Architecture diagram:

A detailed component diagram for this project will illustrate the specific elements within each module and how they interact to process sanitary napkin waste. Here's an overview of what the detailed component diagram include:

1. Input Module

- **Components**:
    - **Collection Unit**: Responsible for receiving the used sanitary napkins.
    - **Conveyor System**: Moves the collected materials to the heating unit.
- **Interactions**:
    - Feeds the collected materials into the Heating Unit.

2. Heating Unit

- **Components**:
    - **Heating Chamber**: An enclosed space where materials are exposed to heat.
    - **Temperature Control System**: Regulates the heat levels.
    - **Ventilation**: Ensures safe disposal of any fumes.
- **Interactions**:
    - Receives materials from the Input Module and transfers the softened, sanitized material to the Crushing Unit.

3. Crushing Unit

- **Components**:
    - **Crusher Blades/Rollers**: Mechanically break down the heated materials into smaller pieces.
    - **Motor System**: Powers the crushing mechanism.
    - **Safety Shield**: Protects the system operator from debris.
- **Interactions**:

    - Takes in material from the Heating Unit and prepares it for separation by breaking it down.

4. Separation Unit

- **Components**:
    - **Water Tank**: Used for the water-based separation process.
    - **Agitation System**: Helps separate plastic and cotton through stirring or mechanical movement.
    - **Filter Screens**: Collects separated plastic and cotton.
- **Interactions**:
    - Processes crushed materials and separates plastic from cotton, sending each type to its respective recycling or repurposing unit.

5. Plastic Recycling Unit

- **Components**:
    - **Plastic Shredder**: Further breaks down separated plastic.
    - **Cleaning Station**: Washes plastic to remove any residual contaminants.
    - **Granulator**: Processes the cleaned plastic into small granules for recycling.
- **Interactions**:
    - Receives plastic from the Separation Unit, processes it, and outputs the recycled plastic.

6. Cotton Repurposing Unit

- **Components**:
    - **Cleaning Tank**: Washes the separated cotton.
    - **Drying Chamber**: Dries the washed cotton.
    - **Repurposing Station**: Processes the cotton for various uses (e.g., composite materials, tiles).
- **Interactions**:
    - Takes the cotton from the Separation Unit, cleans it, and repurposes it for designated applications.

7. Waste Management Module

- **Components**:
    - **Residual Waste Bin**: Stores non-recyclable materials.
    - **Disposal System**: Handles final disposal in an eco-friendly manner.
- **Interactions**:
    - Manages any remaining waste that cannot be recycled or repurposed.