Cavitation in Centrifugal Pumps

A Systems Approach

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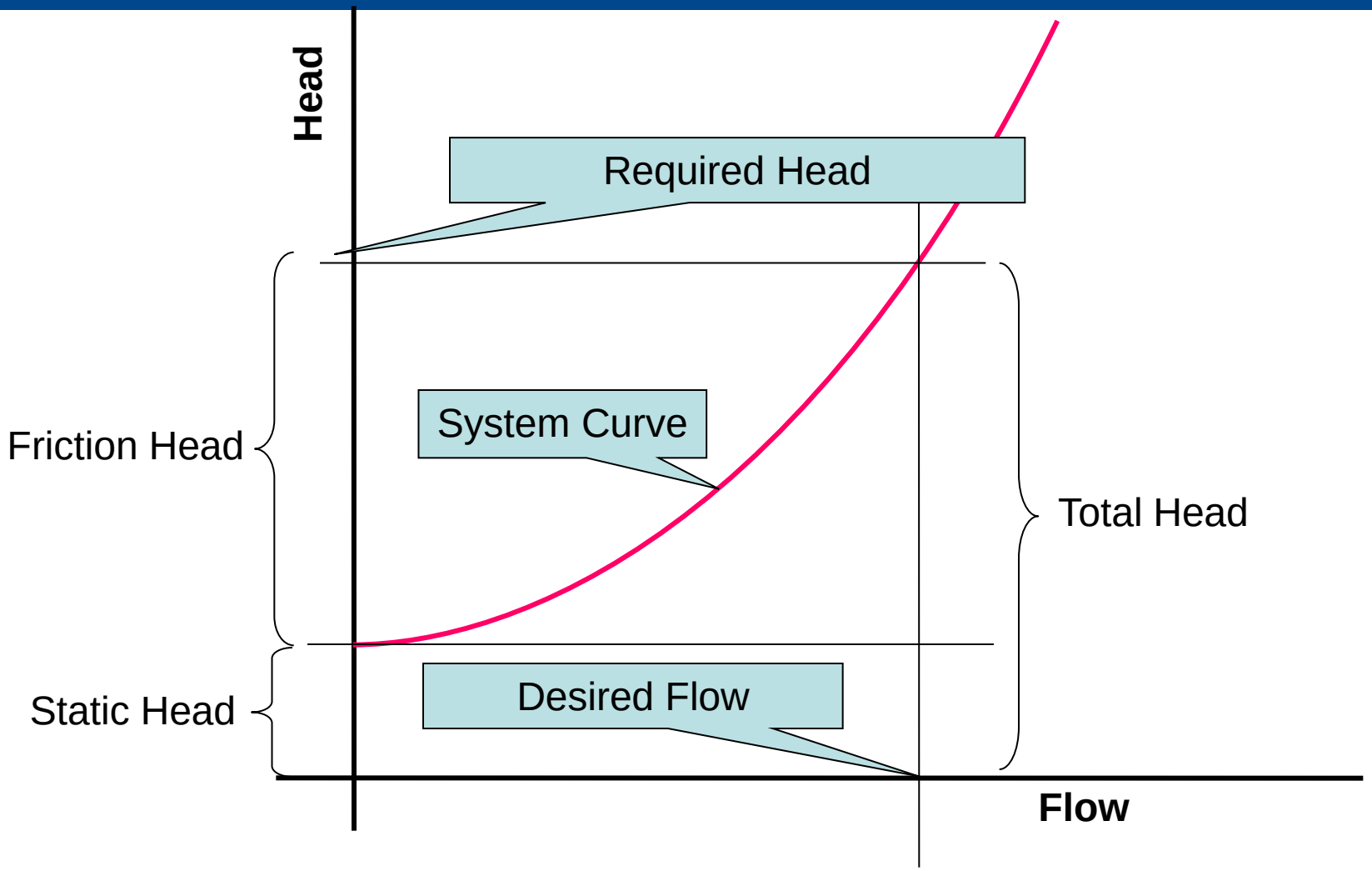
Centrifugal Pump Impeller

