

## The Cool Jacket

### A Homemade Fermentation Chiller

By Charlie Heaps

Many brewers believe that maintaining a proper fermentation temperature is critical to brewing great beer. For lager beer styles this means holding the fermentation temperature in the neighborhood of 50° F. Fortunately for my marital bliss, 50° is not the ambient temperature anywhere in my home. Furthermore, I do not want to devote refrigerator space to fermenting beer (serving beer is another story). A few months ago I noticed that I had some unused space in the freezer compartment of my basement refrigerator. This



made me wonder if there was a way to make use of this freezer space to cool fermenting beer that is located outside the freezer in a carboy or a bucket. As is usual with the home brewing projects that I contemplate, others had

been here before me. I used ideas posted in the online home brewing forums to devise the Cool Jacket fermentation chiller that is described here.

The Cool Jacket cools the fermenting beer by circulating cold liquid from a reservoir placed in the refrigerator's freezer compartment through a coil of copper tubing wrapped around a 6.5 gallon fermentation carboy (though it could be



(Continued on page 5)

## Digital Temperature Controllers

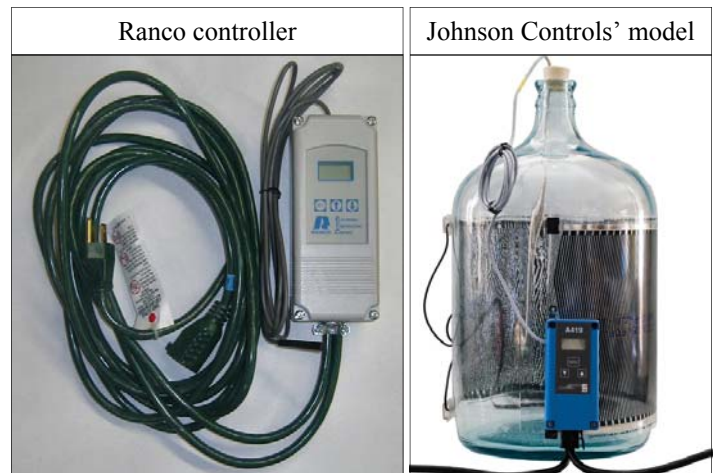
By Steve Kranz

Some brewers (at least, the better ones IMHO) tend to be obsessive about the temperature of their mashing grains and fermenting worts. Just look at that cool (no pun intended) contraption to the left built from scratch by Charlie Heaps. I gotta make me one of those!!

One thing which has frustrated many a homebrewer is the inability to ferment at lager temperatures, or even, to ferment at the correct ale temperatures in the dead of summer. If you have a refrigerator which you could take out of food service for a couple of months, you were gold. All you needed was an inexpensive Johnson Controls refrigerator controller. You plug the controller into the wall, plug the 'fridge into the controller, put the probe inside the 'fridge and dial the temperature you want. The controller cycles the 'fridge on and off to maintain perfect fermenting temperatures.

For a few years now, both Johnson Controls and a company called Ranco also make digital versions of the refrigerator controller. But these are a vast improvement over the older analog version, for three main reasons:

1. They allow you to control heating as well as cooling;
2. They let you more precisely control the "differential" or the amount of change in the metered temperature before the controller kicks on again; and
3. They both have a narrow probe which lets them work with a "thermowell" to go deep into your mash or wort.



# Club Hoppennings

## UPDATE: BrewCamp 2009

This year's BrewCamp is scheduled for October 8—11 (Thursday—Sunday). As of this writing there was only one (1) available camp site remaining in the Addison Run loop of Cunningham Falls State Park. If you want to attend BrewCamp this year and have not made a reservation yet, ya better get on it.

The Park Service has announced that starting in 2009 dogs will be allowed in the campground. I received this news with mixed emotions. On the one hand it's nice that pet owners will be able to bring their pets with them on camping trips. Most dog owners are responsible people who manage their pets so as not to be an aggravation to other campers. On the other hand, there are still too many pet owners who just don't care that their dogs bark continuously (whether day or night), or who think that their dogs' droppings will just blend in with the surroundings. Plus, campgrounds are places with an abundance of built-in stimulation for dogs to...be dogs. Lots of people, lots of activity, and other dogs to communicate with.

Personally, even as a dog owner, I am not in favor of this change. But, I still have Lt. Mark Maas' business card from his visit with us last year, and since he chose to give it to me, you can bet that I will be calling him if we have a complaint about the behavior of other campers or their dogs.

