

IPP – UNIVERSITY PARK, IL SPECIALTY CHEMICALS PLANT



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IPP – UNIVERSITY PARK, IL SPECIALTY CHEMICALS PLANT

Executive Summary

- This collection of plants was constructed in 1998, primarily from new equipment. This plant produced specialty chemicals, including Musk type fragrances for about four years.

Autoclave Process Area – Excellent for Hydrogenation

Fragrance Plant – Excellent for Esterification and Polymerization reactions including multiple distillation steps.

Multi-Purpose Plant – Excellent for almost any small scale specialty chemical manufacturing with multiple reaction and distillation steps.

- The plant has been cleaned; most of the equipment is indoors.
- Equipment files are in extremely good shape.
- The facility is accessible by truck and a rail spur runs adjacent to the plant property.
- The plant could easily be re-started in place if desirable. This plant is very attractive for specialty chemical producers due to the relatively new equipment, flexible processing design, and location near Chicago.
- Additional processing equipment available on site including crystallizers and centrifuges.
- Utility systems are available on site including boilers, hot oil furnace, chillers, air compressors, diesel fire water pumps, waste water treatment.
- Contact IPP for addition equipment details and photos.

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General Information

The facility sits on 28 acres located just 30 miles South of Chicago. It consists of three separate processing units capable of producing a multitude of specialty chemical products. All utilities are available including two boilers, hot oil furnace, two York chillers, air compressors, a liquid Nitrogen tank, two Thermal Oxidizers, and a waste water treatment plant.



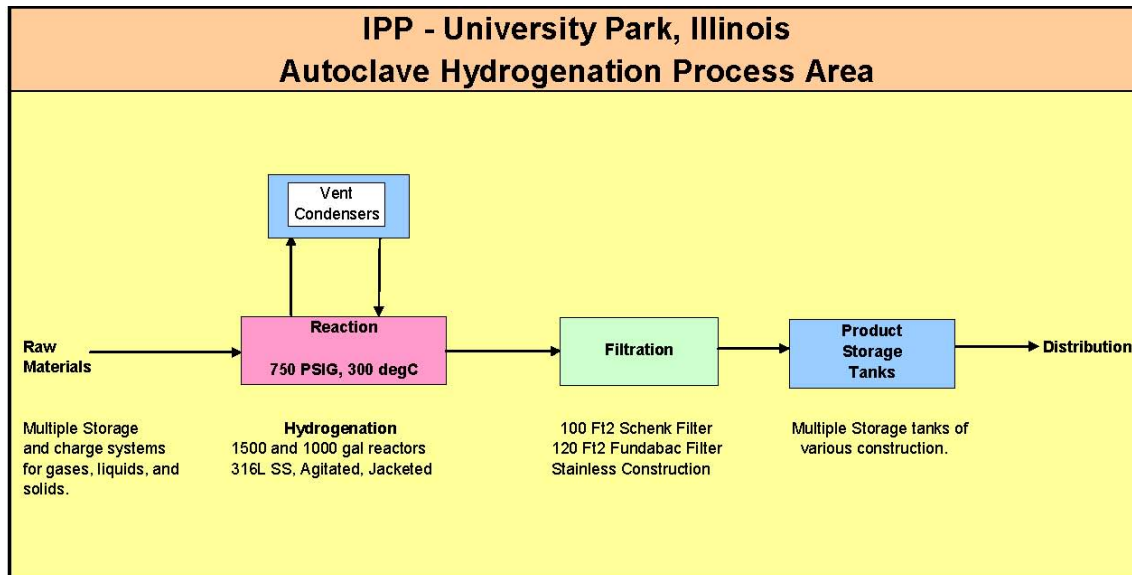
The majority of the equipment was constructed in 1998 and was operated for about four years. There is some equipment left from a previous NutraSweet® operation such as crystallizers and centrifuges.

The facility utilizes all electronic instrumentation and the Provox DCS system is up-to-date and fully functional. There are a few PLC systems for some specific remote operations.

This plant could easily be re-started in place.

Contact IPP for addition equipment details and photos.

Hydrogenation/Autoclave Process Area



The Hydrogenation/Autoclave Process Area of the University Park facility houses two Autoclave reactors along with two catalyst filtration units indoors. The reactors are rated for 750 PSIG @ 300 degC and are constructed of 316L Stainless Steel. Both reactors are jacketed and have agitators. The reactors have multiple storage and charge systems for gas, liquid, and solid raw materials. There is a hydrogen trailer station connected to the Autoclave building. Each reactor has overhead vent condensation equipment.

Filtration is provided by a Schenk filter with 100 sq ft of area or a Fundabac filter with 120 sq ft of area. Both filter systems are stainless steel. There are multiple storage tanks of various sizes and construction for finished products.

