



Introducing The LSI Heat Stress System

LSI HEAT SHIELD WBGT METER & ACCESSORIES



A company of the **SCHAUENBURG** International Group

What Is The LSI Heat Shield Monitor?

- ⦿ Portable heat stress meter using the wet bulb globe temperature method
- ⦿ WBGT method
 - Indoor result
 - Outdoor result
 - Other results related to heat & cold stress are also calculated
- ⦿ Multiple units available
 - Master unit
 - Satellite unit



What Is The Heat Shield Monitor Used For?

- ⦿ To assess the local environment for workers in hot or cold conditions to prevent problems associated with
 - Heat strain
 - Heat stress
 - Cold stress
 - Hypothermia
- ⦿ To assess the local thermal comfort of workers
 - Predicted mean vote (PMV)
 - Predicted percentage dissatisfied (PPD)

Who Uses The Heat Shield Monitor?

- ⦿ Bakeries, warehouses, shops, offices, cold rooms
- ⦿ Foundries, power plants
- ⦿ Utility companies, linemen, road crew
- ⦿ Military training establishments
- ⦿ Sports facilities and event locations
- ⦿ Firefighters
- ⦿ IH consultants

What Are The Primary Requirements For A Heat Stress Monitor?

- ⦿ Compliance with OSHA National Emphasis Program (NEP) issued April 2022
- ⦿ Compliance with relevant international standards
 - ISO 7243 “Estimation of the Heat stress on working man based on WBGT index”
- ⦿ Use over a wide range of environmental conditions
- ⦿ High quality and reliable temperature sensors
 - Accuracy better than 0.5 °C (0.9 °F)
- ⦿ Direct live calculation and display of WBGT, indoor and outdoor values

What Additional Measurements Are Important To Collect?

- ◉ Remote measurements from satellite units for positional information for the worker(s)
- ◉ Average values for individual worker from other sensor units at same location different heights
- ◉ Time history variations of parameters – data logging
- ◉ Heat Index
- ◉ Humidex value

What Additional Features Are Useful To Have?

- ⦿ Choice of 2" and 6" black globe thermometers depending on local standards
- ⦿ Optional anemometers to measure wind speed
- ⦿ Comprehensive software package for reporting results and post calculations
- ⦿ Offline calculation of
 - Predicted Mean Vote, PMV (Thermal Comfort)
 - Predicted Percent Dissatisfied, PPD (Thermal Comfort)
 - Predicted Heat Strain, PHS (Hot Environments)
 - Insulation Required, IREQ (Cold Environments)

What Results Are Calculated And Displayed?

- ◉ WBGT indoor result
- ◉ WBGT outdoor result
- ◉ Results in degrees C or F
- ◉ Single station or average of all stations results
- ◉ Delayed start and stop timers

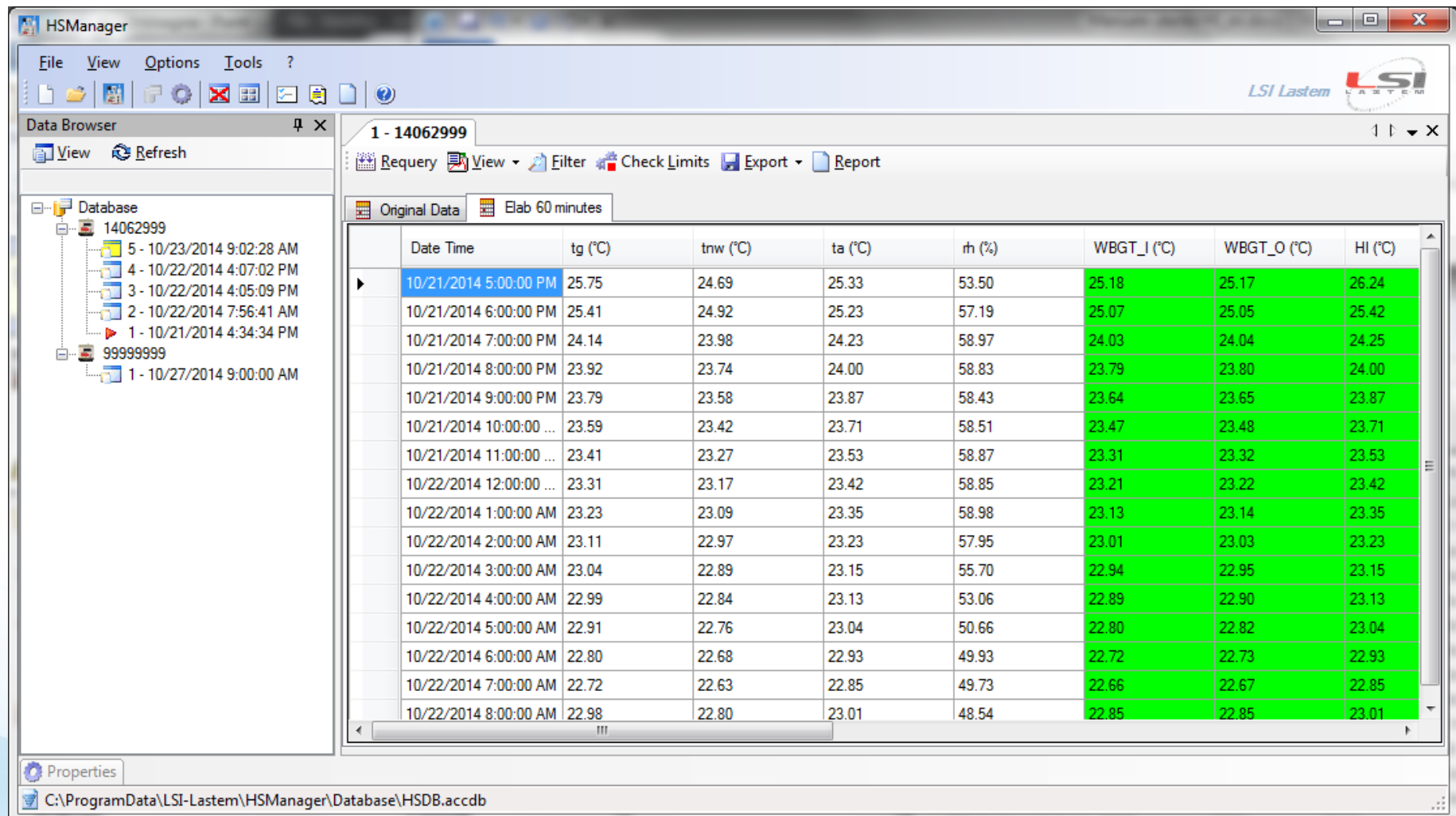
| | | | |
|--------|------|----|------------|
| | | | B = |
| WBGT_I | 23.4 | 'C | |
| WBGT_O | 23.3 | 'C | |

