



AMERICAN
ETHANOL
INC.





Goal: Produce 800 million gallons of biodiesel and 2 billion gallons of ethanol by 2012

- currently largest biodiesel producer in India with additional capacity coming on-line
- 115 M gal/yr ethanol facility under construction in Sutton, Nebraska
- five additional sites permitted
- eight additional sites under development



- Seasoned management team: Founding members of Pacific Ethanol (NASDAQ: PEIX); two Goldman Sachs alumni on board of directors
- Strategically partnered with \$1.5 billion revenue construction company TIC, and engineering and construction company Delta-T
- Developing Second Generation of ethanol production plants using breakthrough technology

Second Generation Ethanol Plants

- Regional approach using all available ethanol feedstocks
- Integrates and utilizes cellulose and starch feedstocks in one continuous process
- Reduced capital and operating costs compared to traditional ethanol plants.



Enabling Technology

- Production of unique enzymes using solid state culture technology
 - Enables new alcohol production processes that are more efficient
 - Technology for the second generation of ethanol production plants



ATSH Enzymes

- Advantages
 - Converts raw starch granules to sugar without cooking the mash
- Operating Conditions
 - at near ambient temperatures, at a pH of 3.5 and higher
- Activities
 - alpha amylases, glucoamylases and beta glucanases

