



# Body Cooling System

(ECS-2)

## The Technology

Body Cooling System ECS-2 is designed to keep the human body at a comfortable temperature when the body's natural temperature regulating mechanisms are ineffective due to high heat and/or humidity condition. It has been developed indigenously at Elektro Control Industries, Pakistan for EOD operators to be worn under EOD suits in high heat conditions. The system is an improved version of conventional Body cooling system.

ECS-2 Body cooling System is an autonomous ice reservoir chilled water circulation cooling system. The system is designed primarily for the EOD operators. During the EOD/IEDD and mine clearance operations, the protective suits, worn for personal protection against blast effect, prevent the body from cooling itself naturally. The system is designed to be worn as a tube sewn under garment, over which an EOD, fire or any other suit is worn. Different tests have shown that the EOD suits worn with the cooling system regulates the body temperatures.

## Features & Benefits

The cooling suits are capable of removing up to 400 watts of heat (1365 BTU/hour or 344 KCAL/hour) as measured in human physiological tests under laboratory conditions in an ambient temperature of 37.8°C (95°F). Cooling Endurance in field lasts approximately 40-60 minutes under moderate work rates and ambient temperatures around 35°C (95°F).

## Parts & Accessories

- ⊙ Battery Charger / Operation Switch
- ⊙ Mode Selection Switch
- ⊙ Pumping rate Adjustable Knob
- ⊙ Connector Charger / Pump
- ⊙ LED Charging / discharging (Dual color : Red/Green)
- ⊙ LED Operations (Green)
- ⊙ Spare bottle
- ⊙ Battery charger
- ⊙ Maintenance kit

## Maintenance & Calibration

A fuse is placed in line with the battery, inside the Electronics control box. Replace the fuse when necessary. Use a 3 amp fuse.

Replace the water filter (B) after 500 hours of use or if it is suspected to be plugged.

Frequent lubrication of the male quick-connector O-rings (C) is recommended. Use a cloth soaked with light machine oil. Sewing machine oil is ideal because it is non-staining.

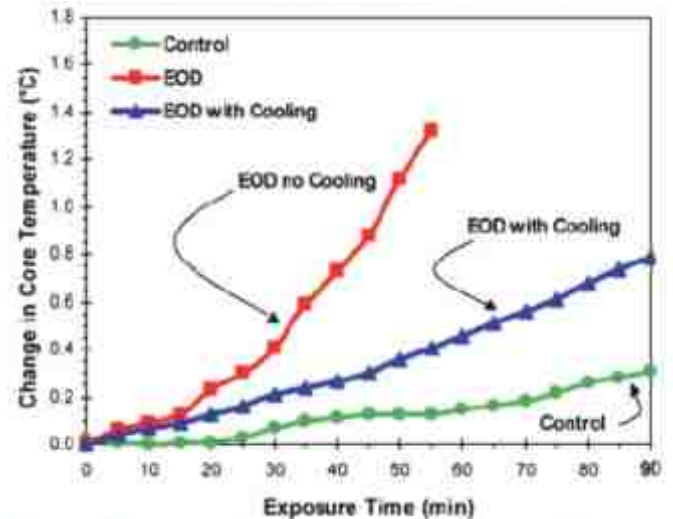
## Typical Applications

The Body Cooling System is used by EOD operators and has following specific applications:

- ⊙ EOD / IEDD operations
- ⊙ Mine Clearance operations



Left to Right: Complete Body Cooling System (ECS-2)



## Warranty Coverage

The product is warranted for one year against any engineering defects. The company's liability is limited to replacement or repair of defective parts, as it may deem necessary.

## Technical Specifications

Specification	Parameter	
Cooling Rate	480W @ 350mL/min. <b>Conditions of test:</b> Extrapolated from data using a sweating thermal mannequin wearing a similar extra-large tube suit (conservative assessment) under a Chemical Biological protective garment, in an environmental chamber maintained at 35°C and 30 % relative humidity.	
Operation modes with adjustable flow rate	Mode-1 : Continuous run (DIS) Mode-2 : Battery Save mode (EN)	
Interconnections	Auto shut off CPC connections	
Cool Tube Suit		
Wearing Weight	with liquid Filled – 0.9 to 1.1 kg	
Tubing	PVC	
Garment	Full torso, arms, head and lower body coverage Snug fit design for maximum contact for optimal cooling Diffused manifold for evenly distributed cooling Continuously stitched medical grade PVC tubing CPC interconnectors for shirt/pant, shirt/hood coupling.	
Interconnection	1/8” flow CPC connectors.	
Color	Brigade Blue	
Fabric	50/50 Kermel /FR Viscose	
Sizing Chart:		
Size	Height(ft)	Weight(lbs)
Small	5' 4"- 5' 8"	120-145
Medium	5' 7" - 5'11"	145-165
Large	5'10"- 6' 2"	165-190
X-Large	6' 1"- 6' 5"	190-235
Cooling Unit:		
Ice bottle	2 liters capacity	
Flow rate	Adjustable between 70 to 400 ml/min	
Weight	4.75 Kg (Packed)	
Pouch	Cordura with insulation	
Battery	12 VDC/ 1.3AH Re-chargeable	
Load Cutoff volts	9.1Vdc ±0.2Vdc	
Charge Cutoff	Upper charging voltage cutoff at 14.1Vdc ±0.5	
Charging time	Two hours (Approximately)	
Charging Ind.	Dual color LED (RED : charging /GREEN : charged)	

## For Sales & Marketing Please Contact:

Plot # 8, Service Road East, Sector I-11/4, Islamabad-44000, Pakistan  
Tel: +92 51 4431451-2, Fax: +92 51 4445667  
info@ecipak.com, www.ecipak.com