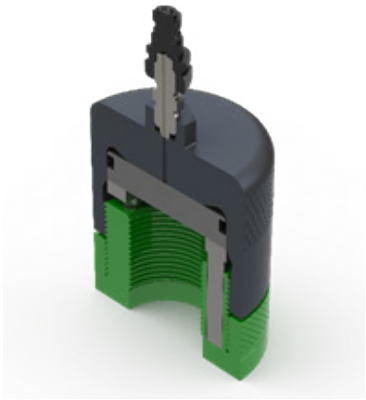
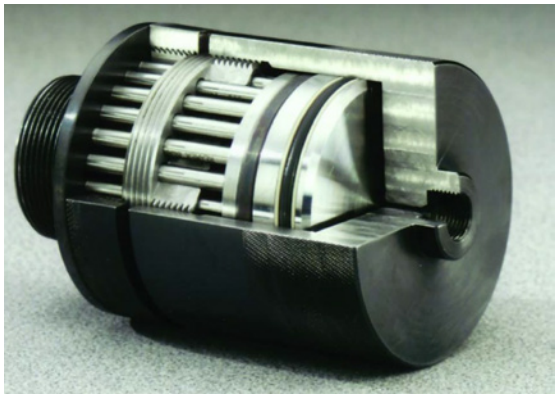
CASE STUDY | HRT & HRN

Nuclear Power Plant:
Steam Turbine Inner Casing Closure

PROVIDING

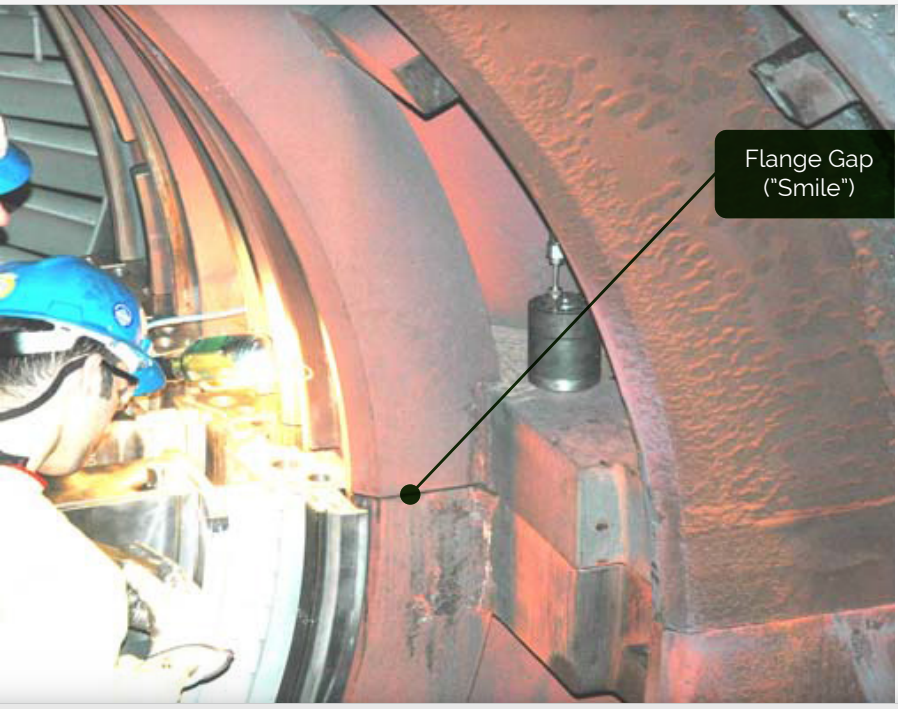
- Greater loads within restricted footprints
- Shortened turnaround times
- Easy adaptation for retrofitting to studs not extending above nuts

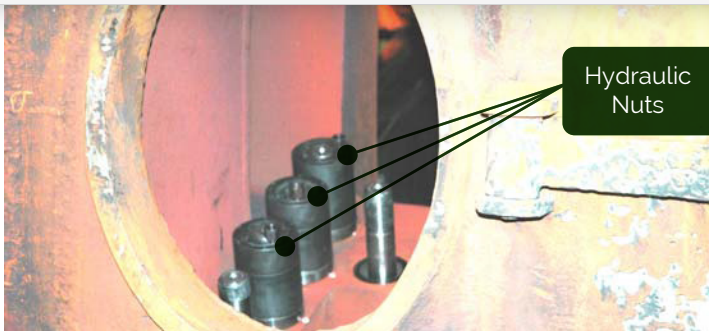


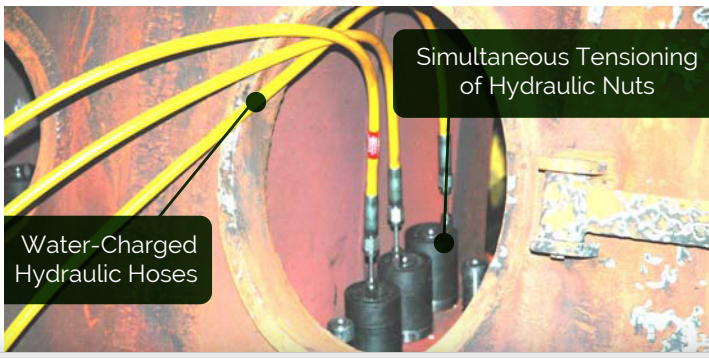


HYDRAULIC ROD TENSIONER (HRT) AND HYDRAULIC ROD NUT (HRN) - HRT SECTION AND ASSEMBLED VIEWS

PROBLEM	SOLUTION
1. Insufficient loading using conventional torqueing methods cased warped flanges	1. Simultaneous tensioning of studs provided precise loading allowing full flange closure
2. Leakage between stages due to gap between flanges (known as "smile")	2. Developed sufficient clamping to overcome warping of inner casing
3. Labor-intensive operations led to over-budgeted turnarounds	3. Labor hours drastically reduced – turnaround reduced by one month
4. Contaminants in the steam path	4. Water-charged hydraulic nuts eliminated contamination concerns







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