



Technology 142 : ClimaGear / Neck Scarf

ClimaGear is a temperature regulating apparel technology that aids in the comfort of outdoor workers/enthusiasts and military personnel. The patent pending technology relies on a battery to power thermoelectric heat pumps that remove heat from the body. The uniqueness of the technology implements an electronic temperature control that allows user to select the temperature that comforts the user. It is mobile, quiet, lightweight, failure tolerant, easy to use, with no moving parts. This is quite different from current solutions, which include vapor compression, resistive heating, chemical reaction heating, electric variable resistive heating, and phase change materials. A prototype, a neck scarf, has been tested for cooling properties and those specifications are available. The technology can also provide heat; however, for the purposes of this sheet, we will focus on the cooling products. Physical characteristics include:

- Over 75% of the neck is covered by cooling points, including the major blood vessels to the brain.
- Entire weight of the “ClimaNeck” including battery pack is 150 gm.
- Batteries, which are embedded in a detachable pouch last for 2 hours and can be recharged.
- No floating wires or protrusions that affect the aesthetic or functional performance or comfort to the user.
- Easy to fit on any person’s neck as the user can tie the “ClimaNeck” by simply knotting.

Cost:

A prototype has been completed. Production testing and manufacturing costs have not been calculated. Development costs will be based upon startup requirements.

Development Status

Three prototypes have been developed, producing 50 watts of heat/cold reduction. The current prototype has exposed wires that will eventually be concealed. Improvements needed include:

- Improve thermoelectric contact area for more uniform cooling by using conductive fabrics and phase change materials
- Develop gravity fed automated water delivery to heat sinks
- Add temperature sensor and controller
- Develop a system for condensation removal
- Improve sweat comfort and fabric comfort
- Add aesthetic design and accessories to jacket

It is expected to take 6 months before the technology is fully developed for appearance and comfort. Consumer testing will then follow for six months. A testing facility for the U.S. Army is under consideration.

IP Status

He has received a DSIR grant and incubator space from FIIT Delhi. A PCT full utility patent was issued with priority dating of February 23rd, 2007. All intellectual property is owned by Mr. Vistakula. A provisional patent in the U.S. has been filed.

Partner Opportunities

The Innovator is seeking funding and partnership to develop the product models of the scarf and vest.

Innovator

Kranthi Vistakula, Dhama Apparel Innovations Pvt Ltd

Additional information contact Earle Hager, IC² Institute Global Commercialization Group at 512-475-7789, 512-431-3940 or ehager@ic2.utexas.edu.





IC² INSTITUTE—GLOBAL COMMERCIALIZATION GROUP
THE UNIVERSITY OF TEXAS AT AUSTIN

3925 West Braker Lane ▪ Austin, Texas U.S.A 78759 ▪ (512) 305-0331 ▪ www.ic2.utexas.edu



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