Reducing burst ratio

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GTR13 Previous meeting in Vancouver, 2019: No more safety margin if burst ratio = 2

Safety Factor: 1.6

Material Safety Factor: iSF:1.6

875 bar End filling Operational Peak Load
Vessel Composite Material Strength
Composite Material Strength
Germany, Achern, Monday, December 24th, 2018: Filling Station with CNG car (200 bar)

Explosion during filling phase.
The driver of the vehicle was severely injured and hospitalized. Driver state now?

https://www.autobild.de/artikel
“STOCKHOLM — A bus exploded on Sunday morning in the heart of Stockholm after ramming into a barrier near the entrance of a tunnel in the Swedish capital....The bus plowed into a barrier indicating the maximum height for vehicles traveling into the tunnel. “The bus drove into a beam hanging down from the tunnel entrance, and then the gas tank on the roof exploded,” Asa Skold, an operator with the emergency services, told the newspaper.”
Impact → Explosion → Fire

Driver state now?

https://www.youtube.com/watch?v=Kdl_sz6jwtY
Explosion in a H₂ filling station

Reducing burst ratio

- Burst occurs during operation
- Decreasing burst ratio from 2.25 to 2.0
  - Reduce by 4% the cost of the storage system
  - Increase sensitivity to impact
  - Increase sensitivity to burst
Thank you for your attention