The CDR Process group serves the dairy and food industry by offering access to large pilot scale process equipment and experienced staff to plan and coordinate projects for industry, research and other CDR Applications programs. Located on the UW-Madison campus in Babcock Hall, the CDR Process pilot plant has access to the UW Grade A Dairy Plant and the Food Science Department to easily collaborate and share resources. The Babcock Hall Dairy plant can provide pasteurized milks, cream and whey and/or larger scale equipment and tanks for the CDR coordinated research projects. The Process pilot plant has the capabilities to conduct a wide range of dairy related processes to produce beverages, cultured products, concentrates and powders. If you have any questions about CDR's Process equipment contact: Mike Molitor, Process Pilot Plant Manager, Phone: 608-265-5919, molitor@cdr.wisc.edu

Low Volume Ultrafiltration or Microfiltration (spiral element) System
Use with either one vessel or two vessels in series holding one 3.8” diameter element per vessel. Designed to have a very low internal volume, this system can be easily drained after trials that concentrate valuable and/or low yielding products. The frequency controlled pumps allow baseline (outlet) pressure to 45 psi and proper boost pressure. Each 3.8” x 38” element (with 46 mil spacer) contains approximately five square meters of membrane area.

Microfiltration (spiral element) System
Use with either one or two vessels holding one 8.0” diameter element per vessel. The smart hydraulic design readily achieves the combination of very low baseline pressure and the high cross flow required for efficient microfiltration. Each 8.0” x 38” element (with 46 mil spacer) contains approximately 24 square meters of membrane area.

Reverse Osmosis or Nanofiltration (spiral element) System
Use with either one vessel or two vessels in parallel holding one or two 3.8” diameter elements per vessel. The frequency controlled pumps allow baseline (outlet) pressure up to 500 psi and proper boost pressure. Each 3.8” x 38” element (with 46 mil spacer) contains approximately five square meters of membrane area.

Ultrafiltration or Microfiltration (spiral element) system.
Use with anything from one to six vessels holding one or two 3.8” diameter elements per vessel. The frequency controlled pumps allow baseline (outlet) pressure to at least 30 psi and proper boost pressure. Each 3.8” x 38” element (with 46 mil spacer) contains approximately five square meters of membrane area.
Ultrafiltration (spiral element) system
Use with either two vessels in parallel holding up to two 4.3” diameter elements per vessel or with one vessel holding up to two 4.3” diameter elements. The frequency controlled pumps allow baseline (outlet) pressure up to 35 psi and proper boost pressure. Each 4.3” x 38” element (with 46 mil spacer) contains approximately eight square meters of membrane area.

Small HTST Pasteurizer
Utilizes a three section (preheat, final heat & cooling) plate heat exchanger to start and end with any desired product temperatures and pasteurization up to 200º F. The typical product flow rate is 1.0-1.2 gallon per minute and it is capable of many hold times ranging from approximately 16 seconds to 160 seconds.

APV Single effect batch evaporator
Single Effect Batch Evaporator with wide gap plate heat exchanger and large vacuum pump to facilitate processing a wide range of products including heat sensitive proteins. It has a design specification to evaporate 250 pounds of water per hour (given an effect boiling temperature of 130º F).

APV Pilot scale one stage spray dryer
The pilot scale one stage (U tube) spray dryer is best suited for “lower” sugar products like nonfat dry milk, WPC, MPC and protein isolates. If used to dry whey or permeate, keep in mind that the powder will contain significant quantities of hygroscopic (amorphous) lactose. It’s direct fired with natural gas and utilizes one high pressure nozzle to atomize the product. It’s capable of 40 – 60 pounds of water evaporation per hour depending on the drying temperatures chosen. A compact coil heat exchange system can be used to heat product up to 170º F in line just prior to the high pressure pump which feeds the nozzle. Our dryer has been used to spray dry a vast range of dairy derived products.
Mobile Fristam FZX2100 Liquid Ring Pump
Mobile Fristam FZX2100 Liquid Ring Pump with motor frequency control. The Fristam FZX is a unique centrifugal pump that can self prime to suction lift product, if necessary; and it has less shear potential which makes it a good choice to transfer products like cream. It has 2” diameter inlet/outlet and can pump up to 50 gallons per minute.

Gaulin Model 125E, Two Stage Homogenizer
Operates at approximately 2 gpm flow rate and up to 5,500 psi.

Mobile Fristam FKL50 Positive Displacement Pump
Mobile Fristam FKL50 Positive Displacement Pump with 2.5” diameter inlet/outlet, gear reduction and motor frequency control. The working flow rate is up to 25 gpm. The Fristam FKL pumps efficiently CIP (internally) and are the best choice for high viscosity products.

Stephan Mixer
Stephan Mixer with 40 liter capacity, choice of two mixing/cutting blades, jacket for heating or cooling and product sweep blade.
**Tanks ranging from 5 - 500 gallons**
Tanks ranging from 5 - 500 gal, several with heat exchange jackets suitable for use with ice water or hot water; several with the option to use variable speed agitation; one with powerful agitation suitable for crystallizing high solids whey or permeate.

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**Farmstead butterfat separator**
Two pilot scale butterfat separators for separating up to five gallons of milk or whey.

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**Groen Kettle with 40 gallon capacity**
Mechanically controlled tilt for pouring, heat exchange jacket for use with steam or cooling and both a mechanical sweep & agitator.

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**Ion exchange chromatography system**
Ion exchange chromatography system 200 mm x 500 mm column 2.5 L/min throughput at 16 cm bed height.