

## HOW TO IMPROVE TRANSMISSION CAPACITY BY AR DEVICES

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The transmission system in the U.S. and in many other countries is in a short-fall situation. Operations are close to the surge impedance limit, and day-to-day operating margins are shrinking. New lines will take years to acquire rights-of-way, obtain permits, and complete construction and licensing.

AR PRODUCTS, LLC has designed over-sized spacer dampers for retro-fitting of existing bundled transmission lines. No changes in existing structures are required. Simply remove the existing standard spacer dampers out in the line span, and replace with the AR over-sized devices. A demonstration of how to do this was put forth at an IEEE conference in Columbus, Ohio in 1995. A paper was also presented on this subject at the conference. A video of the installation on a quad-bundled 765 kV line, near Columbus, is available.

An illustration of the percentage increases of available line capacity is seen in the accompanying table.

### Available Increase of Line Capacity

Spacing(in.)	TWIN	TRIPLE	QUAD
22	1.02	1.04	1.06
26	1.04	1.08	1.11
30	1.06	1.11	1.17
34	1.08	1.15	1.22
38	1.09	1.18	1.26

The baseline is the standard 18 inch bundle. For an over-sized bundle of thirty inches the increased capacity is 6% for a twin, 11% for a triple, and 17% for a quad. If a triple bundle is operating now with a margin of ten percent, the new margin would more than double, for a triple. If an existing quad is operating now with a margin of ten percent, the new margin would increase to nearly thirty percent. If the normal quad load is 900 MW the new margin would be about 270 MW, versus 90MW. This is more than the stand-by capacity of a gas-fired peaking unit!

See a technical report on this subject under TUTORIALS.

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