## Next...

The Maryland Park Service is just full of great ideas...they just can't keep from meddling in something that doesn't need meddling. Starting in November 2009, consumption of alcohol will no longer be permitted in state parks or campgrounds. The only exceptions are that consumption is permitted in recreational vehicles, or if you buy a \$35 permit for a group event at a shelter. That pretty much kills BrewCamp at Cunningham Falls or any other Maryland state park after this year. While it says nothing about not being able to brew beer, what's BrewCamp without the ability to drink beer?

The stated reason for this change is that they issued 413 alcohol-related citations in 2008. That means that they issued an average of 1.1 citation per day across the entire state, or .02 citations per park per day. Wow.

## Quarterly Membership Meeting

Dog Brewing Company in Westminster hosted our first (and future?) quarterly meeting in March, and we had a marvelous turnout of about 35 members. The club sprang for \$200 worth of food which was gone in a flash, followed by the business end of the meeting, and concluding with a tour of the brewery given by Dog owner and brewer George Humbert.

The business end of the meeting touched on a number of topics, but we spent the most time on:

1. the Maryland Microbrewery Competition; and
2. the format of our club's tasting events.

As for #1, Neil Mezebish is taking volunteers for the Competition Committee. Our goal is to get an earlier start with organization and judges than last year, and to improve communications between us and the Homestead.

We also heard what sounded like a consensus that, for our tasting events, we as a club need to be more mindful that people who bring their own beers to share usually want, but don't always get, the opportunity to present their beer and get useful feedback. Starting with the next tasting hosted by Roger and Jan Miller in April, we will use one of several methods for brewers to either pour their beers one at a time for discussion and feedback, or at least, have the homebrews numbered and identified on a board and put on a table where participants can more thoughtfully sample one beer at a time.

Midnight Homebrewers' League		
c/o Steve Kranz 741 Windsor Drive Westminster, MD 21158		
<a href="http://home.comcast.net/~midnighthomebrewers">http://home.comcast.net/~midnighthomebrewers</a>		
<b>President:</b>	Neil Mezebish neil@mezebish.com	410-875-2325
<b>Vice President:</b>	Charlie Heaps cheaps60@gmail.com	410-549-6235
<b>Secretary:</b>	Steve Kranz stevekranz@comcast.net	410-848-6695
<b>Treasurer:</b>	Nancy Codner codfish17@verizon.net	410-857-6494
<b>Events:</b>	Eric & Krista Custer dodadippy@yahoo.com	410-363-1936



# Brewers' Tips & Tricks

Easy-to-do ideas and hints to help you brew better, and easier, beers. Send your own tips & tricks to Steve Kranz for them to appear here.

## • Warm fermentation in colder weather

Homebrewers should be just as concerned about keeping ale fermentation temperatures up in the winter, as they are about cooling things down in the summer. I am fermenting 10 gallons of a Saison, and learned that the strain of yeast I am using is really happiest at temperatures above 75° and actually does best in the 80-90° range. Wow, who'd have thought? Sure enough, primary fermentation went OK for a couple days at 70-72° before it just pooped out. So I racked it into my conical in the basement, and created a nice warm fermentation "cocoon" with a heavy-duty tarp and an electric space heater. I found the perfect heater for about \$20 in the homebrewing section of Lowe's. It has a thermostat which I set to 80°. The heater cycles on and off about every ten minutes, and the temperature underneath the tarp averages about 82—84.

## • Mash tun volume calculation

If you've ever planned to brew a big batch of a big beer and wondered whether your mash tun was large enough to hold all the grain and water that your recipe calls for, here are some calculations to help you figure it out. I sat around one afternoon and figured out that one pound of grain displaces

.109375 gallons of volume. With that number it's easy to figure out how much overall volume you will need in your mash tun, based on the pounds of grain in your recipe, and the water-to-grain ratio (mash thickness) your recipe calls for. Here's the calculation, followed by a simple example:

$$\begin{aligned} \text{Grain (in pounds)} &= G \\ \text{Ratio (quarts of water per pound)} &= R \end{aligned}$$

$$\begin{aligned} \text{Grain volume} &= G \times .109375 \\ \text{Water volume} &= G \times R \div 4 \\ \text{Mash volume} &= \text{Grain volume} + \text{Water volume} \end{aligned}$$

So...if a recipe calls for 20 pounds of grain, and a grain/water ratio of 1.5 quarts per pound, here's the calculation:

$$\begin{aligned} G &= 20 \\ R &= 1.5 \\ \text{Grain volume} &= 20 \times .109375 = 2.19 \text{ gallons} \\ \text{Water volume} &= 20 \times 1.5 \div 4 = 7.5 \text{ gallons} \\ \text{Mash volume} &= 2.19 + 7.5 = 9.69 \text{ gallons} \end{aligned}$$

