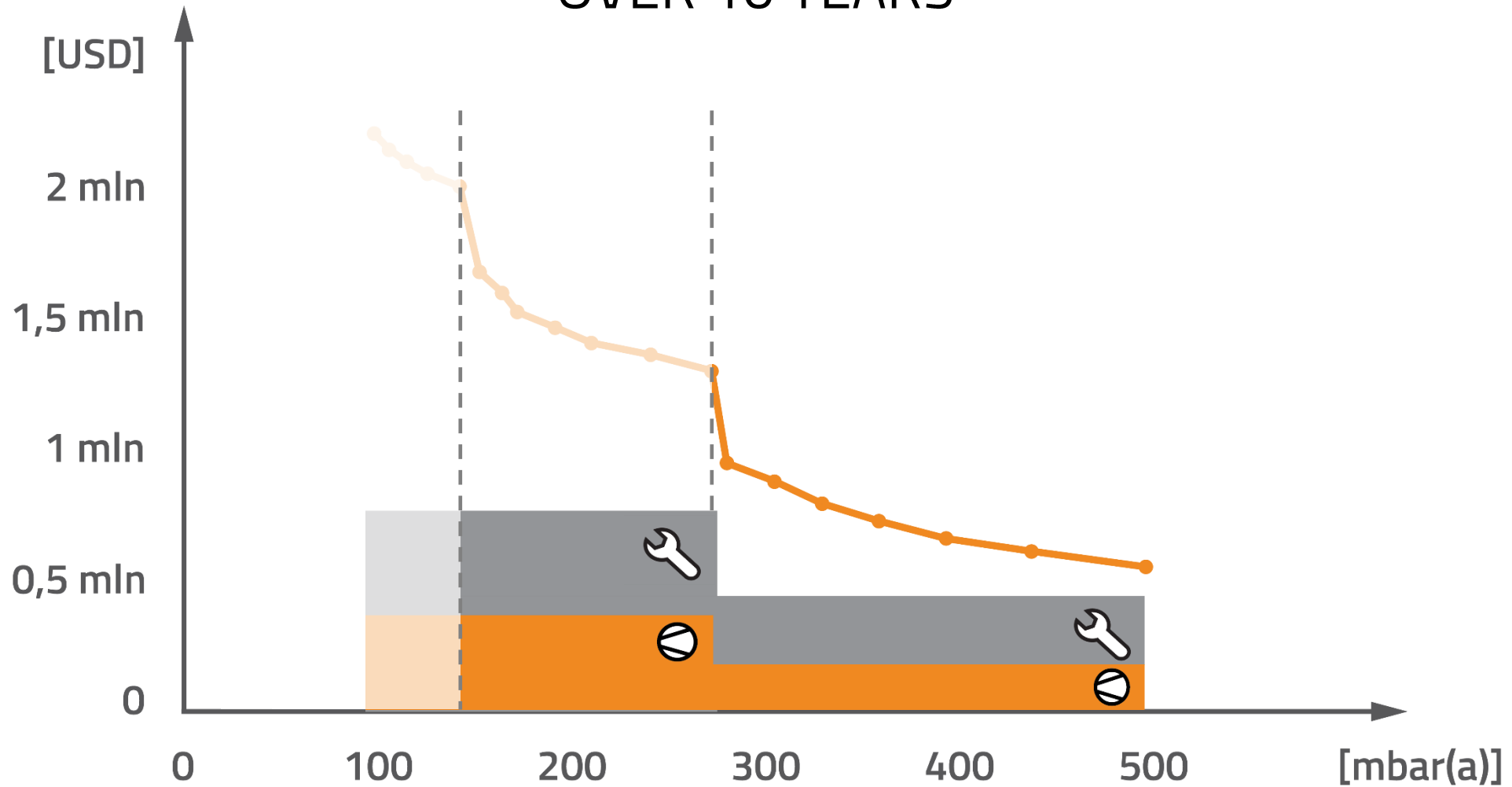
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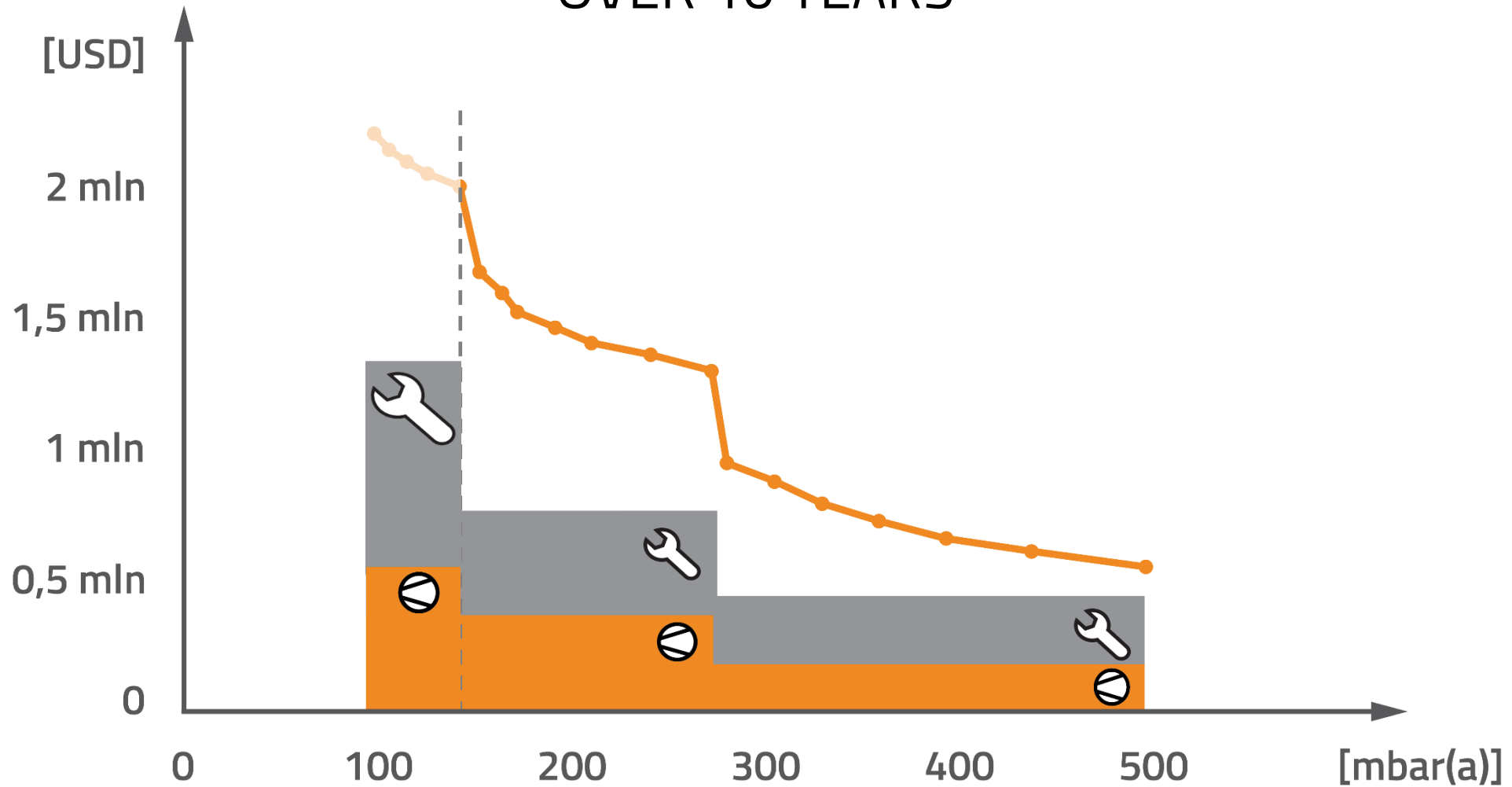
TOTAL OWNERSHIP COSTS OVER 10 YEARS



