MATLAB Application for the Selection of the Best Pipe Series/Parallel Arrangement in Piping Network

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Abstract

The aim of this work is to show the application of computer software to solve complicated real life engineering problems. The software used is MATLAB where a code is written after the theoretical derivation of the governing equations. The application of MATLAB is on mechanical engineering fluid mechanics unit. The application is for the selection of the best arrangement of pipes series/parallel of different diameters, roughness, and lengths to achieve the best operating conditions for a pump in a specified pipe network. This includes selecting the minimum pump power and pressure drop. A MATLAB code is used to solve for different scenarios of arrangement which will save time and efforts.

Results from MATLAB shows a simple solution of simultaneously nonlinear equations describing the system compared to other traditional methods of solution like trial and error manual solutions. MATLAB makes the selection of a scenario among seven possible scenarios easy and accurate.
References


Index Terms

Computer Science Networks

Keywords

MATLAB, pipe network, series, parallel, power, fluid mechanics.