

Igor Karassik - The Pump User's Engineer

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Over the past few years I have written two articles on scientists who have contributed to our understanding of hydraulics. These featured Daniel Bernoulli and Blasé Pascal and there are several more that I have yet to cover. Bernoulli's theorem on energy conservation during steady state flow and Pascal's work on hydrostatics are still used daily in our industry. Their work was done back in the 17th and 18th centuries but, not long ago, a 20th century Russian immigrant to the US also had a profound influence on our industry. Not only did he champion several engineering breakthroughs, he also focused on teaching pump users to apply their pumps correctly. One of his frequent quotes was "operators deserve to sleep nights too". During his fifty year career, he became known as the "pump user's engineer".

Igor Karassik was born in Russia in 1911 and passed away in 1995. He immigrated to the US during the Russian revolution and was educated at the Carnegie Institute of Technology where he received a BS and MS in engineering. Karassik joined Worthington Pump in 1934 and spent much of his career there. In 1937 he and fellow employees, George Wislicenus and R. M. Watson, developed the concept of suction specific speed which eventually replaced the Thoma-Moody constant. The use of suction specific speed provided a far more reliable method for determining the flow at which recirculation could occur in the suction of a pump. Two other successes were the prevention of catastrophic boiler feed pump failures in open cycle steam power plants and the development of high speed (9000rpm) boiler feed pumps. In the 1970's he was an early advocate for the development of variable frequency drives and the use of magnetic bearings in electric motors.

In addition to his vast technical knowledge, Karassik also had a keen business sense. He was a great believer that the only way business can prosper is by helping their customers succeed in their endeavors. A major goal was educating people about pumps so they could apply them properly. He was a great supporter of the International Pump Users Symposium because its objective was to help pump users better understand pumps. At the 1988 symposium, he presented a paper entitled "An Open Letter to the Pump Industry". This presentation stressed his belief that manufacturers should exert a greater effort in educating pump users. He was

most concerned with something he called "controversial facts". The two that he mentioned were required versus recommended NPSH and recommended minimum flows. One of his most quoted statements from this presentation was "When the user hears two or more statements that contradict each other but start with the same "It has been proven" he is completely confused. Remember a man with one watch knows what time it is but a man with two watches does not". For some of our younger readers who may not be familiar with mid 20th century watches, they were not quite as accurate as today's digital models. Seldom did two display the same time. Several of his symposium papers, including "An Open Letter to the Pump Industry", "A Map of the Forest" and "A Name Well Chosen", as well as all of the annual proceedings are available online at their website <http://turbolab.tamu.edu/proc/index.html> .

Karassik's forward thinking ideas often faced resistance from others in his industry who did not want to try something new. His usual reply was "If you don't want problems then don't do anything. Progress is made by solving the problems caused by progress." As a follow up he also stated "There may be a light at the end of the tunnel but, once in a while, there could be another tunnel at the end of the light". In the end, he considered his most important role as that of a teacher. He was unique and, to date, I have yet to see his replacement in the pump manufacturing industry.

During his career, he authored several pump related books including *Centrifugal Pump Selection, Operation and Maintenance*; *Engineers Guide to Centrifugal Pumps* and *Centrifugal Pump Clinic*. He was coauthor of *Pump Questions and Answers* and coeditor of our industry bible, *Pump Handbook*. Some of the older editions of his books are available as a free download. He also authored over 500 technical articles. One of the most popular was a three part series on "Centrifugal Pump Operation at Off-Design Conditions". This series is a must read and is available on my website.

In order for the pump industry to excel, it must follow Igor Karassik's philosophy as it is a proven roadmap to success. Invest in innovation and progress. Solve the problems caused by progress. Work with customers and help them succeed. Finally, use education to make the incomprehensible comprehensible to all in the industry.

In closing, there is another Russian engineer who has been a major contributor to the proper application and understanding of pumps. Dr. Lev Nelik immigrated to the US in 1979 and worked for several major pump manufacturers before founding his own company which offers training and consulting services. Like Karassik, he is a major supporter of the International Pump Users Symposium and serves on the Advisory Committee. Lev has authored his own book on centrifugal and rotary

pumps and has published over fifty technical papers. You probably know him best for his educational articles that are published monthly in Pumps & Systems.

Joe Evans is responsible for customer and employee education at PumpTech Inc, a pump & packaged systems manufacturer & distributor with branches throughout the Pacific Northwest. He can be reached via his website www.PumpEd101.com. If there are topics that you would like to see discussed in future columns, drop him an email.