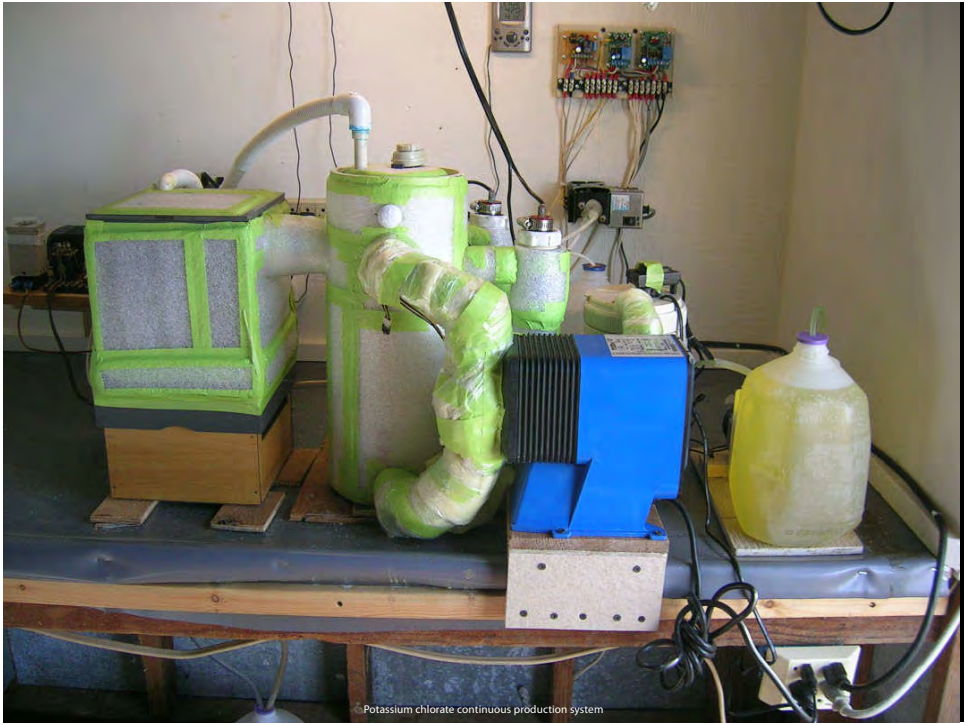
Potasium chlorate continuous production system

The electrolyte (liquor) consists of 30grms KCL and .4grms potassium dichromate per 100ml water.
A chemical pump circulates the liquor through a filter and between the rundown and crystallization tanks.
Approximately 270 grams of potassium chlorate crystals are harvested every 12 hrs.
Potassium chloride is added to the system after each harvest to restore the liquor concentration.
Water is automatically fed into the system to maintain liquor concentration & level.
HCl is automatically fed into the system to maintain ph.
Three 10 amp cells are the backbone of the system. They are wired in series and plumbed in parallel.
Anodes are 1" dia X 12" long graphite
Cathodes are 1 1/2" X 10" ss pipe nipples
Rundown tank capacity is 1 2/3 gal.
Crystallization tank capacity is 1 1/3 gal.
Cells & rundown tank are maintained at 40 deg. C
The crystallization tank is maintained at 30 deg. C average.
A pelter junction cools the bottom of the crystallization tank to 20-25 deg. C.
An exaust system cools the hot side of the pelter junction and removes all noxious fumes.
The system is designed to operate in an ambient temperature of 32 to 95 degrees F.
Chlorate must be harvested every 12 hrs to maintain crystallization tank effiency.
The filter must be changed every 72 hrs or the chlorate starts to look dirty.
The graphite anodes erode and must be replaced every 30 days.

