The CDR cheese pilot plant serves the dairy industry by offering access to pilot scale cheese processing equipment and experienced staff to assist in the planning and coordination of projects and research. Located on the UW-Madison campus in Babcock Hall, the CDR cheese pilot plant is housed within a UW Grade A Dairy Plant with connections to the Food Science Department allowing for collaboration and shared resources. The Babcock Hall Dairy plant can also provide CDR coordinated projects with materials such as pasteurized milk, cream, skim milk or whey and/or larger scale equipment and tanks. The cheese pilot plant has the capability to conduct a wide range of dairy related research trials including cream cheese, butter and more. If you have any questions about CDR's cheese processing equipment, please contact: John Jaeggi, Coordinator of the Cheese Industry and Applications Program, jaeggi@cdr.wisc.edu, Phone: 608-262-2264.

6 Cheese Vats
Manufacturer/Model: Stoelting LV 60
Capacity: Maximum capacity of 600 lbs--these vats work best when filled with between 250 and 550 lbs of milk
Description: CDR has six square, stationary, jacketed stainless steel open cheese vats capable of manufacturing everything from cottage and cream cheese to ricotta and parmesan--we have yet to encounter a cheese that cannot be made in these vats. The open style allows greater flexibility in producing different products and makes the vats ideal for teaching and research. We have cheese knives ranging in size from ¼” to 1” and a full complement of auxiliary equipment including a pasta filata mixer, pumps, pre-press, press, etc.

Cream Cheese Separator
Manufacturer/Model: Sharples DS 2
Capacity: Minimum feed material batch size is 300 lbs with a minimum fat content of 9%
Description: The CDR separator is used to separate solids from serum—it is the only cream cheese separator in the U.S. that is available for contract research. CDR’s cream cheese line includes ripening vessels, the separator, a swept surface tank where the moisture can be adjusted and salts and stabilizers can be added and a homogenizer to smooth the final product. Note: A standard commercial butterfat separator is available in the Babcock Hall Dairy Plant.

Pasta Filata Mixer
Manufacturer/Model: Supreme 640
Capacity: Typically process ~50 lbs of cheese curd in 10 minutes
Description: The Supreme 640 is a steam injected mixer with several extrusion heads - allowing for the manufacture of loaf, ball, string and many other styles of Pasta Filata cheese. The water temperature and auger speed are adjustable and temperature probes are positioned to monitor water and cheese temperatures as the mixer is running.

Shredder
Manufacturer/Model: Urschel CC-D
Description: A stainless steel commercial shredder—this model has several shredding heads available (Feather, V-cut, Crinkle), which makes it ideal for examining cheese machinability and preparing samples for further testing.
Cheese Forms
Description: CDR has a wide variety of cheese forms available for drained and pressed cheeses—and we are bringing in new specialty cheese forms all the time!
- 10, 20, and 40 lb stainless steel rectangular block forms
- Stainless steel perforated rectangular forms for Brick, Muenster, and Havarti-type cheeses
- 12 lb plastic micro-perforated wheel forms—idea for gouda
- Plastic perforated round forms with and without bottoms—for brie/camembert and crottin-type cheeses
- 1 and 2 lb plastic wheel forms
- 7 lb Manchego forms with woven decorative insert
- 20 and 40 lb block forms and Colby horn forms designed for use with the DR Tech Vacuum Press
- Soft curd draining bags - re-usable muslin cloth bags for traditional draining of cream cheese, quark, or sour cream or to pre-drain brie, camembert or blue cheese curds
- 20 lb plastic perforated wheel forms
- Plastic perforated rectangular Feta block forms
- A variety of round and rectangular plastic forms
- Round perforated stainless steel forms for Blue cheese and other soft cheeses
- Plastic baskets for ricotta and other naturally drained cheeses

Extruder/Portioner
Manufacturer/Model: Reiser Vemag Robot 500
Capacity: Minimum batch size of 40 pounds of cheese
Description: The CDR Vemag presses cheese together using a double screw system aided by vacuum. This type of machine is widely used for Latin-American cheeses such as queso fresco. The Vemag is also particularly useful in double milled applications—such as incorporating fruits or nuts into ground cheese. After the cheese is reformed, it can then be portioned with the automatic portioner and guillotine. Also available are extrusion tubes of various lengths—several of the tubes include water jackets to allow the product to be tempered as it exits the extruder.