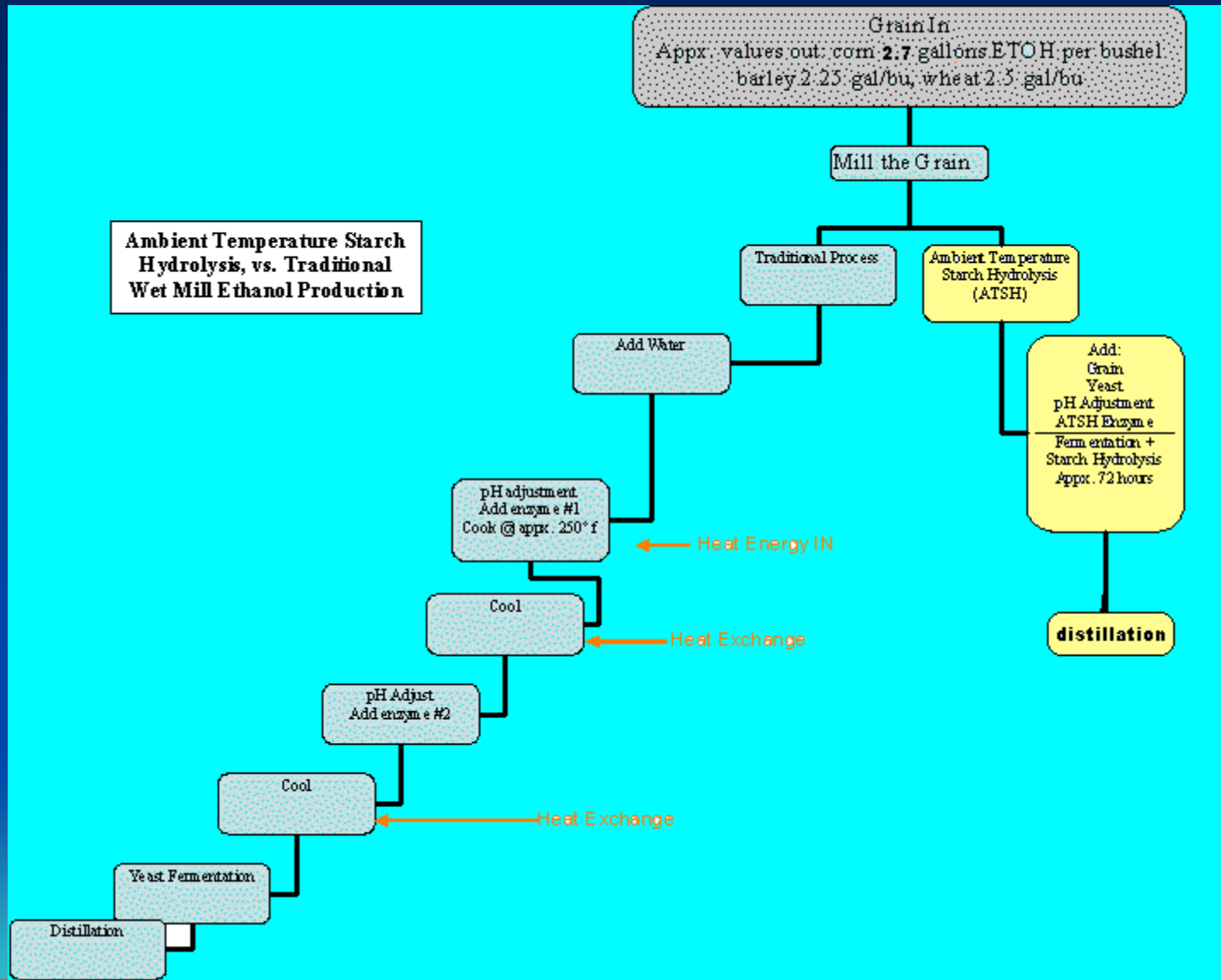


ATSH Alcohol Process

- Simultaneous hydrolysis and fermentation of raw starch at near ambient temperature
- Advantages
 - Lower Operating Cost
 - Lower Capital Cost



Process Comparison



Process Comparison

- Eliminates cooking mash
 - No jet cookers, fewer heat exchangers, pumps, etc.
 - Smaller boiler
- Eliminates cooling mash
 - Reduces cooling water, towers, pumps, heat exchangers



ATCH (Cellulase) Enzymes

- Advantages
 - Converts cellulose to sugar
- Operating Conditions
 - At near ambient temperatures, at pH 4.0 and higher
- Activities
 - endo and exo acting cellulases, cellobiase and xylanases