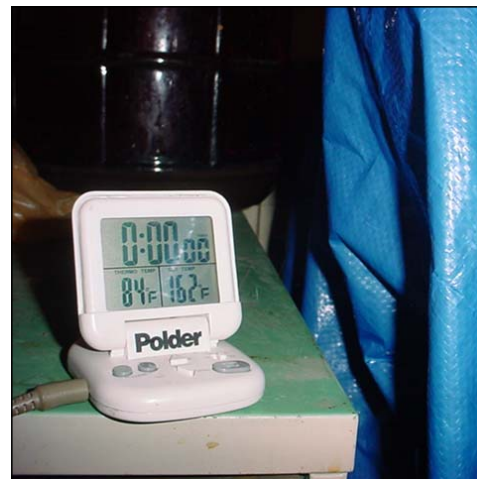
So this recipe will fit inside my 10 gallon mash tun. Similarly, if I use 27 pounds of grain (2.95 gallons) and a ratio of 1 (6.75 gallons), that's 9.7 gallons, or a very tight fit.



Here's my attractive enclosure made from a plain, heavy-duty tarp. It ain't pretty, but it seems to work.



Here's the heater inside the tarp. Be on the safe side and make sure the tarp doesn't touch the heater.



To monitor the temperature from the outside, I put the probe of this digital thermometer on top of the fermenter underneath the tarp.



# Pub Review: Pub Dog Pizza & Draffhouse

By Steve Kranz

I've been drinking Pub Dog beers for a good while now, buying it in bottles from College Square Liquors. But I only recently made it to one of the pub locations, in Columbia. It was a quick stop-over for a beer on the way to Maryland Homebrew. So we didn't have any food, just the beer.

The pub has a unique beer deal: \$4 gets you two mugs of the same beer at the same time. What's cool about that is that if you're with someone else, you can split your two mugs and get two different mugs of beer for \$4.

Pub Dog beers are all generally very good, at least the ones I have tried (and I have not tried them all). Their new Imperial Dog is outstanding, with a super hoppy nose and flavor but not so

bitter that it makes you pucker. Brewer George Humbert actually Neil and me to a sample of this beer before it was released, and it was every bit as tasty to me as, say, Sierra



Nevada's new Torpedo.

Personally, I can also recommend the Blond, Raspberry, Amber, Brown, and Stout. I haven't tried the Peach

or Blueberry among their other beers (all of which are brewed right here in Westminster!) but I'm not personally a fan of peach-flavored beers anyway.

We sat at the bar to have our two beers, and other than one other guy at the bar we were the only patrons on this Sunday afternoon. Our servers were prompt and friendly, although they had a slightly annoying habit of trying to be a part of our conversation. But we were there for the beers, which were good, plentiful and inexpensive.

Columbia: 8865 Stanford Blvd.  
(just off Dobbin Road, near Maryland Homebrew)

Baltimore: 20 East Cross Street  
Baltimore



## Club Treasury Report

To the right is a snapshot report of the status of our club's checking account as of March 26, 2009. What is not shown are several items of deposit received but not deposited since then (Brew Your Own subscription payments and a couple of Dues payments), and two months of bank service charges. Also not shown is the approximately \$200 which the club spent for our first quarterly membership meeting. We don't expect to be doing that for every meeting, or it would obliterate our entire treasury. Since the members attending the National Homebrewers Conference in Oakland, CA. are representing our club, the club will also pay for shipping our beers to California.

<input type="checkbox"/> INCOME	759.79
<input type="checkbox"/> 50-50 Raffle Income	70.00
<input type="checkbox"/> Membership Dues	647.79
<input type="checkbox"/> Reimbursement - BYO	42.00
<input type="checkbox"/> EXPENSES	-245.03
<input type="checkbox"/> Bank Charge	-8.00
<input type="checkbox"/> BJCP Sanction Fee	-35.00
<input type="checkbox"/> BYO Subscriptions	-119.00
<input type="checkbox"/> Event Fee	-25.00
<input type="checkbox"/> Guild Dues	-20.00
<input type="checkbox"/> Membership Cards	-25.43
<input type="checkbox"/> Postage	-12.60
<input type="checkbox"/> Balance Forward	645.79
<b>OVERALL TO...</b>	<b>1,160.55</b>



