

Smart Breast Pump

A smart robotic breast pump that integrates self-adjusting compression and vacuum pressures, along with a temperature control system, to provide a safe, efficient, and comfortable pumping experience for breastfeeding mothers.

Case ID:
ID2022-011

IP Position:
Patent Pending

Development Status:
TRL 4: Basic technological components are integrated to establish that they will work together

Opportunity
Partners sought for development and prototype testing.

Category(s):
Infant care, Maternal health, Medical devices, Breastfeeding, Postpartum support

Keywords:
Breast pump, Portable, Bonding, Baby products, Parenting

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Technology Overview

Prolonged and successful lactation has been shown to reduce postpartum depression in addition to increased bonding with their child. While the breast pump's goal was to make the breastfeeding more convenient, many women experience adverse and dangerously discomfoting side effects with the commercially available breast pumps.

The smart robotic breast pump aims to address the discomfort and adverse side effects experienced with existing breast pumps, offering a personalized and portable solution that supports prolonged and successful lactation. This has the potential to improve postpartum mental health, increase bonding between mothers and infants, and contribute to the overall goal of promoting exclusive breastfeeding.

Key Features & Benefits

- **Self-adjusting compression and vacuum pressures:** To mimic the gentle and soft positive peristaltic compression experienced during natural breastfeeding.
- **Temperature control:** Enhances comfort during pumping sessions, allowing mothers to customize the temperature according to their preferences and needs.
- **Artificial intelligence control system:** To adjust pump pressure in real-time, synchronizing with the milk production and the mother's comfort level.
- **Portable and convenient design:** Compact and user-friendly design allows for easy transportation and discreet usage, to maintain their breastfeeding routines even while on the go.

Potential Applications

- **Breastfeeding support:** Provides a safe, comfortable, and efficient solution for breastfeeding mothers, helping them maintain a consistent milk supply and support their breastfeeding goals.
- **Postpartum mental health:** By offering a more comfortable and effective pumping experience, the breast pump may help reduce the risk of postpartum depression and improve overall mental well-being for mothers.
- **Bonding and infant health:** The personalized pumping experience, including the option for personalized infant's video and sound recording, may enhance the milk let-down reflex and promote bonding between mothers and infants.

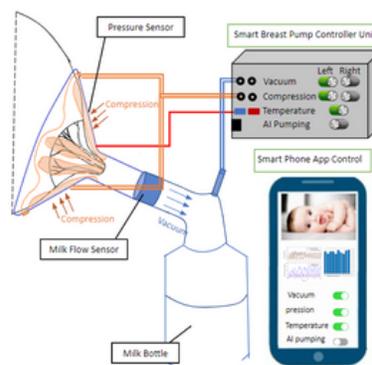


Fig 1.

The BP includes 4 main components:
 a) the pressure generator combines peristaltic vacuum and positive pressure to replicate the mechanism of infant feeding on the mother's breast
 b) the artificial intelligent control system is used to adjust pump pressure in synchrony to the milk production and mother's comfort level
 c) the temperature control system provides comfort with heating and cooling solution
 d) personalized infant's video and sound recording helps with milk let down reflex