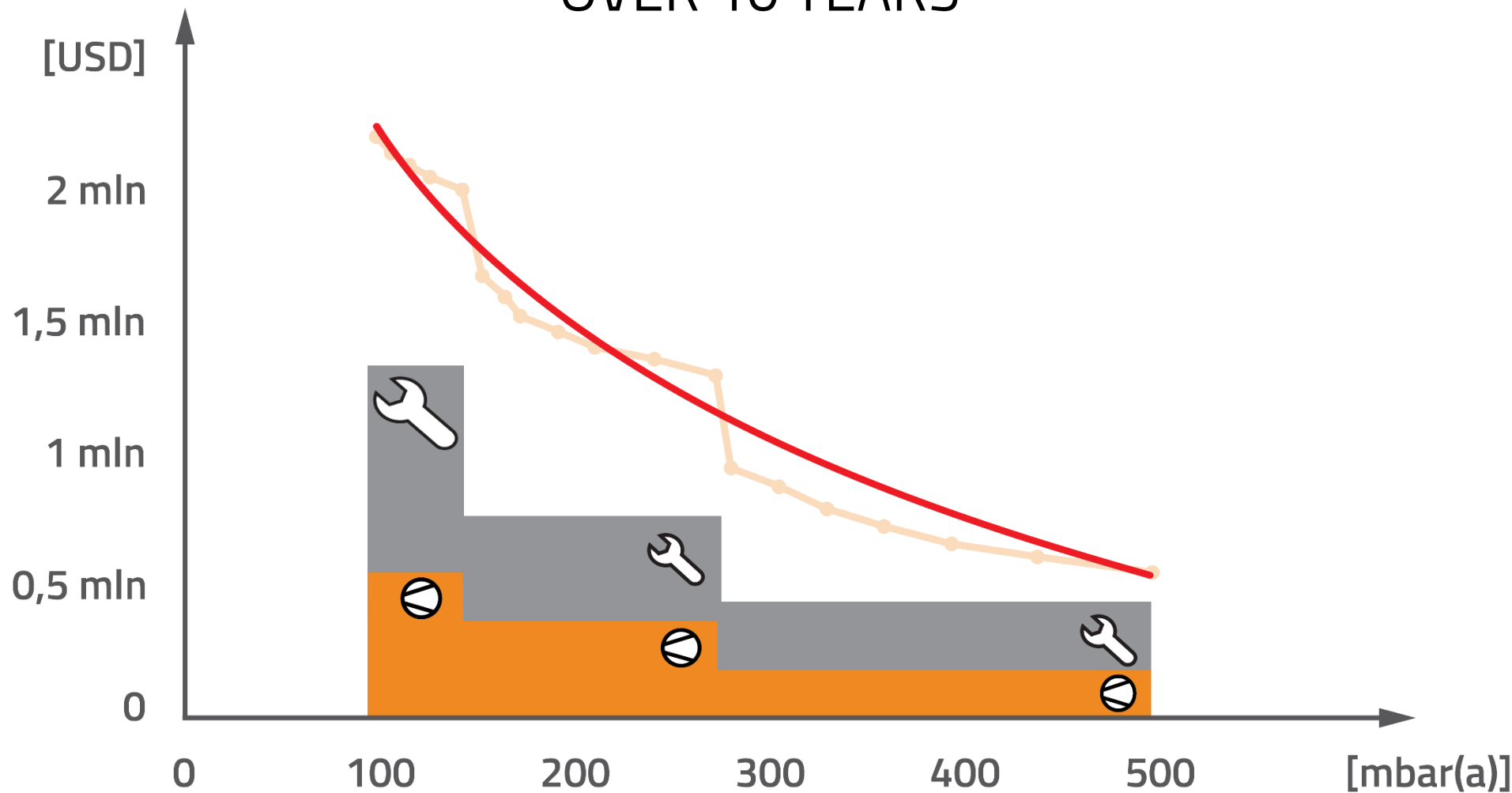
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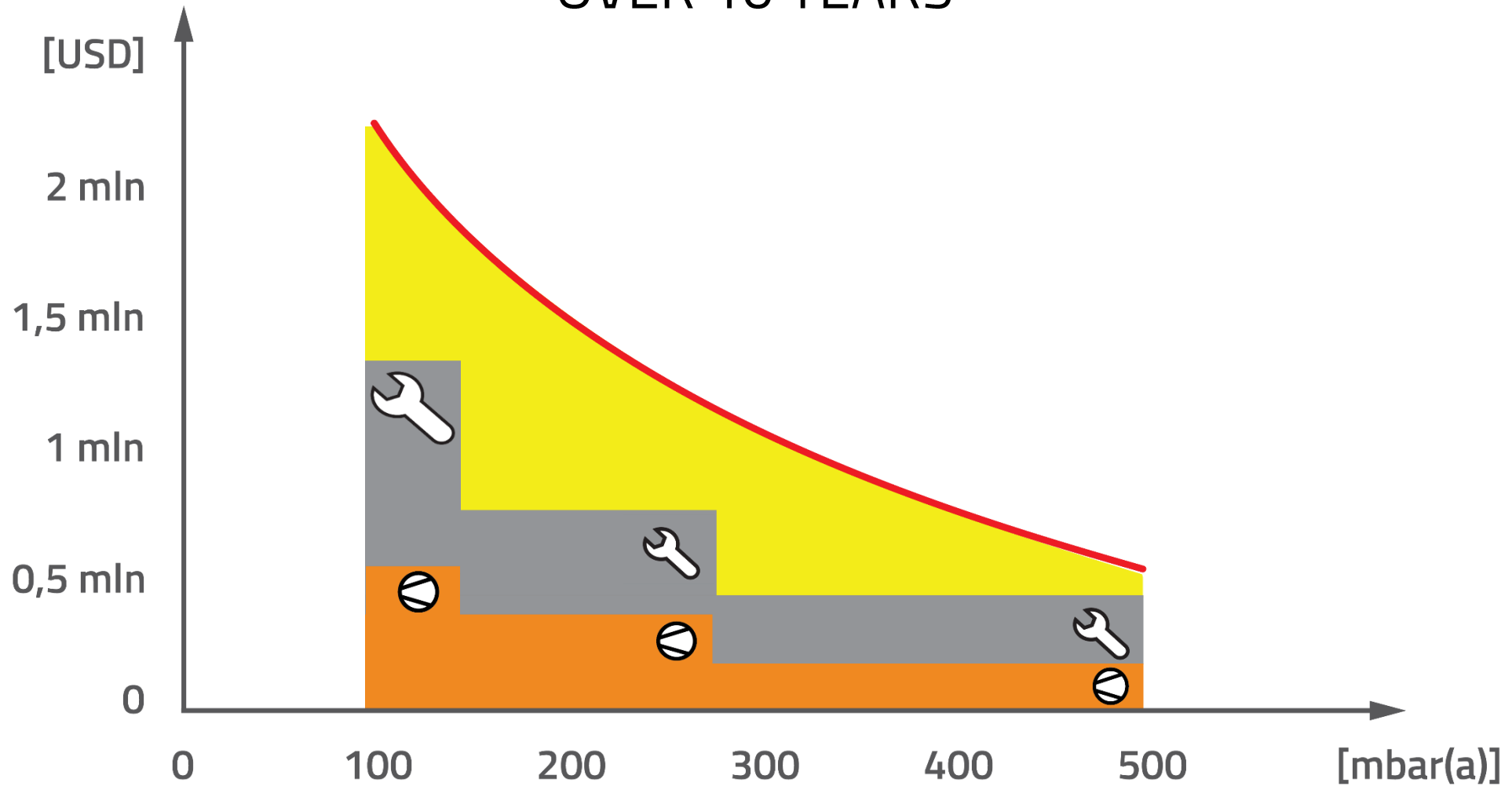