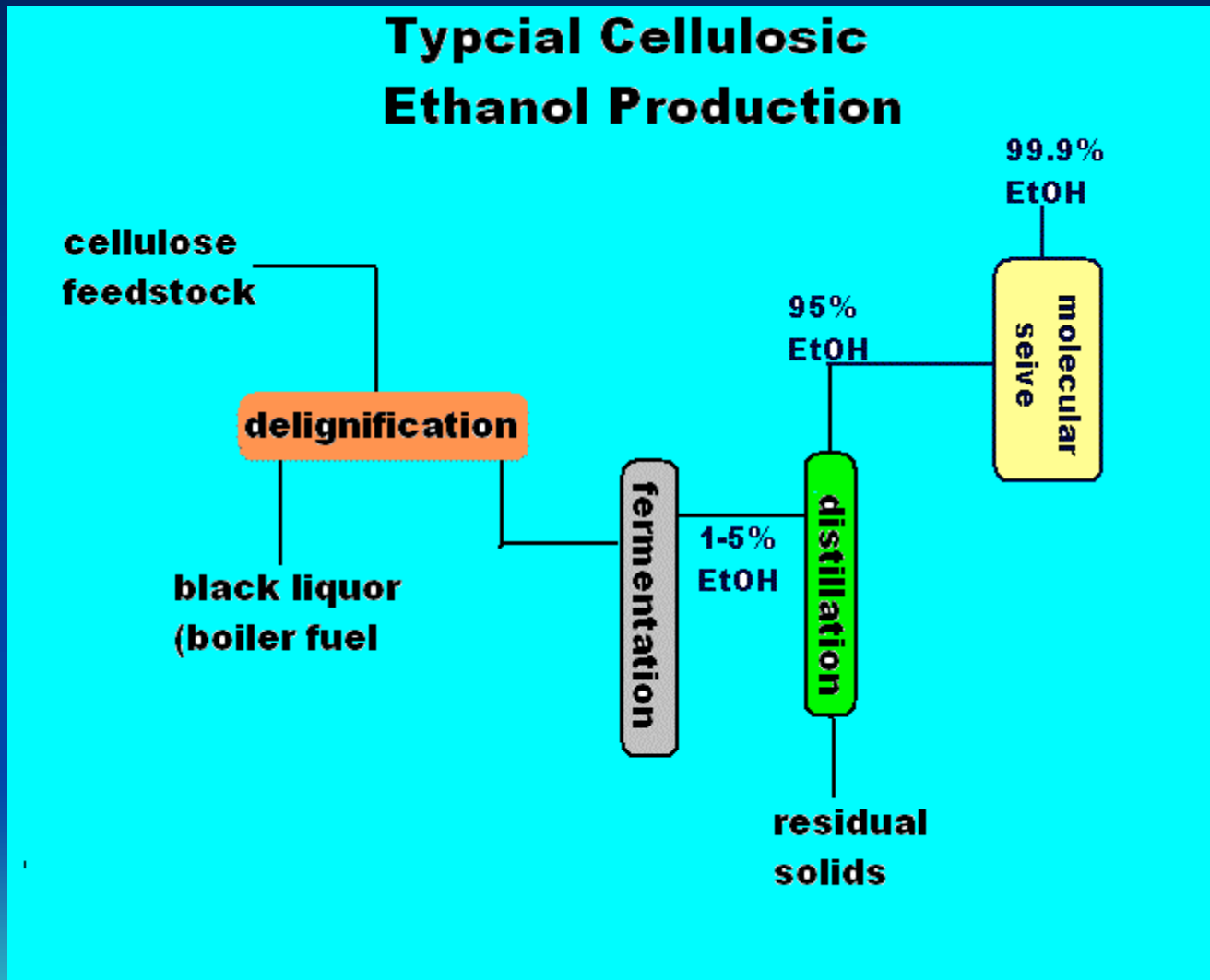


Cellulose Alcohol Processes

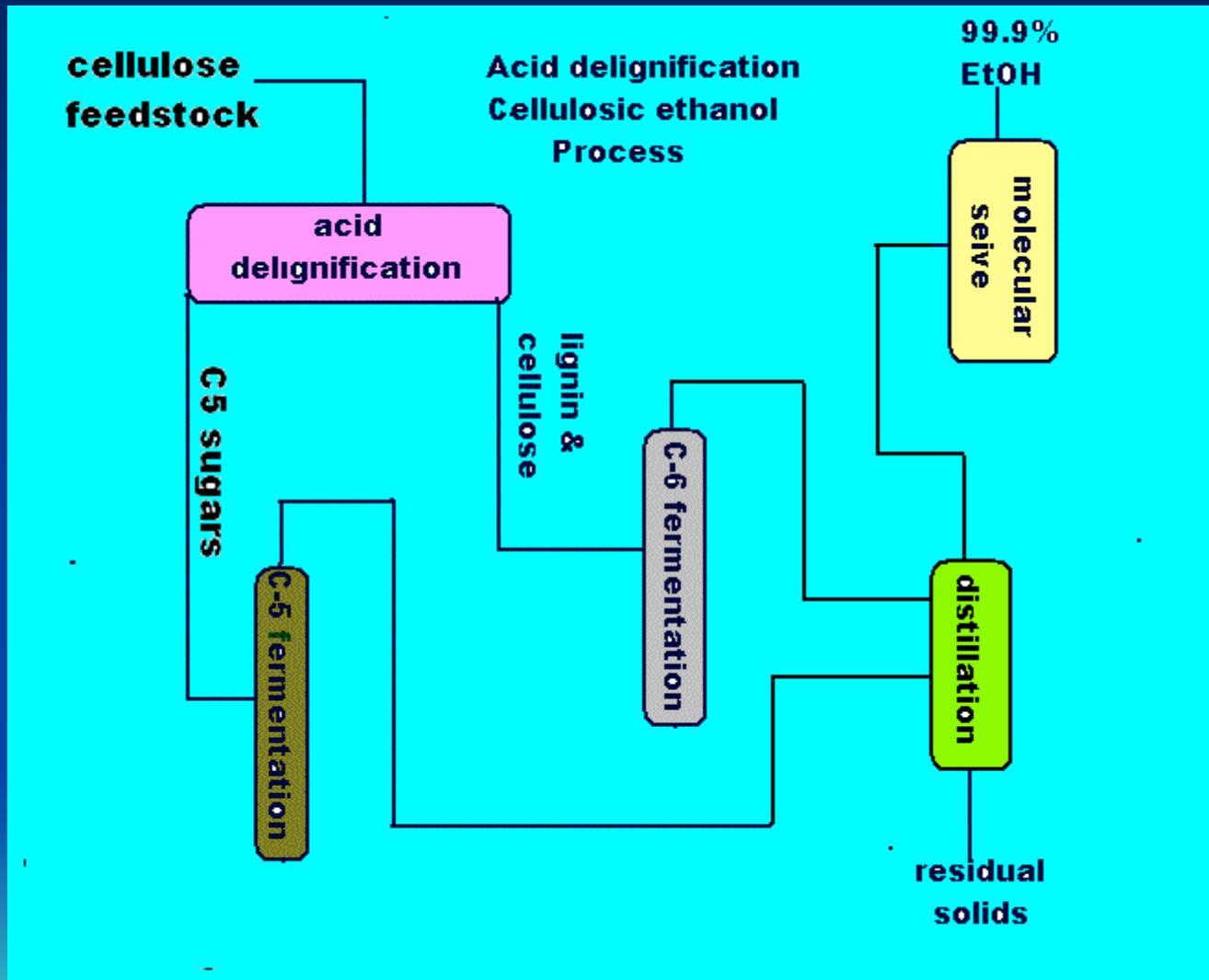
- size reduction
- disassociation of lignin and cellulose
- conversion of cellulose to sugar
- fermentation of sugar to produce alcohol



