

Identification and Elimination of Various Problems Associated with Low Performance and Low Efficiency of Water-Cooled Chiller by Root Cause Analysis.

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Abstract

In today's world, the importance of environmental conservation is a huge factor that any industry needs to consider this fact to be a green company. HVAC systems generally consume around 20 percent of the total energy required in any building. That chiller is a critical component of an HVAC system; we need to make sure that it works efficiently. If we can improve the efficiency with which our chillers work, we can reduce the power consumption and save a lot of money. Often, people are not fully aware of all the factors causing the low performance of the chiller, and they miss a few factors. This paper highlights how to increase the chiller's performance without replacing it. This paper will help you identify such problems whenever they occur in the chiller. A detailed description of all the possible issues, along with the specific cause of each situation, is mentioned in the paper. Once we know the reason, we can quickly brainstorm the idea and find loopholes in our existing system. Moreover, the practical ways that we need to take to eliminate these problems are also mentioned. All the techniques and methods suggested in the paper can be applied to existing chillers. By successfully implementing these solutions, many organizations have increased the efficiency of their chillers and reduced their power consumption.

Keywords:

Efficiency improvement, Water-cooled chillers, Coefficient of Performance, Causes of low performance.

Biography

Mr. Mirang Dabhi joined Pandit Deendayal Energy University in 2018 in Gandhinagar, Gujarat, India. He has completed B Tech in Mechanical Engineering with a CPGA of 9.77/10. Mirage Dabhi has worked as an analyst in the Manufacturing department to make an electric car for Shell Eco-Marathon. His team secured the second rank all over India. He has a keen interest in the thermal and manufacturing sectors. Mirage has done a project on the design and topological optimization of a frame for an electric 2-wheeler. Mirang Dabhi joined as an intern in Bosch Rexroth India Limited and did the research project in collaboration with the industry. The topic for the project was efficiency improvement of the Water-Cooled Chiller system located in Bosch Rexroth, India. After that, Mirang Dabhi worked in Atul Chemicals India. He knows diverse fields apart from mechanical engineering, including Robotics and Business Management. Mirang is a part of various international and national chapters like NDT (Non-Destructive Testing) and ASQ (American Standard for Quality).

Dr. M.B. Kiran is an Associate Professor in the Department of Mechanical Engineering, School of Technology, Pandit Deendayal Petroleum University, Gandhinagar, Gujarat, INDIA. He earned his graduation (B.E.) from the University of Mysore in 1987. He did his post-graduation (M.E.) in Production Engineering from P.S.G. College of Technology (1991) and Doctoral degree (Ph.D.) in Surface Metrology from Indian Institute of Technology (I.I.T.), Madras in 1997. He has Industry/Research/Teaching experience of 25 years. He has published technical papers in many reputed national/international journals and conferences. He is a member of the Project management Institute

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