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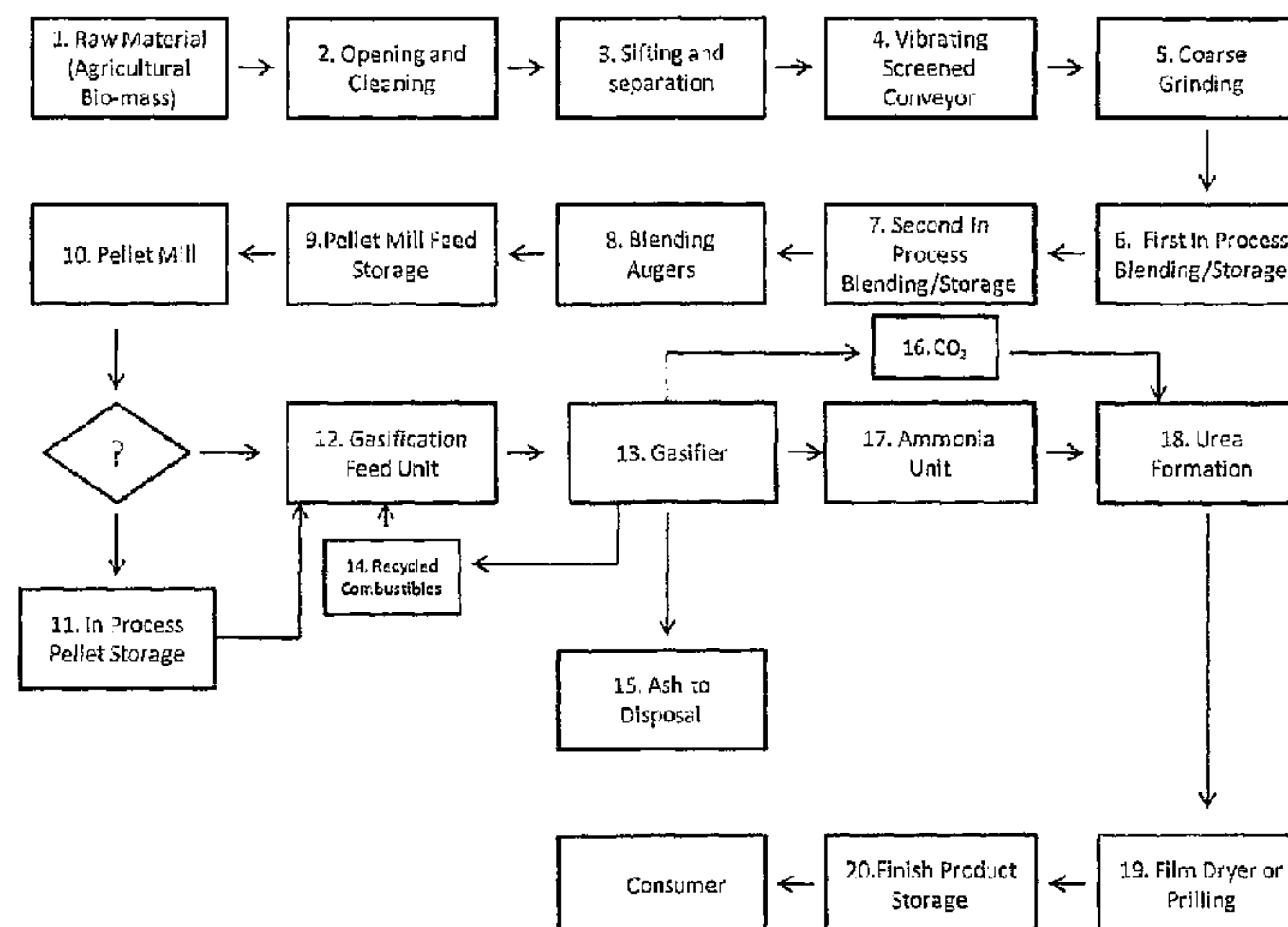
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(54) Titre : SYSTEME MODULAIRE ET PROCEDE DE PRODUCTION D'UREE A L'AIDE D'UNE CHARGE
D'ALIMENTATION FORMEE D'UNE BIOMASSE

(54) Title: MODULARIZED SYSTEM AND METHOD FOR UREA PRODUCTION USING A BIO-MASS FEEDSTOCK



(57) Abrégé/Abstract:

A modular system and method for producing urea from bio-mass includes cleaning a bio-mass feedstock to remove substantially all non-organic matter; blending the cleaned bio-mass to obtain a substantially homogeneous blend; pelletizing the blended bio-mass; and gasifying the pellets in a gasifier. The biomass feedstock may include bio-mass materials having different processing characteristics. The gasifying step preferably includes pulverizing the pellets to a fine particle size, injecting an organic oil into the input bio-mass mist when needed, and controlling the feed rate to maintain a substantially constant burn temperature. The resultant syngas stream is cleaned and compressed to a high pressure of about 6,000 to 7,000 psi. The resultant ammonia stream is processed in a bypass recycling loop system at 30% conversion rate at a high pressure of about 6,000 to 7,000 psi.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a process flow diagram of a urea production process that converts agricultural bio-mass into urea. The agricultural bio-mass is pelletized to a consistent density prior to being fed into a gasification unit.

5 FIG. 2 is a block layout of the feedstock preparation module arranged on a standard 48-foot flatbed trailer.

FIG. 3 is block layout of the pelletizing module arranged on a standard 48-foot flatbed trailer. The pelletizing module may be skid mounted.

10 FIG. 4 is a block layout of the gasification system module arranged on a standard 48-foot flatbed trailer.

FIG. 5 is a block layout of the urea conversion module arranged on a standard 48-foot flatbed trailer.

15 FIG. 6 is a schematic representation of the interrelationship between the carbon dioxide compression component, condenser/reactor, and water extraction and drying components of the urea conversion module and the syngas stream.

FIG. 7 is a schematic representation of the carbon dioxide compression component of the urea conversion module.

FIG. 8 is a schematic representation of the pool condenser/reactor component of the urea conversion module.

20 FIG. 9 is a schematic representation of the water extraction and drying component of the urea conversion module.

9. A method according to claim 1 wherein at least one of the cleaning step, pelletizing step, and gasifying step occurs at a geographical location different from where at least one of the other steps occurs.
10. A method according to claim 1 wherein all equipment associated with at least one of the cleaning step, pelletizing step, and gasifying step is skid mounted.