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I bent the 50 feet of 1/4" copper tubing into a series of tight S curves using a tubing bender, which is a flexible spring that fits snugly over the tubing to prevent kinks in the tubing. The tubing is attached to the foam pad with cable ties that I pushed through the foam. This was the hardest part of the project, taking several hours to complete. Do not attempt it without a tubing bender—the tubing will kink for sure.

used with a bucket or even a conical fermenter). The copper coil surrounding the carboy is covered with foam insulation to improve the cooling efficiency. After the coolant flows through the copper coil, it is pumped back to the coolant reservoir in the freezer to form a closed cooling loop. I used 2 gallons of propylene glycol anti-freeze for the coolant. This is the anti-freeze that is used to winterize RV water lines—not the anti-freeze that is used in car engines. This stuff can be chilled to 5° F before it starts to freeze and it is less nasty to handle than regular automotive anti-freeze.

A temperature-



I built this temperature controller using a Love TS-13010 Digital Temperature Switch and a Radio Shack plastic project enclosure. You could also use a store-bought controller (see Steve's article p. 1). The controller plugs into a wall outlet, and the coolant pump plugs into the controller. The controller switches the power to the pump off and on to maintain the temperature you set on the controller.

Item	Source	Cost
Copper tubing: 1/4" outside diameter. 50-foot coil.	Home Depot	\$23
Foam sleeping pad: the kind that you can roll up for backpacking.	Wal-Mart	\$6
Central Machinery 2 Gallon Coolant pump – Model 45333	Harbor Freight Tools	\$30
Propylene glycol anti-freeze. 2 Gallons. Anti-freeze used to winterize RV water lines.	Wal-Mart	\$5
Styrofoam board insulation 30" x 15" x 1/2". Cut 2 circles from this for the base and lid.	My scrap box	
Vinyl tubing 1/4" ID, 20 feet	Lowes	\$4.50
Love digital temperature switch-model TS-13010. A Ranco or Johnson Controls unit would work as well.	www.ColeParr.com	\$65
2 Brass hose barbs. 1/4" FIP to 1/4" Hose Barb. (Watts A-197)	Lowes	\$4 for 2
2 Quick connect elbows. 1/4" ID to 1/4" MPT. (Watts PL3009). Connects the hose barbs to the copper tubing.	Lowes	\$5.60 for 2
Cable ties – 4" length. 100 count. Attaches the copper tubing to the foam sleeping pad.	Lowes	\$3
3 bungee cords	Wal-Mart	\$2

controlled switch is used to turn on the coolant pump when the temperature of the carboy rises above the desired set point. Once the coolant circulating from the freezer has chilled the beer back down to the desired temperature, the temperature switch shuts off the pump.

I am happy with the performance of the device. It has no difficulty holding 6 gallons of fermenting lager at 50° F in a room where the ambient temperature is 70°. It was necessary to adjust the temperature setting on the freezer to avoid the coolant becoming slushy. A freezer temperature of 5° F seems to be about right. While the Cool Jacket has enough cooling capacity to

maintain the carboy at 50° in a 70° room, it does not have enough capacity to drop the temperature from 70° to 50° in a reasonable amount of time. Therefore, the beer must be



6.5 gal carboy is sitting on the jacket base with the temperature probe underneath. I found that the temperature measured here closely matched the temperature of the liquid inside the fermenter.

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So, what's the big whoop about all that? In large part, the fact that the digital controllers can control heating as well as cooling makes them doubly suited for brewing applications (and, that much easier to rationalize buying).

And, what's a "thermowell"? It is a 15" long, closed-end stainless steel tube, which lets you sink the electronic temperature probe into a liquid (wort or mash) without getting wet. The probe fits snugly inside the tube, and the temperature of the surrounding liquid transfers readily through the stainless tube for detection by the probe. Ingenious!

For example, I have recently deployed a new Ranco controller to control the recirculation pump when I

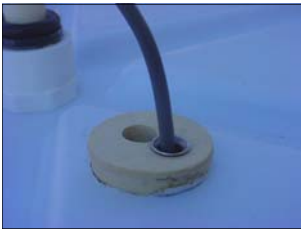


the thermometer in the mash, and then opening or closing the pump valve to keep the pump going. I still have to make sure that the temperature of the water in my kettle is where it needs to be, which I like to be about 5-8° hotter than the mash temperature.

