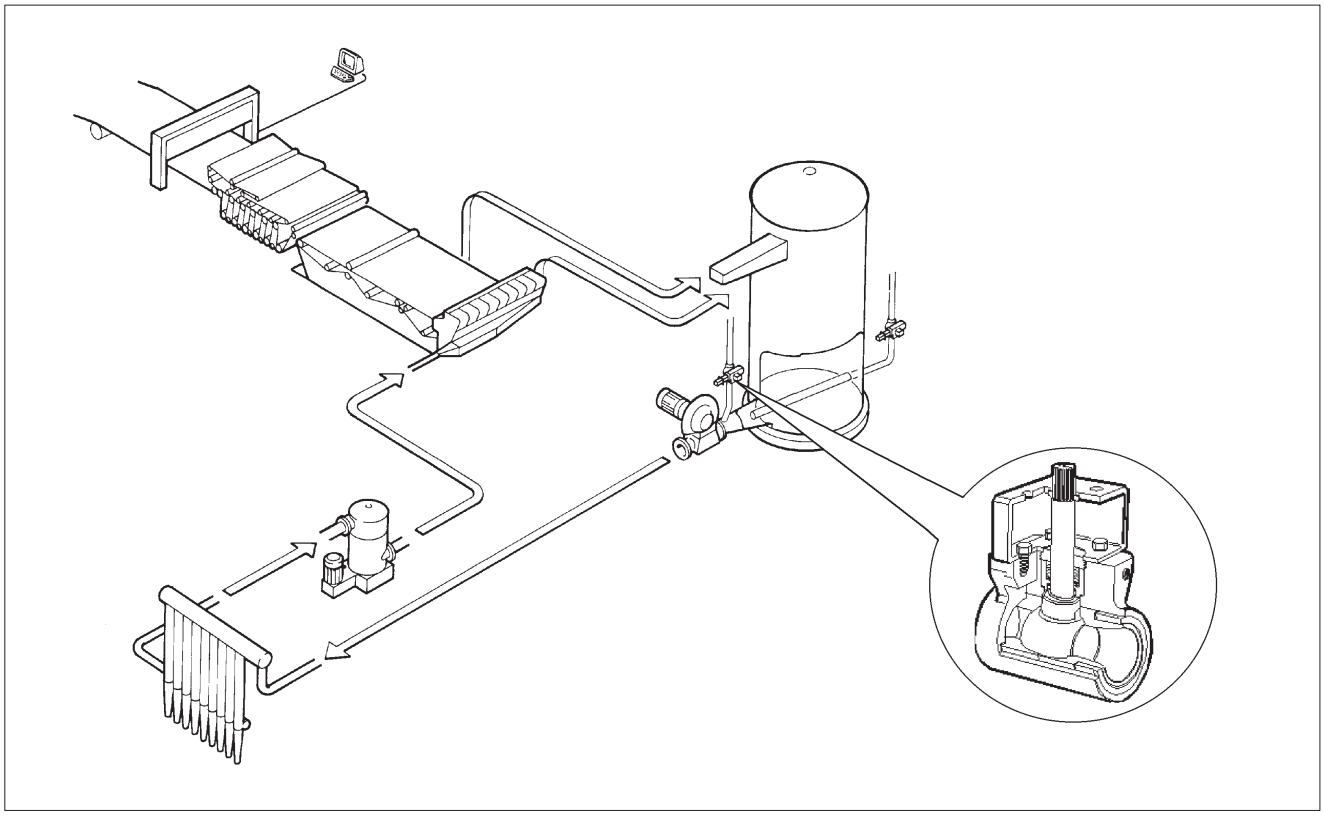
Filler slurry control



Overview of the process

Fillers are used to improve both the optical and physical properties of the sheet surface. Fillers are commonly used as a pigment coating by modern papermakers.

The process

Fillers are usually furnished to mills by suppliers in the form of slurries of 65 to 77 percent solids, supplied in tank cars.