The Autoclave facility is connected by pipeline to the Multi-Purpose Plant and to the Fragrance Plant.

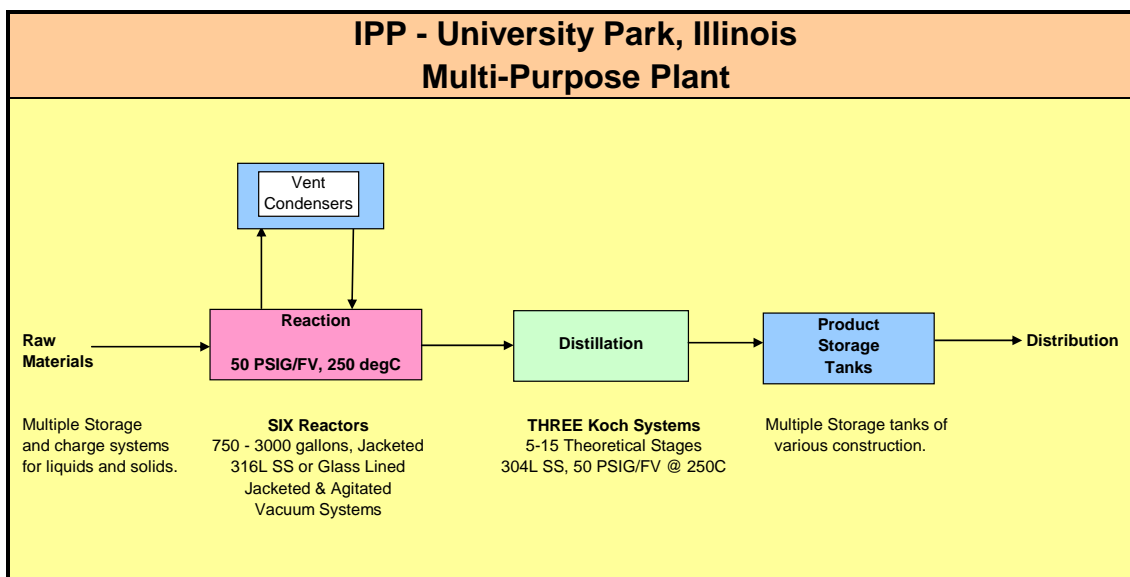


Autoclave Reactors



Autoclave Building

Multi-Purpose Plant



The Multi-Purpose Plant at University Park houses six reactors and three distillation systems all indoors. This extremely flexible system has been used to successfully produce the following chemicals. It is not limited to these chemicals:

Para Menthane 3,8-Diol
Santalex
Menthol-JPG DM
D-Citronellal-DM
Suzaral
ATON
Vanillyl-n-butyl ether

Alpha-Angelica
Alpha-Angelica Lactone
L-Citronellol
I-Citronellyl Nitril
Cooling Agent 10
4H Myrcenol
Nitrile

Note: Some products require Hydrogenation in the Autoclave Process Area.

The raw material section of the plant consists of multiple storage and charging systems for liquids and solids. The reaction section consists of six reactors. Four reactors are 3,000 gallons, one is 2,200 gallons, and one is 750 gallons. Three are 316L Stainless Steel and three are Glass Lined. All reactors are jacketed and all but one reactor is agitated. Each reactor has vacuum systems and overhead vent condensation equipment. The reactors are rated for 50 PSIG/FV at 250 degC.

The distillation area consists of three Koch skid mounted systems capable of 5, 10, and 15 theoretical stages. The systems are 304L Stainless Steel construction rated for 50 PSIG/FV at 250 degC. The columns are generally 27-37" diameter and 222" tall. The reboilers generally handle about 300k BTU/Hr, vent condensers about 20k BTU/Hr, and main condensers about 300k BTU/Hr. Each

unit comes with a complete vacuum system and condensation exchangers with phase separators.

There are multiple storage tanks of various sizes and construction for finished products. The Multi-Purpose Plant is connected by pipeline to the Autoclave Process Area.