For comments or questions: Carl Tauch - ctauch@netexas.net 1-17-2008



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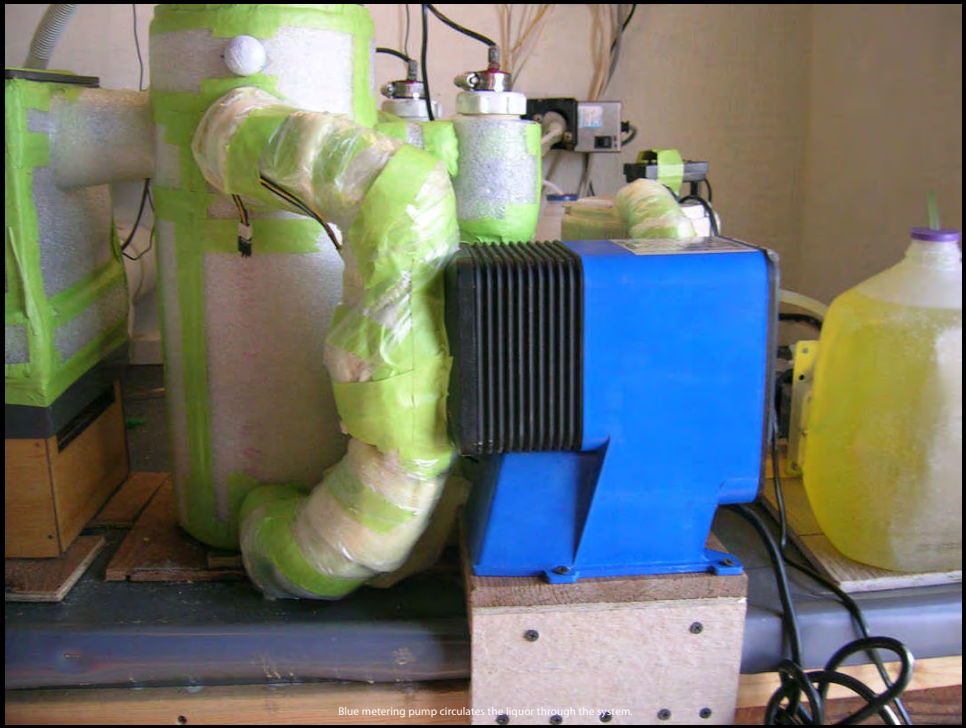
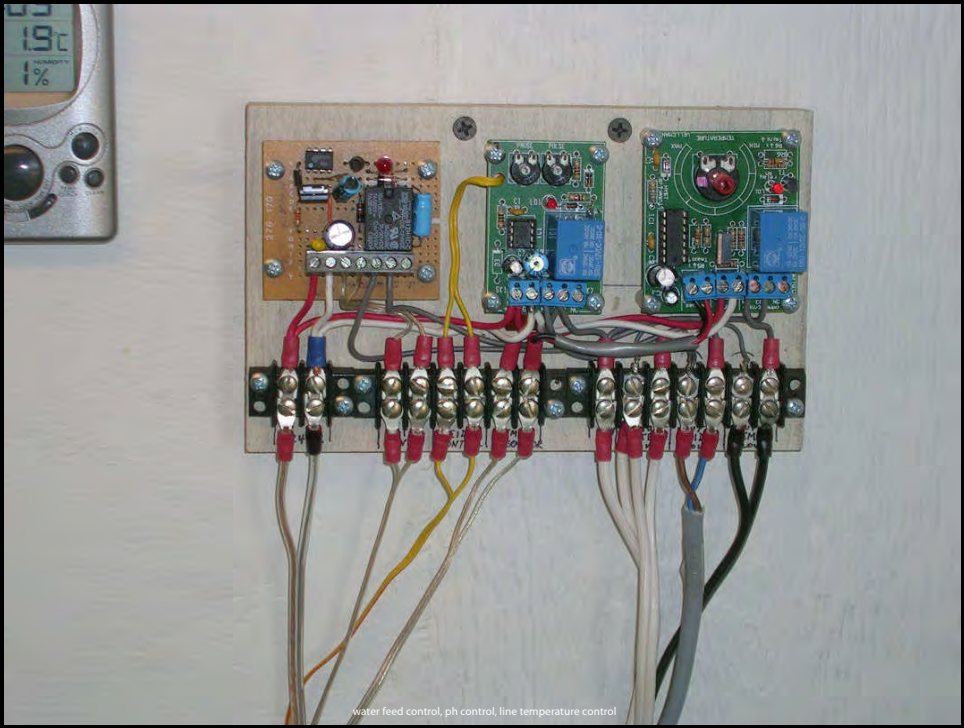
Three 10 amp cells visible on right side of system



Blue metering pump circulates the liquor through the system.