An impeller imparts kinetic energy to the fluid

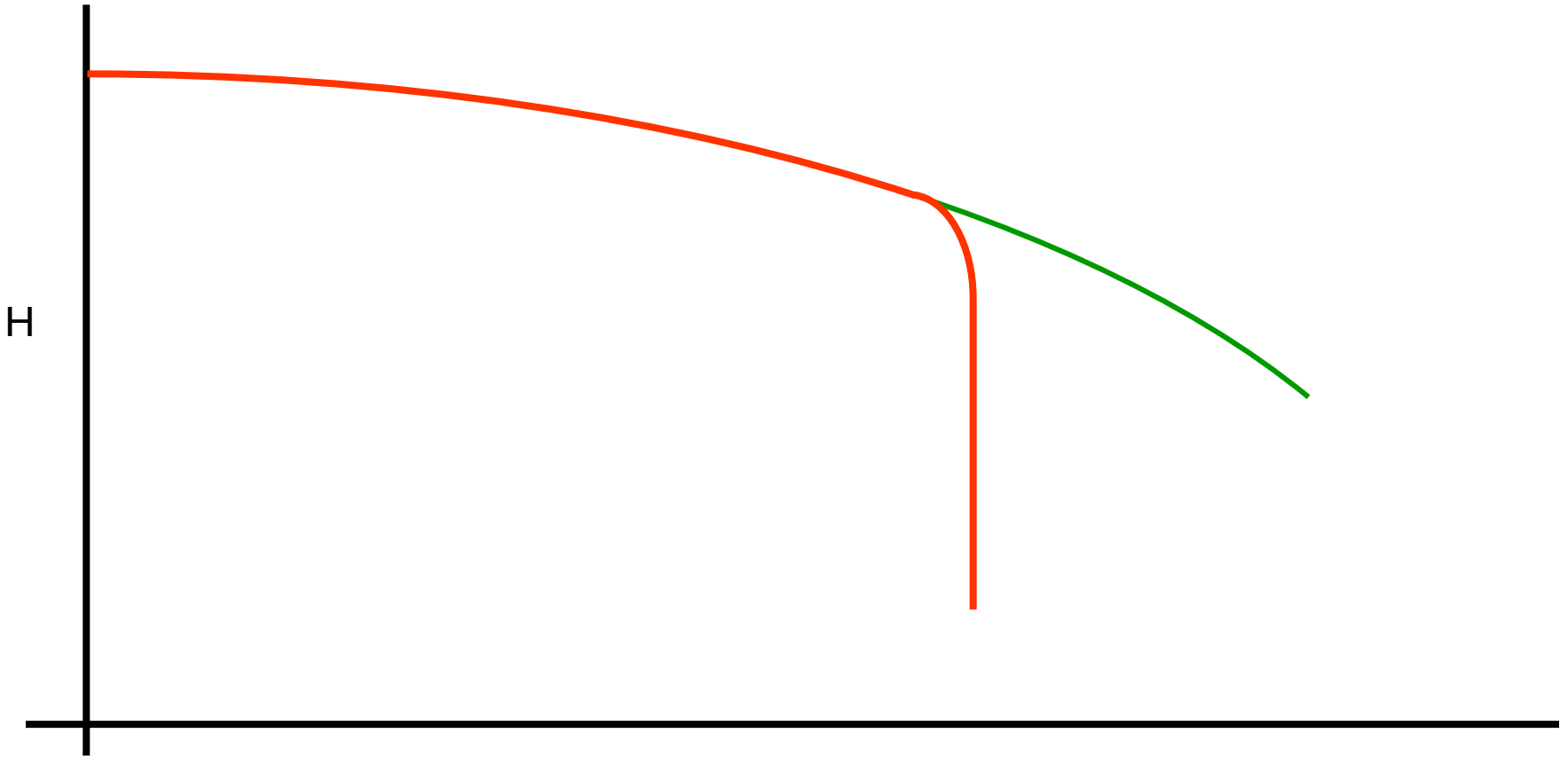
Typical System Curve



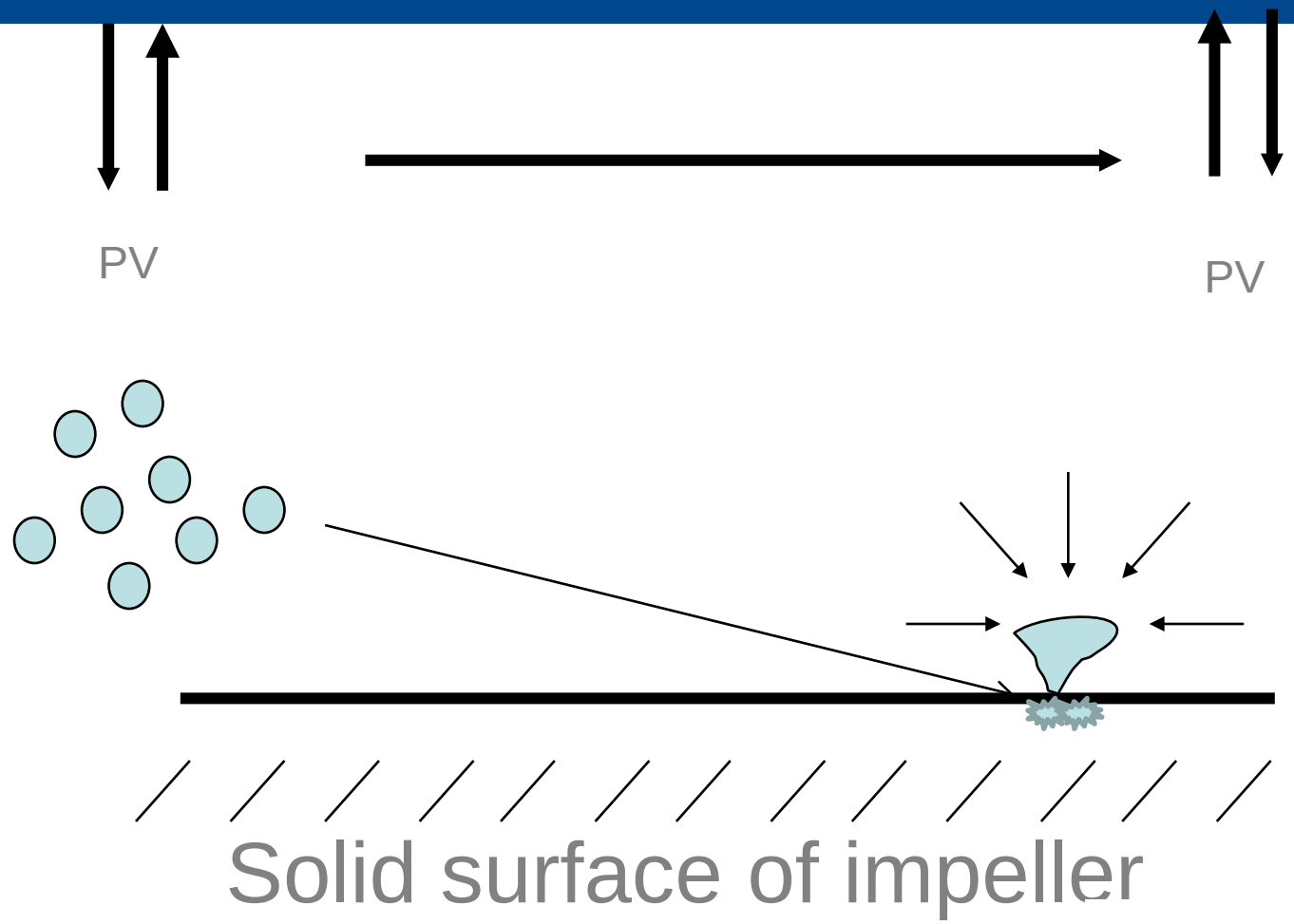
Cavitation Problems

- The volume of vapour partly blocks the pump and reduces pump performance
- The vapour condenses back into liquid as it passes through the pump. This process can erode the pump internals.
- The change back from vapour to liquid causes noise and vibration
- The effect can damage the liquid being handled.

