“Small components, big impact! The Coated Nozzle Ring enables a remarkable increase in additional energy output for Power Stations.”

Peter Cellbrot, Product Manager Upgrades, ABB.
**The solution in a nutshell**

The combustion of heavy fuel oil (HFO) in diesel engines contaminates the turbine blades and nozzle rings of turbochargers and leads to deposits. Deposits on nozzle rings narrow the cross-sections and have a particularly bad impact on the overall thermodynamic performance.

To avoid negative effects frequent wet cleaning injection during operation is required. Side effects of wet cleaning are reduced power output for one hour and decreased component lifetime due to thermal shocks.

ABB Turbocharging sought a solution to limit these negative effects to a minimum. A special coating for nozzle rings was developed to counter the fast build-up of deposits, enabling extended intervals between wet cleanings by up to six fold.

As consequence, the engine availability and power output can be significantly increased while sustaining the high turbocharger performance and fuel efficiency.

**Case study**

**Engine**
- Rated engine power: 17'000 kW
- Yearly running hours: 7'500 h
- Saved time for cleaning: 125 h

**Annual added value**
- Additional energy production: 1'700 MWh
- Additional energy sales (@ 0.2 $/kWh): 340'000 $

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**Application**
- Medium speed diesel engines
- Equipped with ABB axial turbocharger type TPL
- Heavy Fuel Oil (HFO)