Room Fire Pressures

NISTIR 7213

Effect of Positive Pressure Ventilation on a Room Fire

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FEMA

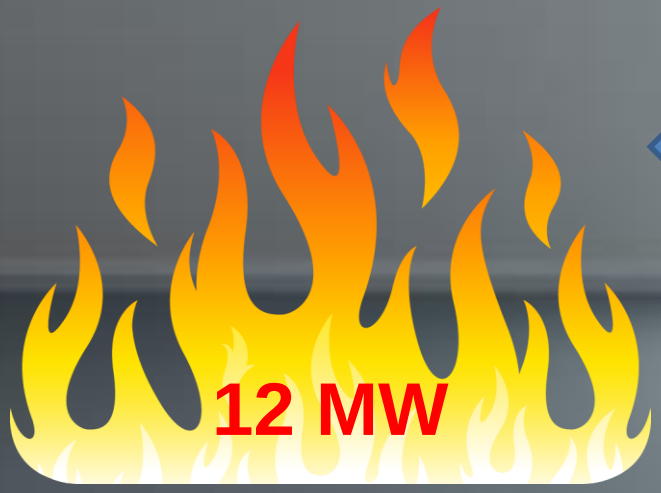
Sponsored in part by
Department of Homeland Security
federal Emergency Management Agency
United States Fire Administration

NIST
National Institute of Standards and Technology
Technology Administration, U.S. Department of Commerce

NIST Report 7213

With the door to the fire room open, fire pressure causes hot gases and flames to move out of the room, into the corridor, from the top two thirds of the doorway.

Air feeds in at low level.



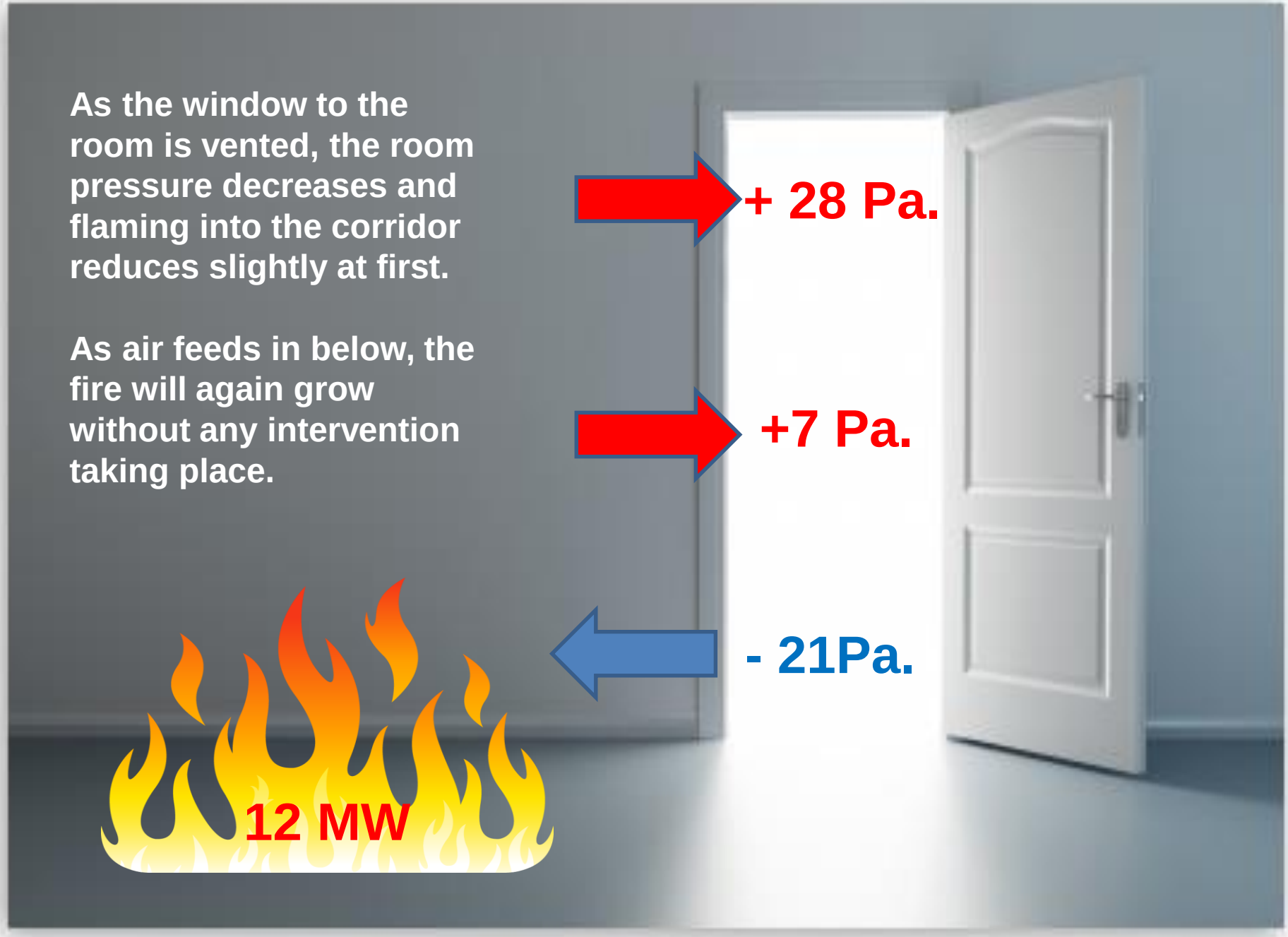
+ 34 Pa.