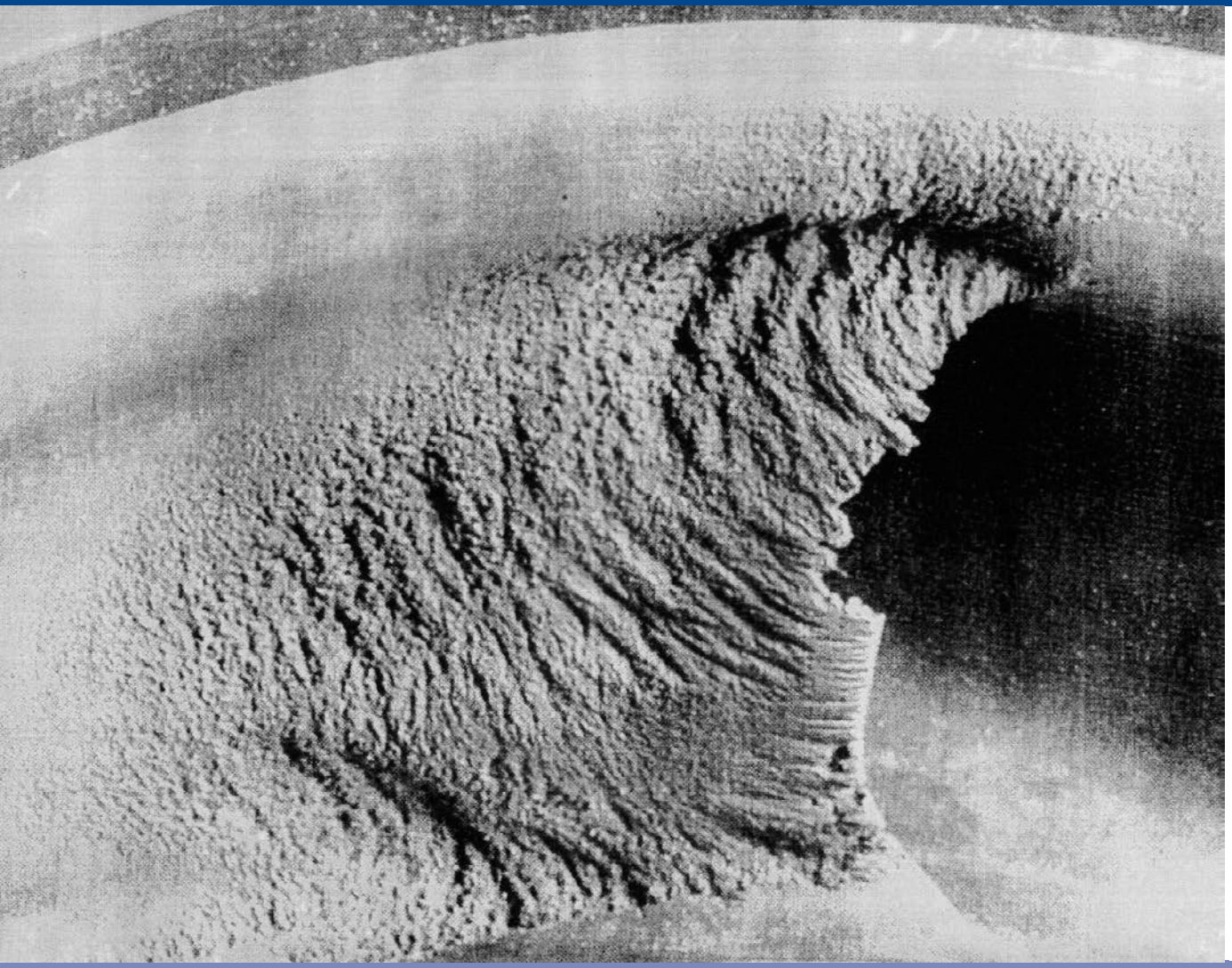
Effect of Cavitation on Output



How Cavitation causes Damage



Example of Cavitation Damage



What to do about it ?

- **No quick fix**
- **Be aware – Design out**
- **$NPSH_A > NPSH_R$**

NPSH Available (NPSHA)

$NPSH_A$ = +Atmospheric pressure (10.3m)

-Vapour pressure

-Friction losses

+/-Static head

Static Head is often the most critical variable