



Fluid Dynamics

Hard water solutions since 1973

MagCAT[®]

Preventing scale build up in sugar processing plants

Fluid Dynamics has had great success with the prevention of scale in sugar processing plants as many case histories have shown. Installations in Belgium have achieved significant reductions in scale accumulation. The nature of the problem can make complete prevention difficult but in all cases considerable improvements have been made.

The reduction or elimination of scale formation following the installation of a Fluid Dynamics MagCAT[®] increases the time between planned maintenance inspections and cleaning. With its Active Catalytic Surface and magnetic fields the MagCAT[®] provides the most powerful physical anti-scaling treatment available.

Typical Results:

- Reduced scale on evaporators
- Reduced chemical usage
- Reduced scale accumulation in pumps





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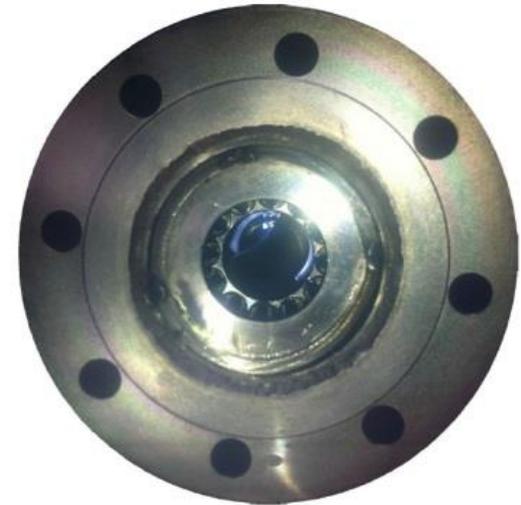
A pivotal point in the manufacture of raw cane sugar is the evaporation process that transforms the juice.

Evaporator efficiency and shutdowns for evaporator cleaning are two major cost components in the operation.

Formation of scale in sugarcane juice evaporators inhibits heat transfer lowering the efficiency of the evaporators reducing throughput.

Scale accumulation can lead to lengthy shutdowns for cleaning with costly chemicals.

The MagCAT treatment is effective on cane juice or low Brix sweetwater, but not on high viscosity syrups.





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MagCAT Case Study Samples: Sugar Processing Plant

Before grinding, three MagCAT units were installed on a large set of triple evaporators (43,000 sq.ft. surface). Unit size was determined according to the pipe diameter on which they were working.

Observations and Discussion

The regular period between boil-outs prior to the installation of the MagCAT system had been 80,000 tons of cane or every 7 – 10 days.

After the first 10 days (80,000 tons) use with the MagCAT system the first and second evaporators were found to be clean with the third having some scale present but that scale was much softer than that found previously. The evaporators were cleaned and then allowed to run until 120,000 tons of cane were ground, then they were inspected again. The same results were noted. The evaporators were treated and put back into service.

By the close of grinding, 160,000 tons of cane could be milled before the evaporators were taken off line for cleaning treatment. On visual examination the first two evaporators were still very clean. The third body had some scale in it but it was soft and easily removed.

Following installation some 160,000 tons of cane could be processed between cleanings: i.e. the time between boil-outs was extended to 14 – 20 days.





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MagCAT Case Study Samples

Sugar Processing Plant	With MagCAT	Without MagCAT
Ash in sugar (season's average (sulfated))	0.26%	0.26%
Ash in molasses (conductivity)		
A molasses	6.34%	6.70 %
B molasses	7.24 %	8.55 %
Final molasses	13.85 %	15.05 %
Sodium hydroxide usage (season)	15,000 gal	41,000 gal
Hydrochloric acid usage (season)	5,300 gal	11,900 gal





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MagCAT Case Study Samples: Sugar Processing Plant

Conclusions:

- Boil out frequency (for evaporator cleaning) was cut in half (decreased by 47 %)
- Sodium hydroxide usage and disposal costs were reduced 64 %.
- Hydrochloric acid usage and disposal costs were reduced 55 %
- Ash level in raw sugar produced did not increase when MagCAT was used.
- Ash level in molasses did not increase when MagCAT were used.
- The payback time for the MagCAT could be as little as one season, based on chemical savings and production increases.





MagCAT[®]

MagCAT Case Study Samples: Other



U.K Government Military Installation 2009

Effluent lines from a reverse osmosis, iron removal system and water softener used to scale up every six months requiring pressure jetting of lines and acid cleaning of pumps. Chemicals could not be used as the water was being drained to a stream. Following installation of MagCAT the whole system has not required shutdown for cleans, now over 3 years of continual operation. The plant is currently undergoing expansion and MagCAT has been specified for the next stage following the impressive results.

Cotto Tiles, Thai Cement

Cooling water circuit for tile mold making machines. The circuit was heavily contaminated with oil and had silica and calcium deposition in pipelines.

A number of chemical and non-chemical treatments had been tried to prevent the problem but failed. Following installation of MagCat scale ceased to deposit and within just 6 months 70% of the existing scale had been removed.



Prior to installation



6 months of MagCat treatment with over 70% scale removed