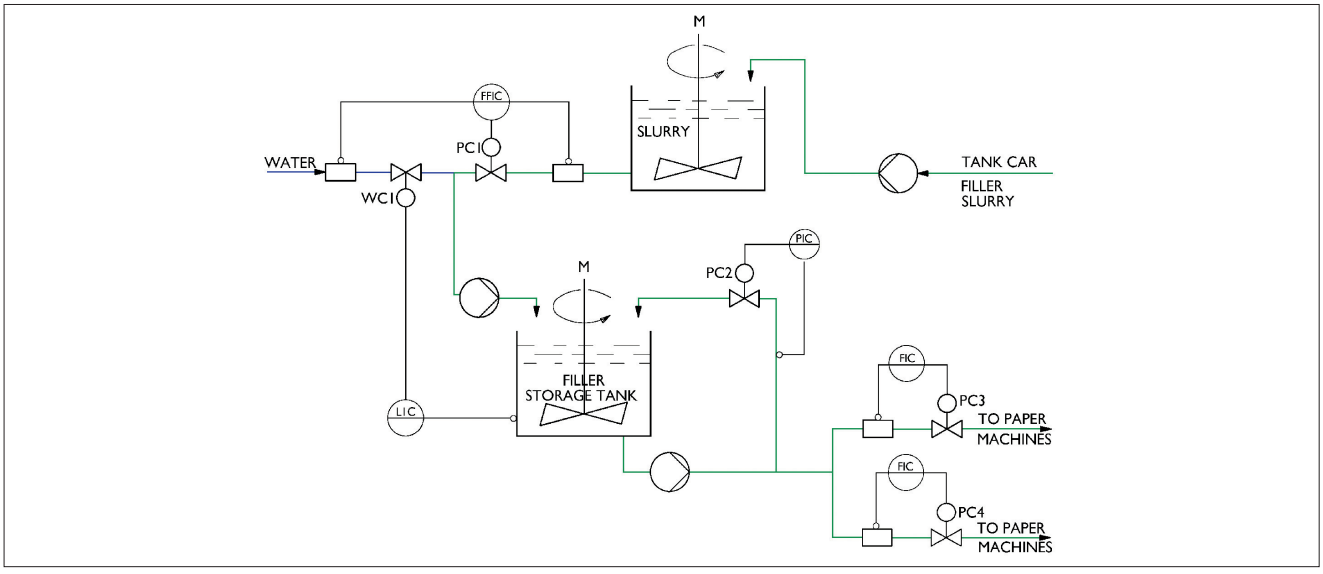
It is diluted by mixing with water under ratio control, and stored in a paper machine supply tank. The diluted slurry is pumped into a recirculating header under pressure control. Feed lines to the various paper machines are flow controlled as required.

Results

Although velocities are kept at a minimum, filler slurries have been known to destroy valves in very short order due to their extremely abrasive nature.

Valmet manufactures ceramic lined ball valves in one of the most erosion resistant materials available today. It is used in abrasive applications such as lime mud, metal slurries, titanium dioxide and cement production where even cobalt based alloy surfaces do not last.

A new generation ceramic material, magnesia partially stabilized zirconia(Mg-PSZ), completely lines the Neles ball valves flow path. The properties of Mg-PSZ are superior to the more common ceramics found in valves, and make it suitable for a wide range of severe service industrial applications.



VALVE SELECTION					
Tag	**Application**	**Control**	**Recommended**	**Alternate**	**Typical size**
WC1	Dilution water	Modulating	R series V-port segment valve	M series soft seated ball valve	DN25 - DN50 1" - 2"
PC1	Slurry to storage tank	Modulating	M series or E series ceramic lined ball valve	--------	DN50 - DN100 2" - 4"
PC2	Slurry recirculation	Modulating	M series or E series ceramic lined ball valve	--------	DN50 - DN100 2" - 4"
PC3 + PC4	Slurry to machines	Modulating	M series or E series ceramic lined ball valve	--------	DN50 - DN100 2" - 4"

Some other common filler materials and their wear factor compared to Kaolin where Kaolin is rated at 100 %.				
Filler	**Density kg/m3**	**Consistency % particle size**		**Wear factor %**
		< 2 µ	**< 10 µ**	
Kaolin	2600	25 - 45	75 - 90	100
$CaCo_3$	2650	30 - 90	95 - 100	65 - 100
Talc	2700	10 - 30	60 - 95	30 - 65
TiO_2	3900		100	70 - 100
Natrium silicate	2100		100	60 - 100
Silicone earth/minerals	2300		60 - 90	100 - 150
Barium sulphate	4400		95 - 100	35 - 65

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