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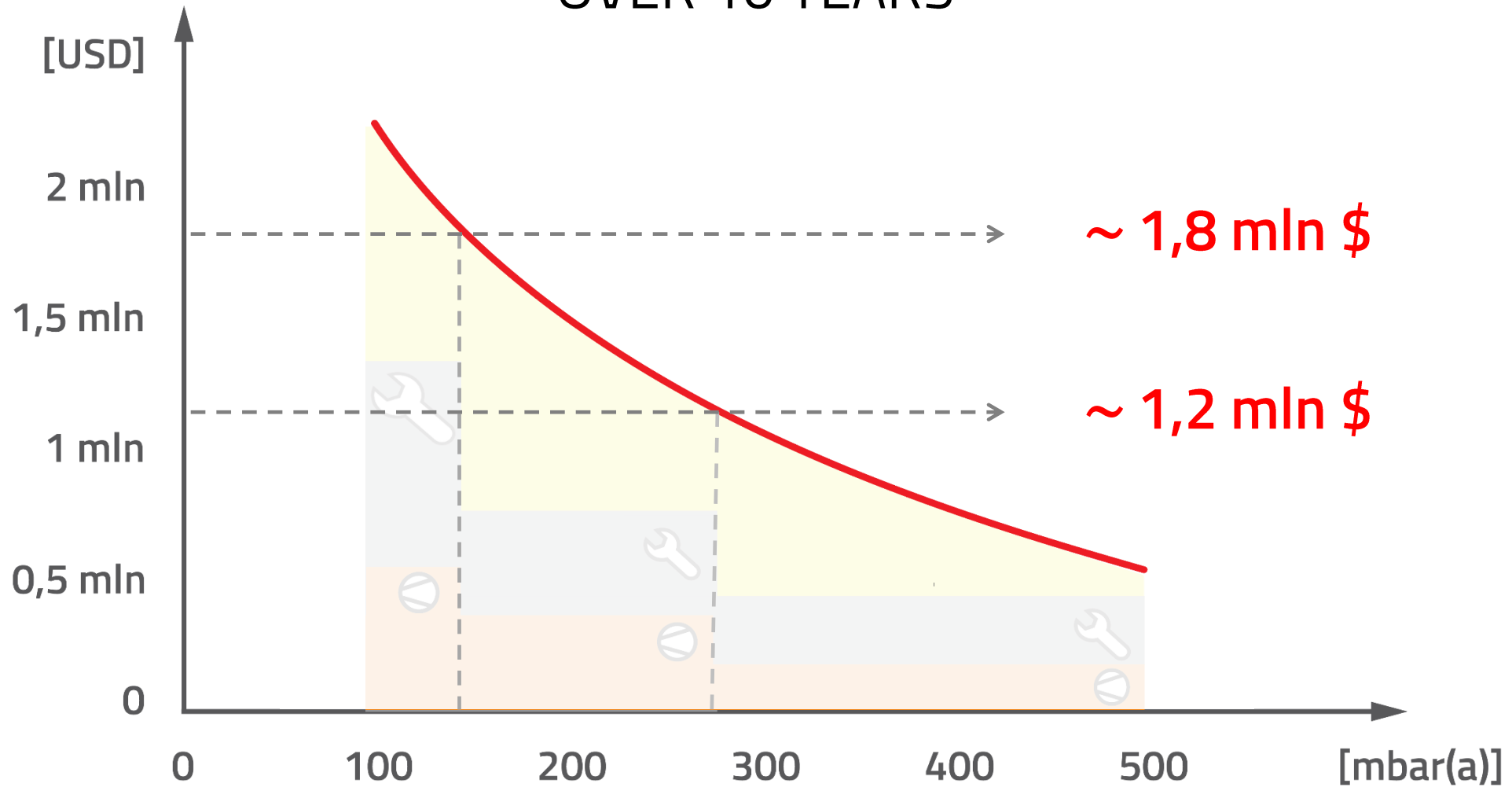
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TOTAL OWNERSHIP COSTS OVER 10 YEARS



TAKE-AWAYS

Set the pressure you really need by using Variable Speed pumps.
Don't be conservative in setting the vacuum level.

**Adapting the vacuum level to the real production needs
is an opportunity to save big money without investing a single cent!**



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Thank you for your attention !