

Toshiba America Energy Systems recognizes Toshiba's Power Generation Services group recognizes that there is a large population of aging fossil-fueled steam turbines whose operators are considering upgrading last stage blade rows with more modern designs. Upgraded designs now available from Toshiba can help improve reliability, maintainability and operating performance over earlier generation blades.

### Key technical advantages of Toshiba's last stage blades:

- *Demonstrated performance enhancements*
- *Multiple shielding arrangements*
- *High-efficiency airfoil design*
- *Detuned against blade/rotor torsional vibration*
- *Improved root finger design*
- *Advanced testing and qualification*
- *Increased backpressure operational limits*

Available L-0 standard sizes of 26, 30 and 33.5 inches, with respective L-1 and L-2 blades also offered.



### On-site "Long Shank" retrofits:

- *Advanced long shank LP turbine blade designs*
- *Optimized dovetail design reduces stresses (up to 15% reduction)*
- *Customized blade shank design uses original rotor without impacting performance*
- *Abundant experience in installation, including the specialized NDT and machining necessary*
- *No performance or efficiency impact as a result of the modified shank*