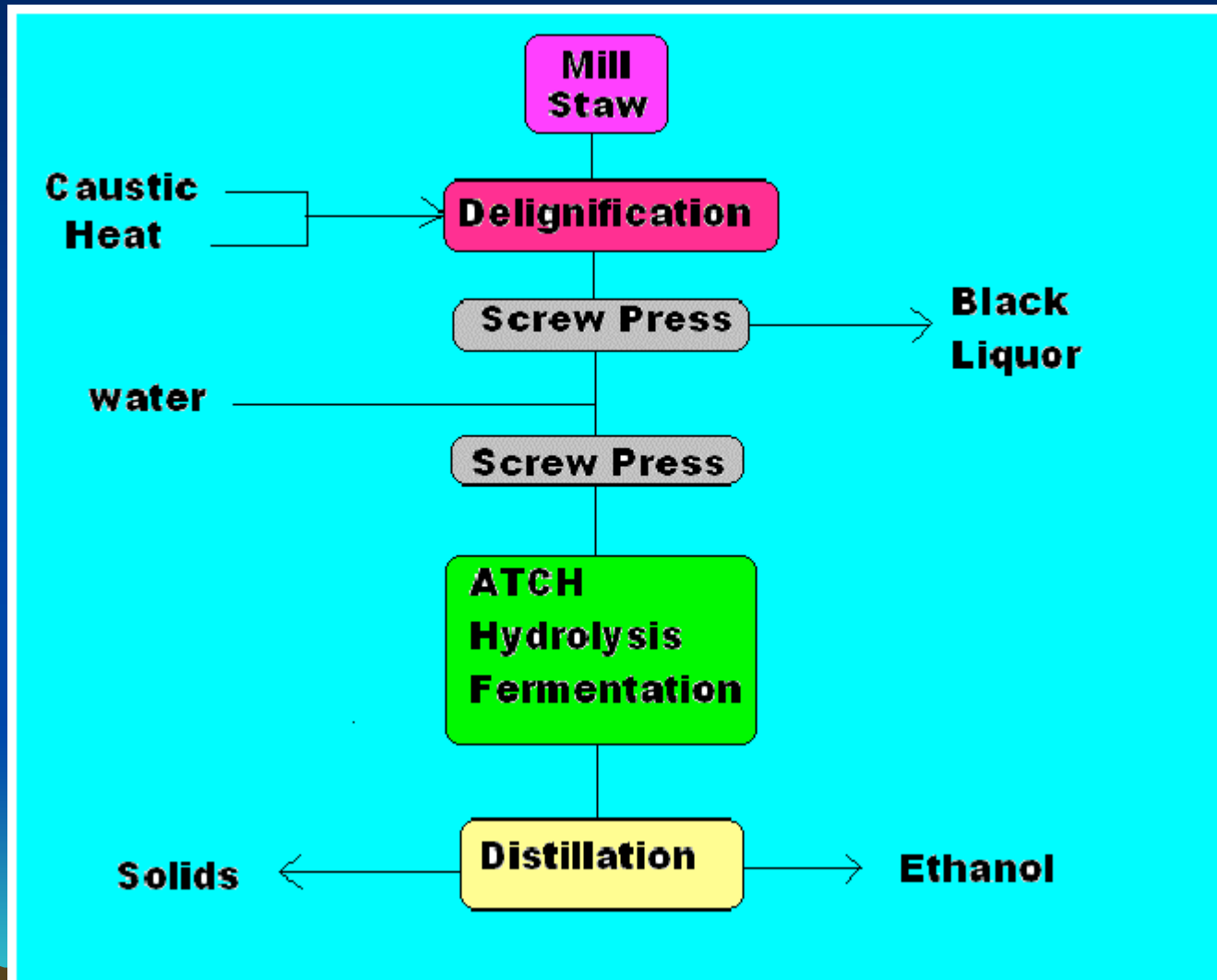
Simplified Cellulosic Ethanol Production Process