But the photo of the carboy on the front page, shows another excellent use of a digital controller to control a heating device. Using a "ferm wrap" fermentation heater, you can precisely control the temperature of your fermenting ales, even in your basement in the dead of winter. Homebrew retailers (including Maryland Homebrew) sell the 15" long thermowell, which fits into your carboy through a second hole in a special stopper which comes with it. Then, you plug the controller into a wall outlet, plug a ferm-wrap heater (or a space heater used in a confined space...like the "cocoon" shown on

Three guys walked into a bar.

The fourth one ducked.



I drilled a hole in the lid of my mash tun, so the special 2-hole bung lets the thermowell and probe go straight down into the mash. The wire sticking out of the thermowell is the probe wire that connects to the controller.

mash. The pump sends wort from the mash tun to a heat exchanger in the kettle, which causes the wort to pick up heat and returns it to the mash tun. The process maintains a much more stable temperature throughout the whole mash bed and for the whole length of the mash.

With the Ranco controller, I can automatically control the pump

by having the controller turn it off when the desired mash temperature is reached, and turning it back on when the temperature deep inside the mash drops by as little as one degree. This takes the place of having to constantly check

page 3) into the controller, and set the controller for whatever temperature you desire. The controller displays the current temperature as detected by the probe deep inside your wort, and as the cold air around the fermenter makes the wort temperature drop below your desired temperature, the controller turns the heater on to bring the wort back up to where you want it.

The Johnson Controls and Ranco controllers cost about \$80 and \$100 respectively. The main difference between them is that the Ranco controller lets you change between cooling and heating modes using the push-button control panel. To do that on the Johnson Controls unit requires that you open the case up and move a switch. I think the ability to control all functions of the device from the front panel is worth the extra \$20, so that's the one I bought.





# 2009 Big Brew Recipes: Belgian Saison, and English Dark Mild

Each year the AHA publishes suggested recipes to be brewed on National Homebrew Day. Brewing these recipes is purely optional, but it often gives brewers an excuse to expand into styles which they haven't tried before. This year is no exception. For the purpose of brevity, we are only showing the extract with specialty grains versions of each recipe. For the all-grain versions, please visit: <http://www.beertown.org/events/bigbrew/recipes.html>

As an aside, the English Dark Mild recipe comes from the Dry Dock Brewing Company in Denver, which publishes all of its recipes scaled down for use by homebrewers. This brewery is owned by the same folks who own the Brew Hut, the homebrew supply shop in Denver which helped us out greatly two years ago by receiving our shipment of kegs for Club Night at the 2007 National Homebrewers Conference. Seeing this recipe from them brought back fun memories.

## Saison Du Mont – Extract with Partial Mash

O.G.: 1.056  
F.G.: 1.008  
IBU: 21

### Ingredients for 5.5 gallons:

- 6.0 lb. Pale Liquid Malt Extract
- 2.0 lb. Vienna Malt, mash
- 8 oz. Flaked Wheat, mash
- 8 oz. Flaked Oats, mash
- 8 oz. Honey, added after boil at 0 minutes
- 1.5 oz. Golding, (4.75% AA), 60 minutes (If Golding is unavailable, substitute Willamette hops for 17 IBU.)
- 0.5 oz. Hallertauer, (4.0% AA), 15 minutes
- 0.5 oz. Hallertauer, (4.0% AA), at 0 minutes
- ¼ tsp. Irish moss, added at 15 minutes
- 0.5 oz. crushed coriander, 0 minutes
- 0.5 tsp. grains of paradise, 0 minutes
- 0.25 oz. Curacao (sweet) orange peel, 0 minutes
- 0.25 oz. Valencia (bitter) orange peel, 0 minutes
- Two (2) packages Wyeast 3724 Belgian Saison Yeast, or two (2) White Labs WLP550 Belgian Ale Yeast

**NOTE:** Saison should be a dry beer. If your attenuation is not enough, you may need to add a secondary yeast such as Champagne yeast (White Labs WPL 715, or Wyeast 4021) or an attenuative ale yeast (White Labs WLP 001, or Wyeast 1056) to achieve the correct attenuation.

Mash grains in 1 gallon of water at 150°F for 60 minutes. Raise temperature to 170°F then remove the grains, strain, and sparge with 2 quarts of hot water. Stir in extract and top up the volume to 3.6 gallons and bring to a boil. At the beginning of the boil, add the first hops. Boil for 45 minutes then add the second hops and the Irish moss. Boil 15 minutes more, and then turn off the heat and add the honey, the finishing hops, and the four spices.