Multi-Purpose Plant Building



Stainless Reactors



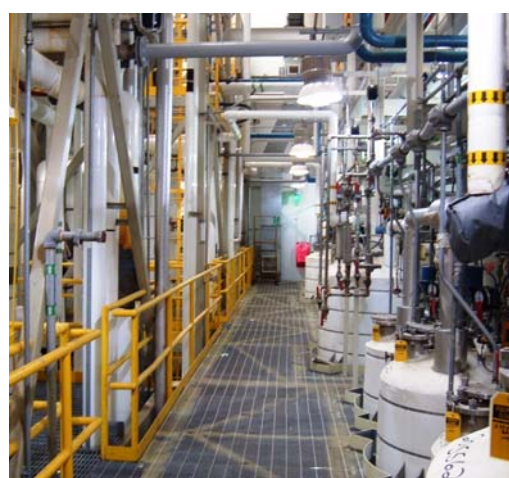
Reactor Vent Condensers



Glass-Lined Reactors

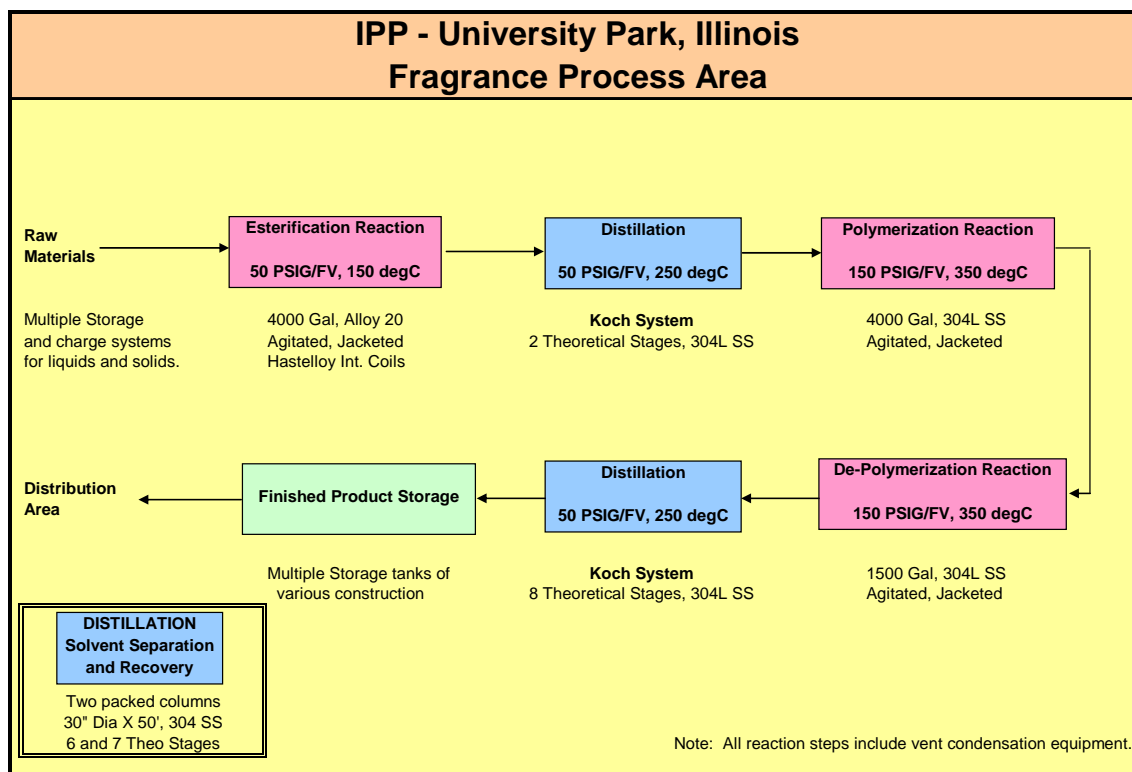


Distillation Unit



Distillation Area

Fragrance Plant



The Fragrance Plant at University Park houses multiple reaction and distillation systems both indoors and outdoors. This extremely flexible system has been used to successfully produce the following chemicals. It is not limited to these chemicals and can also produce esterification products similar to NutraSweet®.

Dimethylbrassicic Acid

Musk T

The raw material section of the plant consists of multiple storage and charging systems for liquids and solids. There is a dense phase pneumatic conveying system for solids. The esterification reactor is a 4,000 gallon Alloy 20 system with jacket, agitator, and 3" Hastelloy internal coils. The Polymerization reactor is a 4,000 gallon 304L Stainless Steel system with jacket and agitator. The De-Polymerization reactor is a 1,500 gallon 304L Stainless Steel system with jacket and agitator. Each reactor has its own vent condensation system.

The distillation area consists of two Koch skid mounted systems capable of 2 and 8 theoretical stages. The systems are 304L Stainless Steel construction rated for 50 PSIG/FV at 250 degC. The columns are generally 27-37" diameter and 222" tall. The reboilers generally handle about 300k BTU/Hr, vent condensers about 20k BTU/Hr, and main condensers about 300k BTU/Hr. Each unit comes with a complete vacuum system and condensation exchangers with phase separators.

An additional distillation area is provided for separation of solvents used in the process. Two stainless steel packed columns approximately 30" in diameter and 50' tall are available with complete reboiler and overhead condensation equipment.

There are multiple storage tanks of various sizes and construction for finished products. The Fragrance Plant is connected by pipeline to the Autoclave Process Area.



Fragrance Plant



Reaction Area



Distillation Area

Contact IPP for addition equipment details and photos.