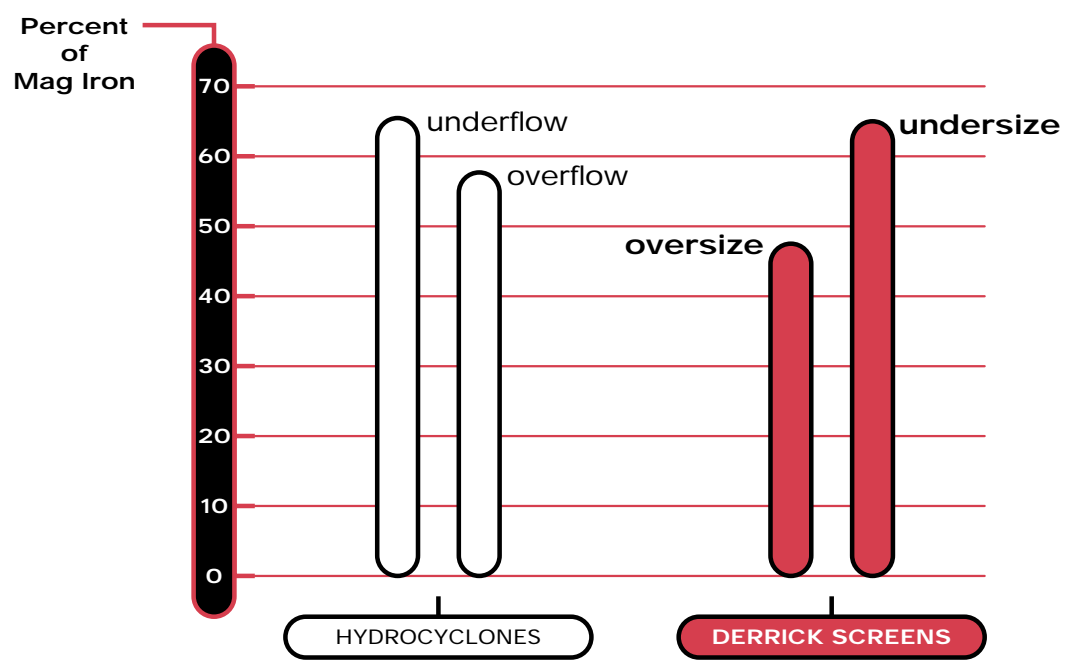


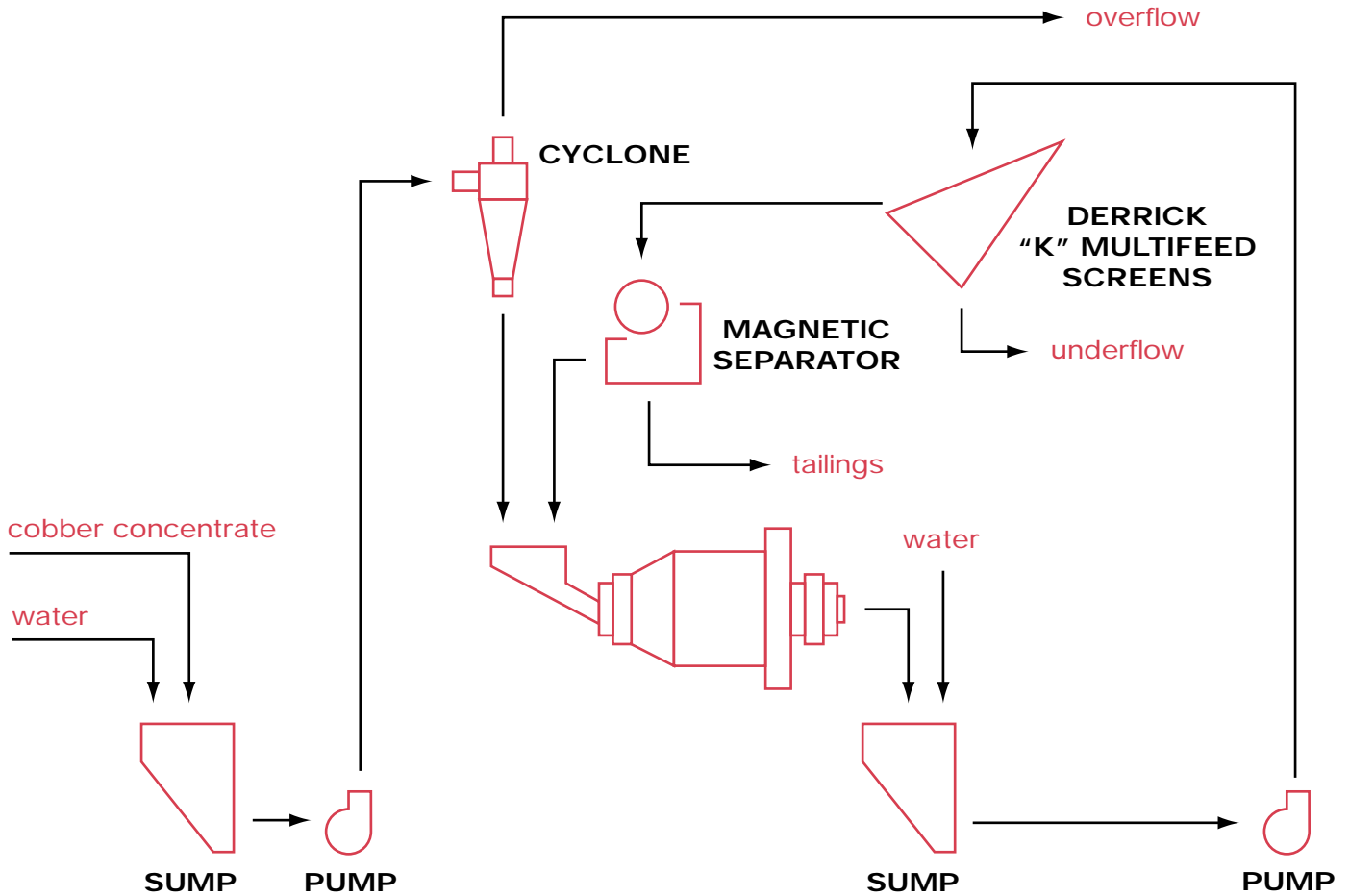


IRON ORE IMPROVED GRINDING EFFICIENCY THROUGH BETTER CLASSIFICATION

It is well accepted in industry that improved grinding efficiency can be obtained through better classification. In 1996, National Steel Pellet Company modified their existing circuit to include Derrick Multifeed units in the grinding circuit (Ref. 69th Annual Meeting Minnesota Section SME, Duluth MN, April 24, 1996). This resulted in a significant improvement in grinding efficiency. *(see schematic and benefits on reverse side)*

Another benefit of screens in the iron ore industry is improved classification based on particle shape. Since screens are more sensitive to particle size than density, they are less susceptible to the heavy media effect experienced with hydrocyclones. Magnetite has a specific gravity of 4.7 vs. silica of 2.7. A hydrocyclone will send finer magnetite particles back to grinding while coarser, middling particles can continue through the process. This results in excessive grinding, more silica in the concentrate, higher fine iron losses and reduction in plant capacity.





BENEFITS OF MODIFIED CIRCUIT

PARAMETER	ORIGINAL	MODIFIED	IMPROVEMENT
Grind (%-325 mesh)	79	72	
Circuit Feed	221	296	34%
Power Consumption (KWH/LT)	13.12	9.8	25%

NOTE: Data is based upon equivalent silicas in the concentrate.



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