Low shear, Double Screw Process
Cheese Cooker
Manufacturer/Model: Blentech CC-0025-V
Capacity: 20 pound maximum batch size
Description: With direct and indirect steam and a vacuum system, this jacketed cooker is ideal for U.S.-style processed cheese block manufacture.
**Portable Cheese Vat**  
*Manufacturer/Model:* Kusel Equipment Co.  
**Capacity:** maximum capacity of ~450 lbs  
**Description:** This rectangular portable, jacketed stainless steel open cheese vat can be heated with either steam or an electric immersion heater. It includes cheese knives and a draining screen, but requires manual agitation.

**High Shear (Bowl Chopper-Style) Processed Cheese Cooker**  
*Manufacturer/Model:* Stephan UM/SK5  
**Capacity:** 5 pound maximum batch size  
**Description:** The CDR Stephan UM/SK5 is a mobile, jacketed stainless steel cooker that utilizes indirect and/or direct steam for small batches of processed cheese. This cooker has a swept surface and main agitator (with the capacity to utilize either sharp or dull agitator blades) and a vacuum system. The unit’s high shear main agitator makes it ideal for European-style cheese sauces, spreads, etc.

**Dairy Product Aerator**  
*Manufacturer/Model:* Haas-Mondomix BV  
**Continuous Aerator, Type Mini-Mondo Mixer**  
**Capacity:** 10 pound minimum batch size  
**Description:** Used in the manufacture of soft dairy-based products, this research-scale mixer blends product with nitrogen to attain a specific overrun and a lighter, more spreadable texture.

**Starter Tank**  
*Manufacturer/Model:* Damrow  
**Capacity:** 100 lbs  
**Description:** This stationary, jacketed stainless steel starter preparation tank heats, cools, and agitates dairy liquids. It is ideal for processing and culturing bulk and secondary starter media.

**4 Mini Cheese Vats**  
*Manufacturer/Model:* Labtronics  
**Capacity:** maximum capacity of ~5 gallons  
**Description:** CDR has access to four small, square, jacketed stainless steel cheese vats for special projects. These vats, which hold a maximum of 45 pounds of milk, are ideal for starter culture acidification studies.
Horizontal Cheese Press
Manufacturer/Model: Damrow Brothers Co. 2LS-12 Type H
Capacity: Two sides – each will hold ~25 - 20 lb cheese blocks and can be adjusted from 20 to 80 psi.
Description: This horizontal stainless steel pneumatic press holds a wide range of cheese forms.

Vertical Cheese Press
Manufacturer/Model: Kusel A-Frame AFVS-SP
Capacity: Maximum capacity of ~30 wheels and can be adjusted from 5 to 40 psi
Description: The A-Frame press allows for a greater degree of flexibility in pressing – both in the type of cheese form that can be placed in the press and in the psi range. This press is ideal for specialty cheeses that require frequent turning and variable pressing psi.

Eyed Cheese Pre-Press
Manufacturer/Model: Stoelting
Capacity: Four separate compartments and two pneumatic rams with an 80 psi maximum
Description: This stainless steel pneumatic pre-press presses the curd under whey, allowing for minimal mechanical openings and good eye formation in cheeses such as Swiss and Gouda.

Swept Surface Tank
Manufacturer/Model: Scherping DJ 30 G
Capacity: 30 gallons
Description: A jacketed, swept surface stainless steel tank that is used to blend stabilizers, salt, and other ingredients into cream cheese or sour cream. It can also be used to blend, heat, and cool secondary starter media and other dairy products.
Homogenizer
Manufacturer/Model: Gaulin 100 DJ F385J
Capacity: Minimum batch size of 40 pounds
Description: CDR homogenizer is used to homogenize milk, cream, cream cheese, sour cream, and other dairy products. This homogenizer has one and two stage capability.

Vacuum Sealer
Manufacturer/Model: Multivac C-400
Capacity: up to a 40 pound block
Description: This vacuum sealer has adjustable vacuum, with or without a nitrogen gas flush. CDR stocks a variety of cheese bags – both standard and permeable (for swiss).

Cold Pack Cheese Unit
Manufacturer/Model: Stephan VCM12
Capacity: 10 pound maximum batch size
Description: A portable, stainless steel mixer with a main and swept surface agitator that is used in the manufacture of cold-pack cheese and cream cheese based products.

Cheese Grinder
Manufacturer/Model: BIRO 922 E97
Description: A portable stainless steel cheese grinder, used to grind natural cheese in preparation for processed cheese making.
Large & Small Volume Scales
Capacity: from 600 lb scales in 0.2 lb increments down to analytical balances with 0.0001 gram accuracy
Description: The CDR has the ability to perform yield studies with the accuracy necessary for publication in peer reviewed journals.

