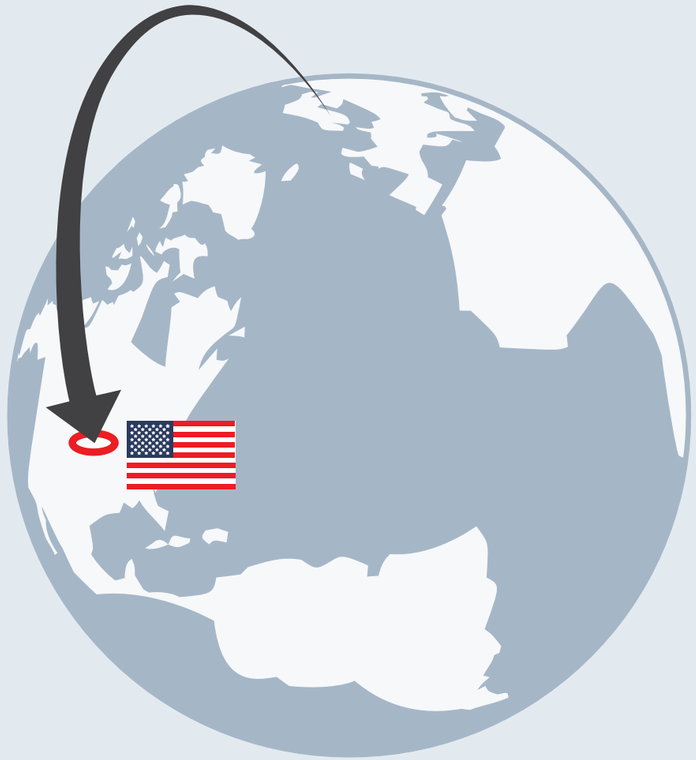
THE EVOLUTION
of the Severe Service Knife Gate Valve

The Knife Gate Valve began its journey in the Swedish Pulp and Paper industry. The market demanded an inexpensive valve for pulp stock applications, and a revolutionary valve design for the era was born. Known as the Knife Gate Valve, this new technology was capable of low pressure uni-directional general purpose isolation.

The simplistic and inexpensive design did have its problems. The hypothesis that the pulp stock in the water slurry would dewater around the closed gate and seat, thus forming a tighter seal resulted in extremely high allowable leakage rates and fugitive emissions (leakage both inside and outside the piping system). Unfortunately, the original design often acted more as a sieve than a valve.



In 2017, DSS Valves officially entered the market, boasting the most technologically advanced Severe Service Knife Gate Valve. The design completely removes the chance for fugitive emissions, surpasses the rigorous standards for Severe Service defined by the MSS, and provides bi-directional zero leakage from full vacuum to ASME Class 900/PN 150 pressures (2220 psig/153 barg).

The 1950's saw a new patent for the Knife Gate Valve in the U.S. From here, a variety of designs began to improve the functionality and capabilities of the valve.

First came the **Through Gate** design, which was able to accommodate higher consistencies of fiber in water, but had issues with through leakage and consistently released large amounts of fugitive emissions.

The **Lined Gate** was the first design to consider the effects of corrosive materials. The design featured a protective corrosion resistant body liner, but couldn't perform low pressure uni-directional general purpose isolation.

The **Push-Through** design emerged, enabling knife gates to handle high solid slurries. However, its more robust design still struggled due to releasing discharge on each and every stroke.

A true zero leakage bi-directional higher pressure design, known as the **Guided-Shear Gate**, featured the first true "knife" gate able to handle clean, clear or heavy slurry in highly alkaline or acidic solutions.

DSS® VALVES

1950

Quest for Sustained Zero Leakage

2017