

Pump Failure Investigation

The Challenge

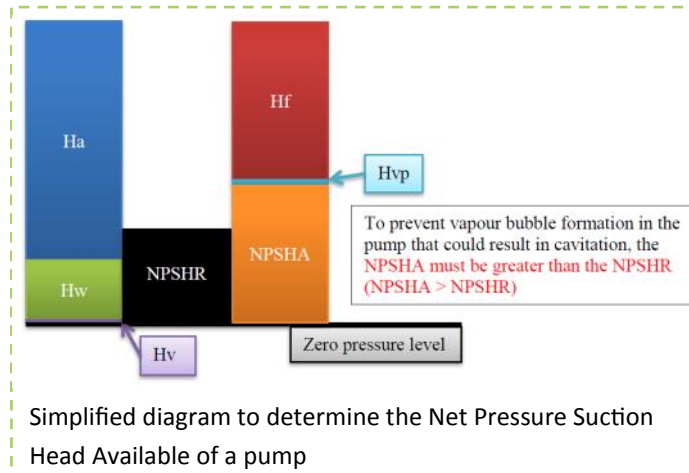
BSRIA was approached by an industrial end-user who was having issues with some pumps feeding water to their large cooling system. One pump had already failed and there was high potential for the remaining ones in operation to fail soon if the problem was not identified and resolved rapidly.

Process

BSRIA reviewed the design of the system, manufacturing records and maintenance records. We examined the failed pump to understand what the likely mode of failure was and identify the source of it.

BSRIA also performed live measurements of the remaining pumps in operation to determine whether they were showing any detectable signs of similar failure.

BSRIA reviewed the historical operating conditions to identify any periods where the possible mode of failure could have been initiated.



Key advantages in employing BSRIA consultancy services

- Professionalism in dealing with complex and sensitive systems
- Experience in forensic building investigations
- Competent in condition monitoring
- Independent assessor

Results

- Several locations inside the body of the pump were identified as failure points.
- These failures were not caused by a single cause, and were rather resulting from a complex mechanism that involved several causes.
- The apparent localised corrosion inside the pump was subsequently affecting its performance and capability to deliver the required flow rate.
- Some periods of service were identified where cavitation inside the pump could have occurred. This was determined by computing the Net Pressure Suction Head Available (NPSHA) and comparing it to the Net Pressure Suction Head Required (NPSHR) provided by the pump manufacturer.

