Nowadays, medium voltage variable frequency drives (MV drives) are ubiquitous in the industry. The cement industry was one of the pioneer industries that adopted MV drives. These advanced and complex equipment are utilized in various applications, such as the operation of fans and conveyors.

Characteristics and performance of various MV drive topologies are investigated and studied in multiple papers. These invaluable studies generally focus on technical aspects, leaving some of the more practical features neglected. This paper attempts to independently study one of the major practical challenges that MV drives users to encounter in industry. This issue is known as cooling of or more accurately, heat-load management of the medium voltage drives.

This paper investigates various sources of power loss and heat in MV drives. Air cooling and liquid cooling systems, as well as their advantages and disadvantages, are reviewed. Finally, various commercially available drive packaging and installation methods are introduced. Investigating and analyzing these options can lay down a foundation to help project engineers to optimally select and design a solution in accordance with the application and project-specific requirements.