Chill to 73-76°F, transfer to a fermenter and add enough pre-boiled and cooled water to bring the volume up to 5.5 gallons. Pitch the yeast and aerate well. Ferment at 76°F for one week. Rack to secondary for another week. Bottle or keg.

## SS Minnow Mild Ale—Dark Mild – Extract With Specialty Grains

O.G.: 1.037  
F.G.: 1.012  
IBU: 15

### Ingredients for 5 gallons:

- 5 lb. Light Dry Malt Extract, or 6 lb. Light Liquid Malt Extract
- 11 oz. English Crystal 55 L
- 6 oz. Crystal 120 L
- 3 oz. British Chocolate Malt
- 3 oz. Brown Malt (if unavailable, substitute Biscuit Malt or Amber Malt)
- 0.75 oz. East Kent Golding, 5.8% Alpha Acid, for 60 minutes (If E.K. Golding is unavailable, substitute Fuggle, or Willamette hops for 15 IBU.)
- ¼ tsp. Irish moss, added at 15 minutes
- 1 package of either Wyeast 1968 London ESB Ale Yeast or White Labs WLP002 English Ale Yeast; or make a yeast starter.

Steep grains in 2.5 gallons of water at 150°F for 30 minutes, raise temperature to 170°F, then strain and sparge with 2 quarts of hot water. Stir in extract for a total boil volume of 3.5 gallons, and bring to a boil. At the beginning of the boil, add the bittering hops. Boil for 45 minutes then add the Irish moss. Boil for 15 more minutes. After the 60-minute boil, cool the wort to 67°-70°F.

Transfer wort to fermenter and top-up to 5 gallons with pre-boiled and cooled water. When the wort temperature is down to 67°F, pitch the yeast and aerate well. Ferment at 67°F for one week. Rack to secondary and age for one week. Rack to keg, or add the bottling sugar and bottle.

## Events Calendar

For all tastings, \$5 per member (\$7 for guests) covers the host's costs. RSVP directly to the host, or as otherwise indicated. If you wish to schedule an event, contact Event Coordinators Eric & Krista Custer.

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| <p><b>April</b><br/>16 Beer Wars Live!<br/><a href="http://www.fathomevents.com">www.fathomevents.com</a><br/>25 Tasting hosted by Roger and Jan Miller in Taneytown.</p> <p><b>May</b><br/>2 Annual Big Brew to celebrate National Homebrew Day.</p> <p><b>June</b><br/>TBD Membership Meeting<br/>14 MHL exhibiting @ Fiddlers Convention, CC Farm Museum<br/>18-20 National Homebrewers Conference in Oakland, CA</p> <p><b>July</b></p> | <p>11 Annual Brew-Ha-Ha hosted by Lindy and Neil Mezebish</p> <p><b>August</b><br/>TBD Lawnmower Beer Competition</p> <p><b>September</b><br/>TBD Membership Meeting</p> <p><b>October</b><br/>8-11 BrewCamp @ Cunningham Falls State Park</p> <p><b>November</b><br/>OPEN</p> <p><b>December</b><br/>TBD Membership Meeting &amp; Holiday Party</p> |  |
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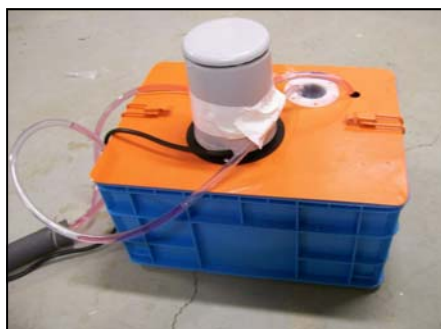
chilled to the proper temperature range prior to using the Cool Jacket. To accomplish this, I start by cooling the hot wort with a standard copper tubing immersion wort chiller with tap water flowing through it. Once the wort temperature is down to about 80° F, I switch from running tap water through the wort chiller to re-circulating ice-cold water through the chiller. With this technique I can drop the wort temperature to 45°-50° quite quickly. Then I pitch the yeast and put the Cool Jacket on the carboy.



The full length of copper tubing is shown here attached to the foam pad. The foam will help retain the cold when the copper coil is placed around the fermentor.



The 13" diameter jacket lid was cut from Styrofoam board insulation with a strip of sleeping pad foam glued around its perimeter. The center hole allows the air lock to protrude.



Coolant Pump purchased from Harbor Freight Tools. Unfortunately, this unit is no longer listed. You can construct a similar unit using a plastic storage box as the reservoir and an inexpensive fountain pump to re-circulate the coolant.

## April 2009

SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

## May 2009

SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

## June 2009

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				