

0392 - Is Power to Hydrogen an appropriate approach to mitigate PV-induced strain on 110 kV high-voltage grids?

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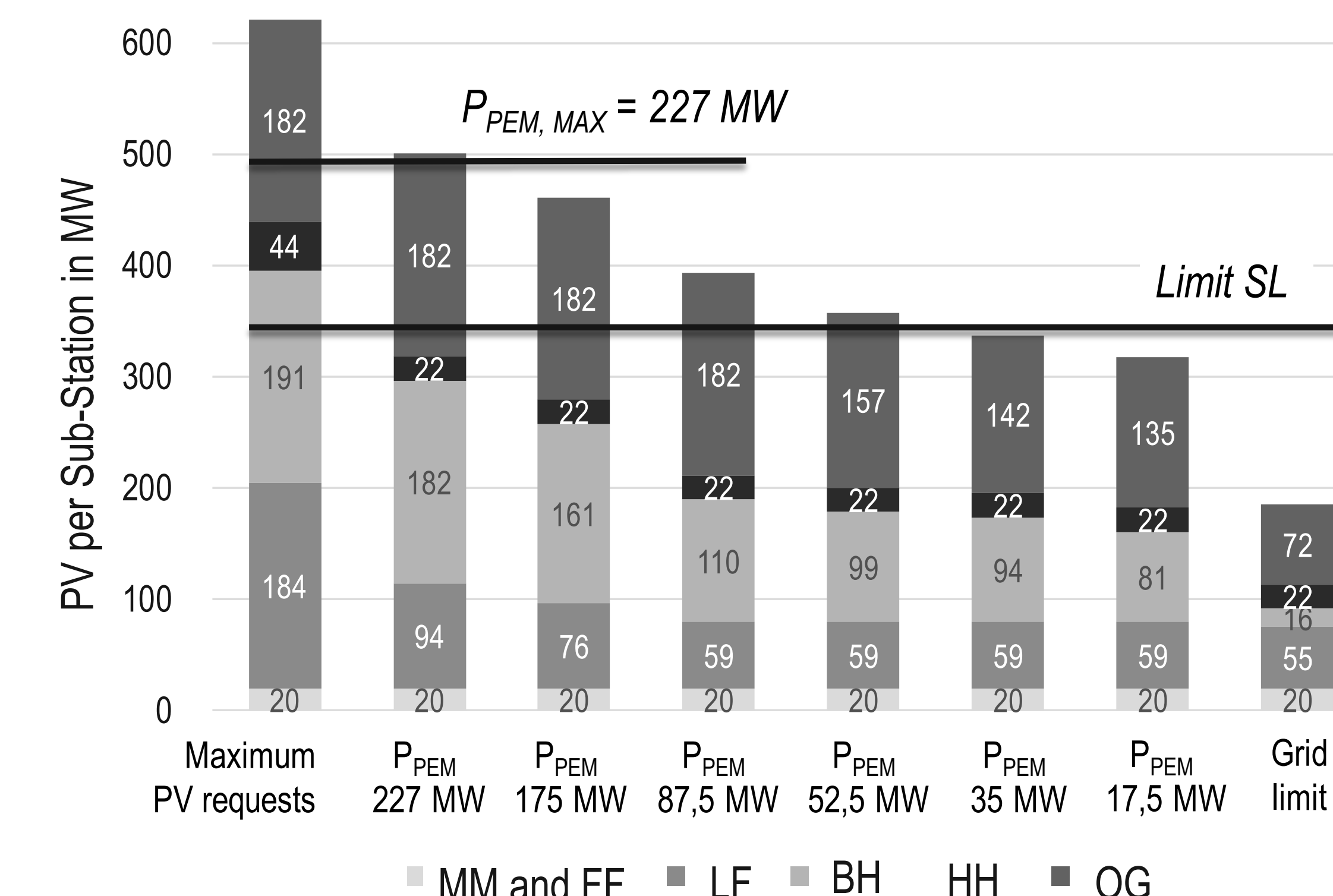
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Introduction:

Within this work, we investigate by means of a techno-economic analysis how PV-induced strain of rural 110 kV power-grids can be relieved through hydrogen production via PEM electrolysis.

Methodology:

1. Implementing a PEM in the Substation OG and altering its power from 17,5 -227 MW.
2. PEM control strategy based on the neg. residual-load $P_{res}(t) = P_{Load}(t) - P_{PV}(t)$ of:
 - a. The total grid area,
 - b. The area around SS OG and BH
3. Gas-Grid limit: max 10 Vol% H₂ in the Natural Gas Grid
4. Load flow calculations in order to analysis the impact of the PEM on Power-Grid bottlenecks



Results and Conclutions:

- Ratio PV to PEM of 4 and higher
- Investments for PEM similar to costs for classical grid expansion
- New business models are possible if sector-coupling technologies are being used as grid-serving elements

