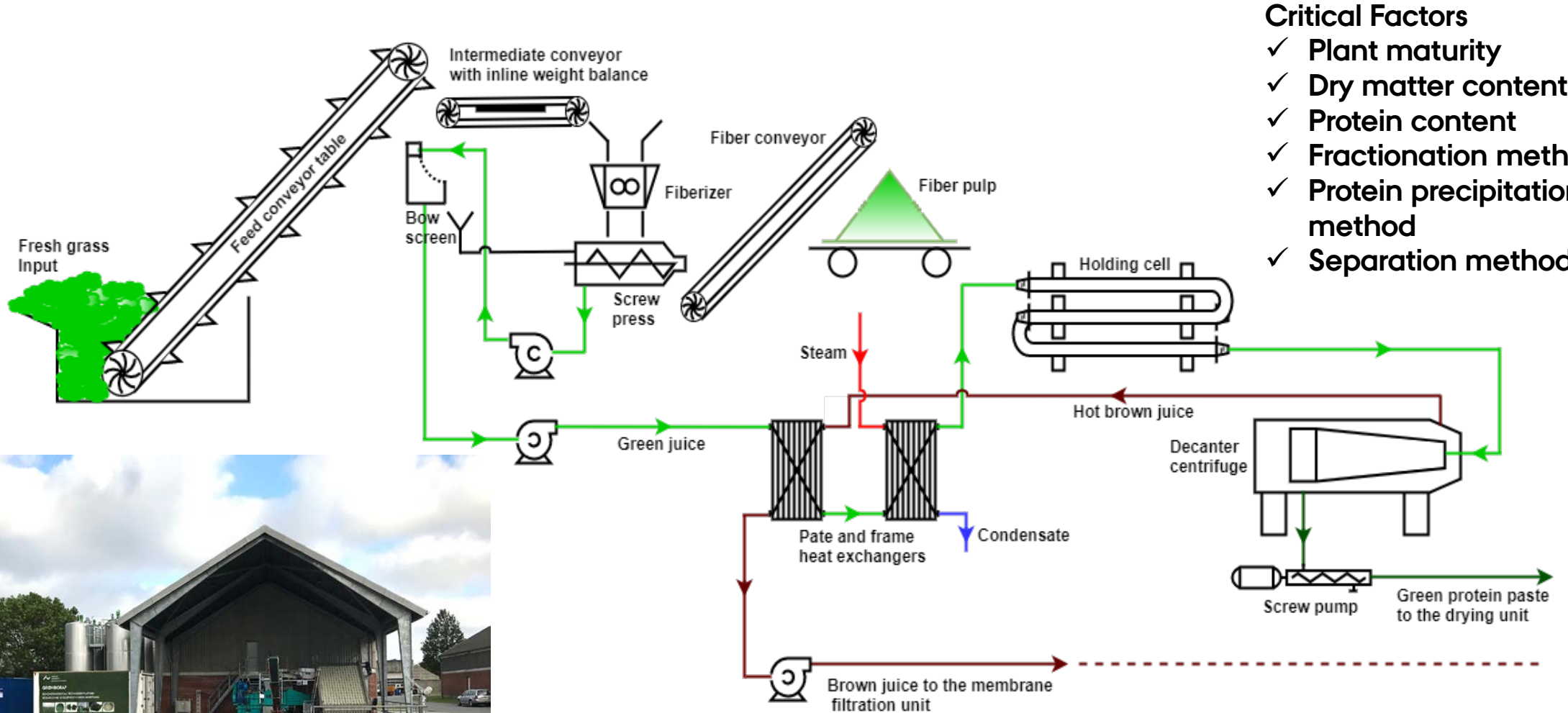


RESOURCE RECOVERY FROM A GREEN BIOREFINERY WASTE STREAM USING MEMBRANE FILTRATION

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ILLUSTRATIVE FLOW DIAGRAM OF THE GREEN BIOREFINING PROCESS



- Critical Factors**
- ✓ Plant maturity
 - ✓ Dry matter content
 - ✓ Protein content
 - ✓ Fractionation method
 - ✓ Protein precipitation method
 - ✓ Separation method



BROWN JUICE NANOFILTRATION TESTS



Lab scale Nano filtration pilot plant (2,6 m²)

Objectives of the filtration tests

- ✓ To determine the flux behavior of the brown juice that results in the highest volume concentration factor
- ✓ Identify optimal operating parameters such as pressure, crossflow velocity, etc
- ✓ Screen for commercial membranes that would provide best performance (highest sugar retention while allowing maximum passage of potassium to the permeate stream)
- ✓ Determine the right membrane cleaning strategy

Products of the NANOFILTRATION process are

- **Concentrate stream:** rich in sugars, organic acids and minerals suitable for biomethane production, fermentation media, single cell production, etc
- **Permeate stream** useful in ferti-irrigation application for recycling potassium back to the soil and for in-house use during maceration.



Demonstration scale Nano filtration plant (100 m²)



Permeate

Concentrate