

From daily plugging to non-stop pumping

Recessed-impeller ANSI pump solves solids-handling problem

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Dismantling and cleaning out the suction side of an ANSI centrifugal pump handling 5% stock was a daily chore at Cottrell Paper Co.'s Rock City Falls, NY, plant.

The problem developed in 1993, when the company began using longer denim fibers in the stock to increase finished paper strength.

Eventually, Cottrell solved the problem with the installation of a recessed-impeller pump, which has been running six days per week with no unscheduled downtime ever since.

Fibrous stock

Cottrell makes 100% cotton rag paper electrical insulating board, using recycled denim jeans as raw material. The board product is used on magnet wire and in transformers. Other markets include lighting and low-heat applications.

Stock used to make the board contains 5% solids and varies in temperature from 50°F to 160°F. The pump operates continuously six days a week, moving 300 gpm against a 200-ft head. Discharge pressure is around 40 psig.

Interruptions for unplugging were troublesome and costly in lost production, so Cottrell turned to its pump supplier for help.

The pump company recommended retrofitting the 2x3 ANSI pump with a recessed impeller and matching casing. The only other change needed was shortening the suction pipe by 2 in. The split mechanical seal from the old pump was installed on the new one without problem,

and it has performed well.

Installed in April 1994, the recessed-impeller pump was an immediate success. It has been running round-the-clock, six days per week ever since with no unscheduled downtime.

Conventional end-suction pumps have close clearances between impeller and casing to maintain efficiency and performance. When handling bulky, fibrous solids they can clog. Also, high velocities in the casing cause increased wear, and can cause degradation of the solids by shearing.

Recessed impeller advantages

Since the impeller is recessed from the casing in Cottrell's new pump, velocities are low, and solids contact with the impeller is reduced. Wear rate, fiber shearing and degradation are minimized. The recessed impeller is designed for non-clogging pumping of solids suspensions. Anything that will pass through the pump discharge flange will travel through the pump.

The same motor was used on the recessed-impeller pump as on the old pump. The new design pumps a little less than the old one, but performance is entirely satisfactory in the application.

Among other liquids the recessed-impeller pump has handled successfully are shear-sensitive latex, 1% to 2% paper stock, soap stock and liquids with 5% to 20% entrained gas.

■ CV-3196 Recessed-impeller Pump—Goulds Pumps Inc., Seneca Falls, NY.



Top: Shortening of suction pipe was the only modification needed to fit the recessed-impeller pump where the conventional ANSI pump had been.

Bottom: Fibrous buildup occurred daily in suction of the original pump.