

# Smart jacket for premature babies

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Together with the Máxima Medical Center (MMC), Eindhoven University of Technology has developed a prototype wireless 'baby jacket' for very premature babies in intensive care units. The jacket, which includes monitoring sensors, is comfortable to wear and was designed to reduce the baby's stress and make it easier for the parents to hold their baby outside the incubator. This is expected to benefit the later development of the baby. Industrial Design engineer Sibrecht Bouwstra received her PhD cum laude on 30 October for her "smart jacket" design.

Incorporating monitoring sensors in the jacket means they no longer have to be stuck to the extremely thin skin of the baby. This eliminates the painful and therefore stressful process of changing the adhesive sensors. Because the jacket uses wireless communication, both [parents](#) and baby have greater freedom of movement in [intensive care](#) than has been possible up to now. This also reduces the baby's stress level, while at the same time supporting the bonding between parents and baby.

## Incubator blanket

In another part of her PhD research, Bouwstra developed four other concepts to promote bonding between parents and [babies](#) in intensive care. One of these is an incubator blanket with lights that show parents the medical monitoring results in an intuitive way – without distracting attention from the baby as the present monitoring devices often do. The blanket shows the baby's breathing by a built-in light circle which expands and contracts. The heartbeat is also shown at the center of the

light circle by a varying light intensity.

## **Premature babies**

In the Netherlands, 7 to 8 percent of babies are premature, which is defined as occurring before the 37th week of the pregnancy. One-fifth of these are even born before the 32nd week. Each year around 400 very [premature babies](#) are admitted to the Neonatal Intensive Care Unit in the Mother and Child Center at the MMC in Veldhoven – one of ten NICUs in the Netherlands.

## **Development problems**

Developments in healthcare mean that very premature babies now have a higher survival rate. However the percentage of premature babies that later show development problems (low IQ, learning difficulties, ADHD) remains high. Reducing stress and promoting bonding between parents and babies during the stay in the NICU may contribute to better development of the baby at a later age. For this purpose, MMC is working together with TU/e on technical developments to give very premature babies a better start and future.

Provided by Eindhoven University of Technology

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