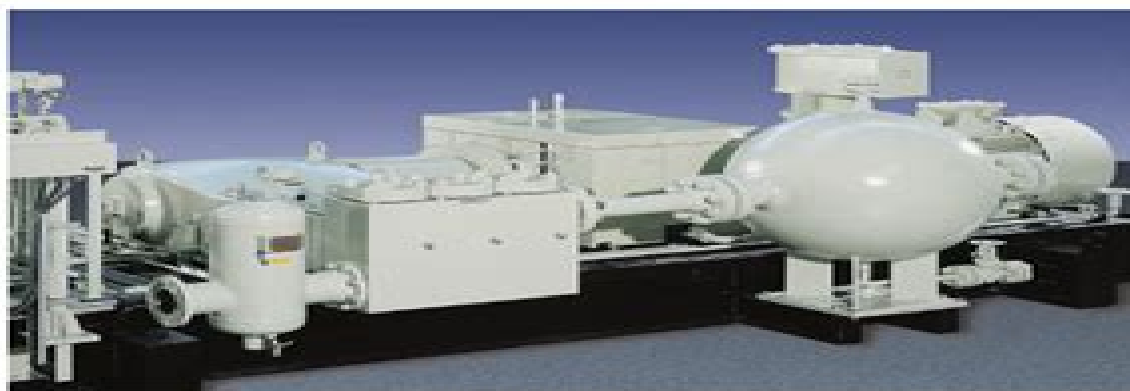


API 674 Analysis for Reciprocating Pumps

Reciprocating pumps are frequently used in many applications, because they can generate high head, independent of density. However, a reciprocating pump system also generates pulsations, which can lead to cavitation, fatigue pipe failures, reduction of efficiency and capacity limitations. TNO Science and Industry uses the digital simulation program PULSIM (PULsation SIMulation) to calculate the acoustical behaviour of the liquid in the pipe system.



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Even when pulsation levels are within allowable levels, high vibration and cyclic stress levels can occur. Especially for very flexible pipe systems and variable speed pump systems, it can be difficult to achieve an optimum design from the dynamic point of view. Cavitation and vibration problems can be avoided, and consequently life cycle costs can be reduced when they are solved during the design stage of the project.

Pulsation and mechanical response studies have demonstrated to be effective tools to meet such objectives.

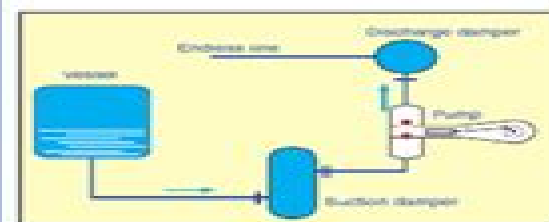
Importance of analysis

The PULSIM program has been developed by TNO Science and Industry. PULSIM solves the one dimensional flow equations with the method of characteristics in the time domain. The general purpose finite element program ANSYS is used to calculate the mechanical behaviour of the system.

Using these tools the system can be optimised from the dynamic point of view in such a way that cavitation, fatigue problems and inefficiently operating pump systems can be avoided. The importance of such an analysis is also reflected in the API Standard 674, 2nd edition of June 1995. TNO Science and Industry uses a three-step approach in the API 674 analysis.

Step 1: Prestudy or dampercheck

Projects can be delayed considerably when pulsation dampers are not designed well in an early stage of the project. To size bottles more accurately, and to prevent costly, time-consuming changes in a later stage of the project, an acoustic prestudy (also called dampercheck) of the damper is carried out.



Api 674 Free Download

Wolfgang Guggemos



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challenges This book is intended to be a definitive guide for professionals researchers policymakers and anyone interested in understanding the nuances and implications of this transformative technology **C++** □□□□ Hoon Co,2002 C

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 - The Rise of Digital Reading Api 674 Free Download
 - Advantages of eBooks Over Traditional Books
2. Identifying Api 674 Free Download
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Api 674 Free Download
 - User-Friendly Interface
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 - Personalized Recommendations
 - Api 674 Free Download User Reviews and Ratings
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 - Utilizing eBooks for Skill Development
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 - Integration of Multimedia Elements

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