Scale-Up Cheese Vat
Manufacturer/Model: Kusel
Capacity: Maximum capacity of 5,400 pounds
Description: The Babcock Hall Dairy Plant has one stationary, jacketed stainless steel open cheese vat which can be reserved for product scale-up and other special projects.

Curd Mill
Manufacturer/Model: EBR
Description: This stainless steel curd mill is used when making milled curd cheeses such as cheddar and mozzarella.

Batch Butter Churn
Manufacturer/Model: W. M. Sprinkman Corp Custom Built Batch Butter Churn
Capacity: 30–240 lbs of cream yielding ~15–30 lbs of butter
Description: A portable, research-sized unit that can churn sweet, whey or cultured cream.
Low Shear, Twin Screw Process Cheese Cooker
Manufacturer/Model: Loos 10 lb
Capacity: 8 to 10 lbs finished batch size
Description: This jacketed cooker simulates the lower shear of production twin screw cookers to produce process cheese block and spreads. The smaller batch size allows the production of a number of different samples in one day. The cooker is supplied with culinary steam heat and can heat either directly or indirectly. The auger speed can be altered using a variable speed drive.

Low Shear, Twin Screw Process Cheese Cooker
Manufacturer/Model: Koss ST
Capacity: 25 to 45 lbs finished batch size
Description: This jacketed cooker is able to produce larger quantities of product than the Loos. The unit has vacuum capability to remove entrained air from the product. In addition to direct and/or indirect culinary steam supply, the Koss cooker has an operator panel that controls the speed and direction of the augers, and measures product temperature. The unit is able to store run time, auger load, auger speed, and product temperature data. An associated wifi interface allows data storage on a remote PC.
CDR Equipment also Available in our Pilot Plant

**6 Agitator Motors**
*Manufacturer/Model: Steinman*
*Description:* These portable, variable speed agitators on stands are used in conjunction with the Stoeling cheese vats.

**Coagulation Monitor**
*Manufacturer/Model: Stoelting Optiset*
*Description:* The OptiSet probe may be used to monitor and record the coagulation process (gel firmness) in a cheese vat. It can also serve as a diagnostic tool to quantify the effect of process changes on cheese quality.

**Vacuum Press**
*Manufacturer/Model: DR Tech Single Station Vacuum Cheese Press*
*Description:* This press utilizes pressure and vacuum to shorten pressing time and achieve a closed cheese body.

**Slicer**
*Manufacturer/Model: Berkel Company 823E*
*Description:* An adjustable stainless steel commercial deli slicer – this model is used to determine slicability and to prepare samples for further testing.

**Auxiliary Equipment**
**2 Culinary Steam Generators**
*Manufacturer/Model: Reimer Boiler RH-20 & RH-40*
*Capacity:* 60 psi (RH-20) and 120 psi (RH-40)
*Description:* These units provide clean, culinary grade steam to our Mixer Molder and Process Cheese Cookers.

**pH & Titratable Acidity Equipment**
*Manufacturer/Model: 3 Accumet AB15 Basic pH/mV Benchtop Meters, 2 Accumet XL 60 Multiparameter Benchtop Meters, and 1 Titratable Acidity Tester*
*Description:* The AB15 meters offer pH/mV with temperature compensation while the XL meters offers research-grade pH, mV, ion, conductivity and dissolved oxygen with a 1,000 data point memory.

**Mixers, Pumps, Etc.**
*Description:* The CDR has a wide variety of blenders, mixers (immersion, lightening, powder, etc.), and pumps (including curd pumps) to complete a broad range of projects.

**2 Brine Tanks**
*Capacity:* 2 – 12’W x 4.5’D x 1.2’H tubs holding approximately 190 gallons of brine each
*Description:* The CDR brining tank system consists of two fiberglass tanks connected by a circulation pump that allows for the removal of curd particles and free fat. A heat exchanger keeps the brine temperature constant. CDR also has a variety of portable tubs available for smaller experimental brines.

**Coolers/Freezers/Incubators/Warm Room**
*Description:* The CDR shares a warm room with the Babcock Hall Dairy Plant and has a variety of coolers available for use with temperature ranges from 38 to 52 degrees Fahrenheit. The CDR also has a Norlake Scientific NSR1331WSW/8H 33 cubic foot Incubator / Humidity Chamber with 3 adjustable shelves and a So-Low Ultra Low Temperature Culture Freezer. A wide range of temperature and humidity requirements can be met on a project basis.