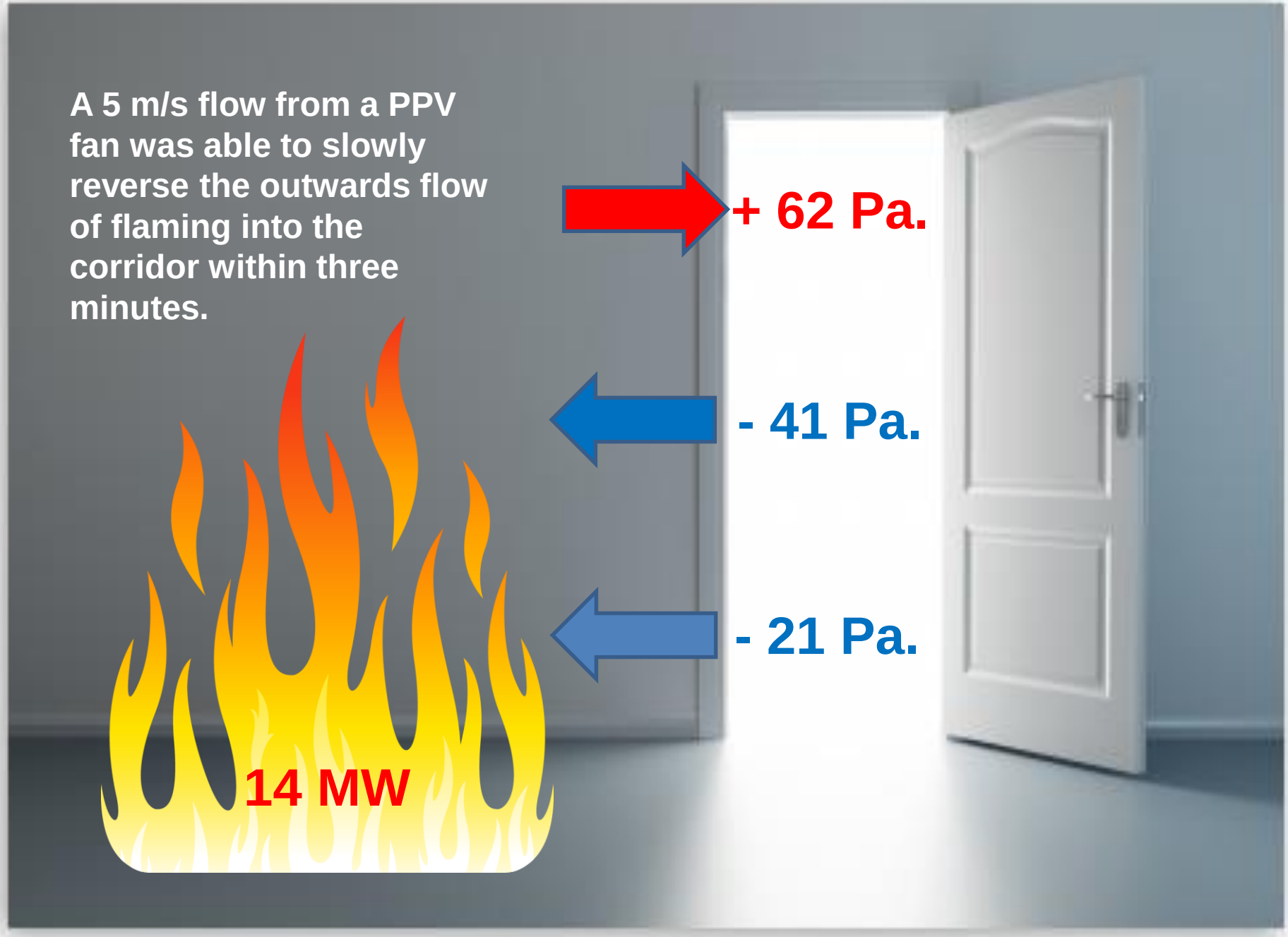
+14 Pa.

- 14 Pa.

As the window to the room is vented, the room pressure decreases and flaming into the corridor reduces slightly at first.

As air feeds in below, the fire will again grow without any intervention taking place.




A 5 m/s flow from a PPV fan was able to slowly reverse the outwards flow of flaming into the corridor within three minutes.
+ 62 Pa.
- 41 Pa.
- 21 Pa.
14 MW

Overall, airflow entering the room from PPV at 8 m^3/s (28,800 m^3/hr) reversed pressure flows within 3 minutes out of the vented window.

8 m^3/s

8 m^3/s

8 m^3/s