Cellulosic ethanol using acid delignification



Cellulose Alcohol Process

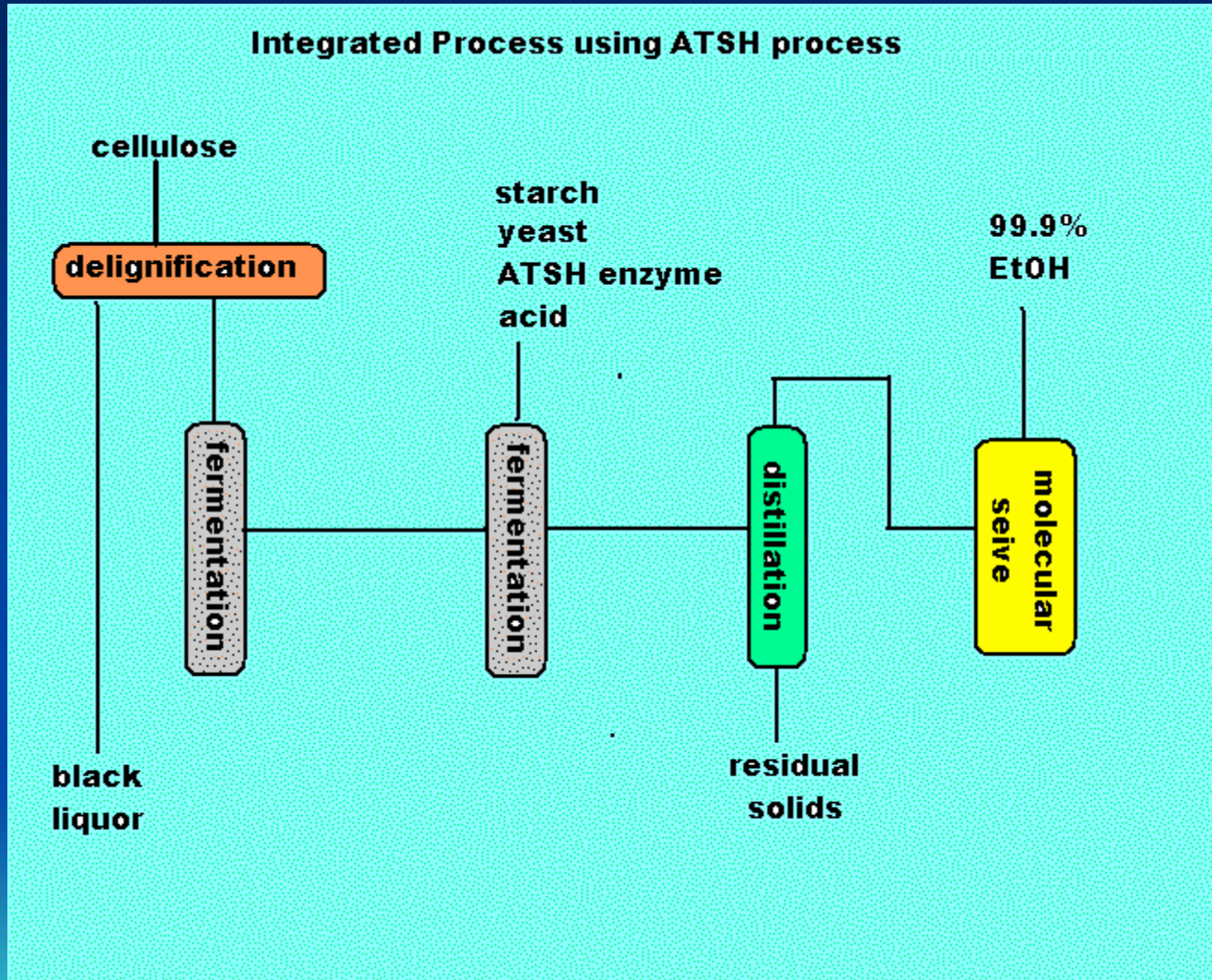


Integrated Process

- Uses all of the resources available in a region
- Economic advantages of scale
- Reduced capital cost vs traditional process
- Increase alcohol concentration in beer going to distillation



Simplified Integrated Process



American Ethanol Plant

- To be located in Willamette Valley
- 50M gallon capacity
- Use multiple cellulose feedstocks,
 - Grass seed straw
 - Paper mill waste
 - other
- Use multiple starch based feedstocks
 - Corn
 - Barley
 - other

