

# Identifying Correctable Cause for Low Condenser Performance Measurements

By

Joseph W. Harpster, PhD, [jharpster@intekflow.com](mailto:jharpster@intekflow.com)

Timothy J. Harpster, PhD, [tharpster@intekflow.com](mailto:tharpster@intekflow.com)

Warren C. Welch, III, PhD, [nwelch@intekflow.com](mailto:nwelch@intekflow.com)

Intek, Inc.

751 Intek Way

Westerville, OH 43082

P: 614-895-0301, F: 614-895-0319

[www.IntekFlow.com](http://www.IntekFlow.com)

## Abstract

Low condenser performance results in increased operating condenser pressure and reduced unit thermal efficiency. Described here are measurements and observations used to indicate the presence of causes for this deleterious condition.

Recent condenser studies, including results where condenser modifications have been implemented, are reviewed for their effectiveness in identifying unique problems and finding methods for improving performance. These results are consistent with findings presented at the last Condenser Technology conference, where the authors reported on predicted, and later achieved, dramatic performance improvements for a particular condenser design.

Although of a different design and manufacturer, more recent studies and retrofitted units had similar findings. Following a modification, they also yielded performance improvement consistent with the formerly reported optimized unit. A description of methods to be used by plant personnel to identify performance limiting indicators are presented. These are shown to be commonly accepted and available measurement data and operating conditions for identifying poor performance indicators. Once causes are recognized, the deficiencies can be eliminated through an engineered retrofit.

Described retrofit programs include modifications during a retubing operation, or during an outage without retubing the whole condenser. Presented benefits include lower condenser pressure, significantly improved condensate purity and possible power uprates to 30%.