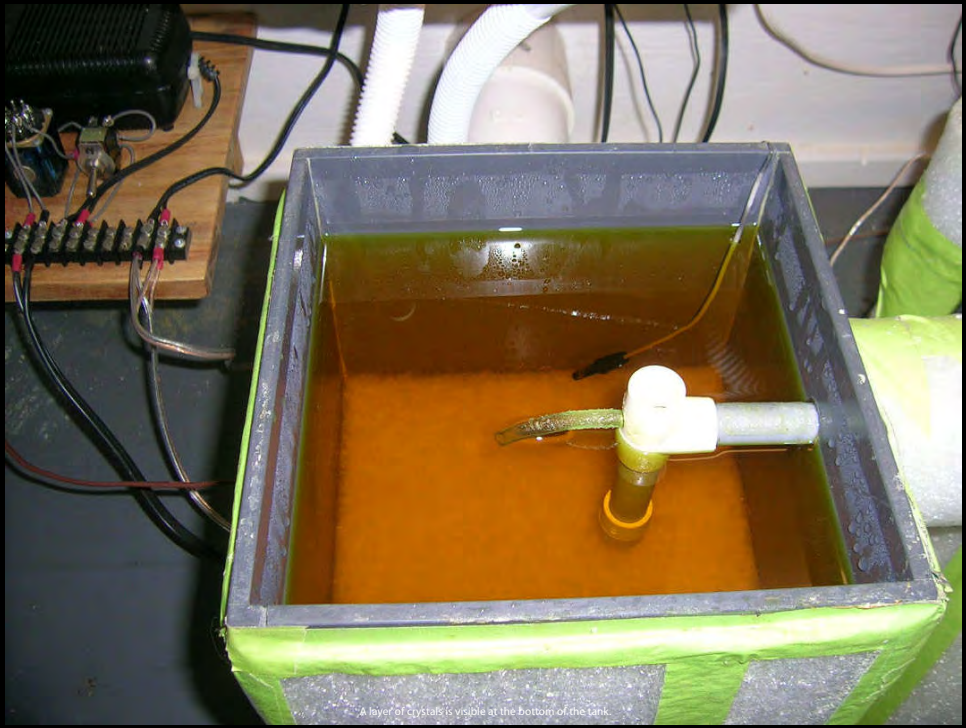
peristaltic pump at right feeds wash water back into system

The power supply produces a constant 10 amps for the system.



water feed control, ph control, line temperature control

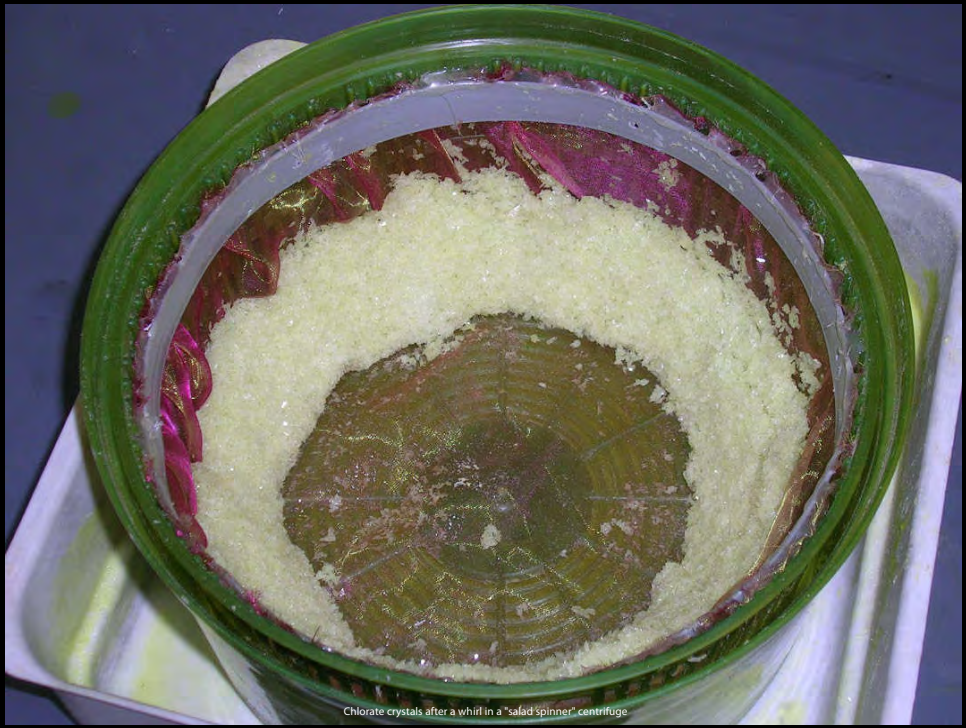
crystallization tank at left is cooled with a pelter junction



A layer of crystals is visible at the bottom of the tank.

Chlorate crystals are harvested with a fish net.

12 hour yield of wet chlorate crystals (270 grms).



Chlorate crystals after a whirl in a "salad spinner" centrifuge

Crystals are weighed to determine the amount of KCL to add back

Crystals are accumulated for a wash to remove residual liquor.