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## Contribution: Evolving Gasketing and Sealing Technologies



Let me express my congratulations on the 90th anniversary year since the establishment of Nippon Valqua Industries, Ltd. I greatly respect everyone who has supported industry through the development and manufacturing of seal products for as long as 90 years. Valqua's long history shows the importance of seal products, and gaskets in particular, for industry.

I started research on gaskets about 20 years ago when I was transferred to the National Institute of Technology, Numazu College. At that time, research and standardization of the fugitive emissions of gaskets was led by the Pressure Vessels Research Council in North America. This is when I started a joint study on the leakage characteristics of gaskets together with Mr. Nishida, currently a senior fellow, Mr. Asahina, currently an executive officer, and others. In the course of the study, we discovered that the leakage amount of a gasket is closely associated with its compression amount. It was already known that the amount of leakage differs at the time of compression and unloading of gaskets even when the same contact pressure is applied to the gasket. However, we found that the correlation between a gasket's leakage amount and compression amount can be uniquely determined. Our finding was a significant achievement for evaluating the leakage characteristics of a gasket.

We presented the results of this study at domestic and international academic conferences. Also, Valqua Technology News featured our results in 2005. Our method for determining the leakage amount of a gasket by using its compression amount was incorporated in JIS B 2490 "Test method for sealing behavior of gaskets for pipe flanges" in 2008. I am proud to have contributed to society through the inclusion of our collaborative results in JIS.

Today, asbestos is no longer used in gaskets; gaskets are mainly made from heat-resistant fluororesin. These gaskets have excellent sealing performance and the leakage amount is much less than that of joint-sheet gaskets. Fluororesin gaskets can dramatically reduce gas emissions from flanged joints of piping systems in plants including chemical plants into the environment. This low-emission property contributes to environmental protection. Methods for designing flanged joints

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were developed around 1940, and are still based on gasket factors. Although problems associated with the gasket factor ( $m, y$ ) have been pointed out, the gasket factor is still used most frequently. However, the design method is now transforming into a more reasonable design method for flanges which appropriately takes the gasket's leakage characteristics into account.

I am sure Valqua will continue to develop highly functional gaskets and prosper also as a supplier of comprehensive sealing technologies for flanged joints toward the coming 100th anniversary.

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