| | | | |
|----------|------|----|------------|
| | | | B = |
| WBGT_I 1 | 23.4 | 'C | |
| WBGT_O 1 | 23.4 | 'C | |

| | | | |
|----------|------|----|------------|
| | | | B = |
| WBGT_I 2 | 23.3 | 'C | |
| WBGT_O 2 | 23.3 | 'C | |

- | | B = |
|---------|------------|
| t g 2 | 23 . 6 ' C |
| t n w 2 | 23 . 4 ' C |
| t a 2 | 23 . 4 ' C |

How Are Results Usually Displayed After Download to Computer?



The screenshot shows the HSManger software interface. On the left is a 'Data Browser' pane with a tree view of a database containing several data points with timestamps. The main window displays a table of data for a specific entry (1 - 14062999). The table has columns for Date Time, tg (°C), tnw (°C), ta (°C), rh (%), WBGT_I (°C), WBGT_O (°C), and HI (°C). The data rows show a time series of measurements from October 21st to 22nd, 2014. The bottom status bar shows the file path: C:\ProgramData\LSI-Lastem\HSManger\Database\HSDB.acddb.

1 - 14062999

Requery View Filter Check Limits Export Report

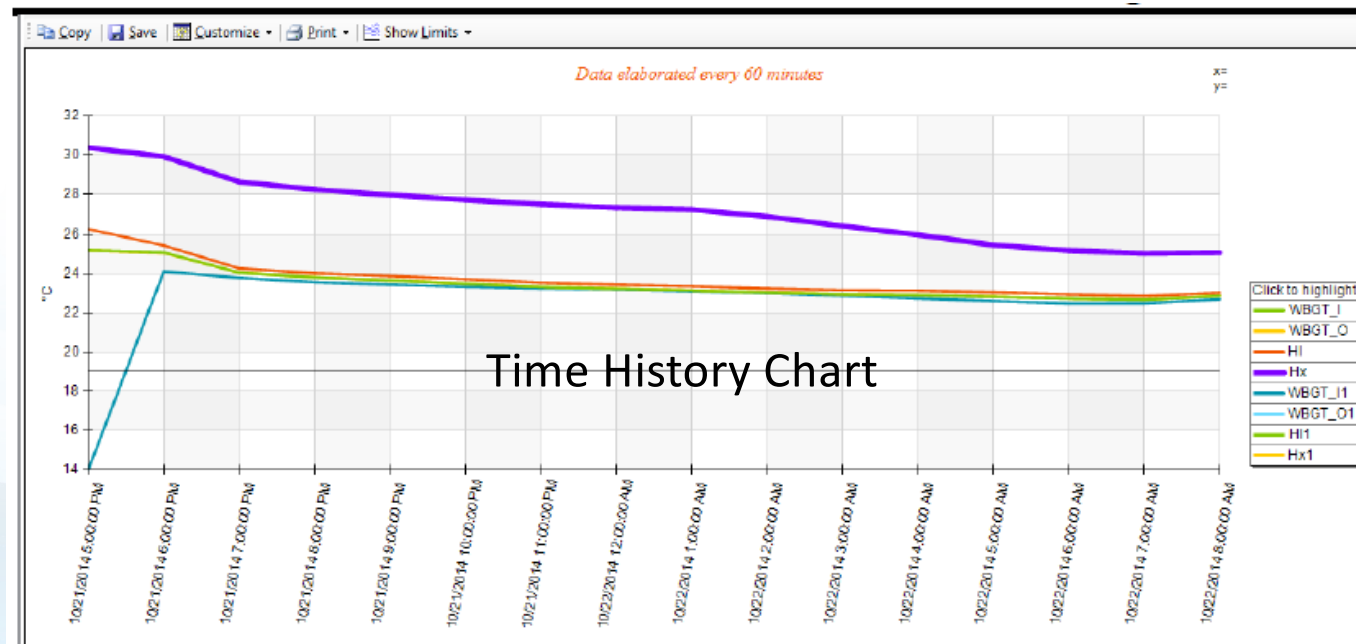
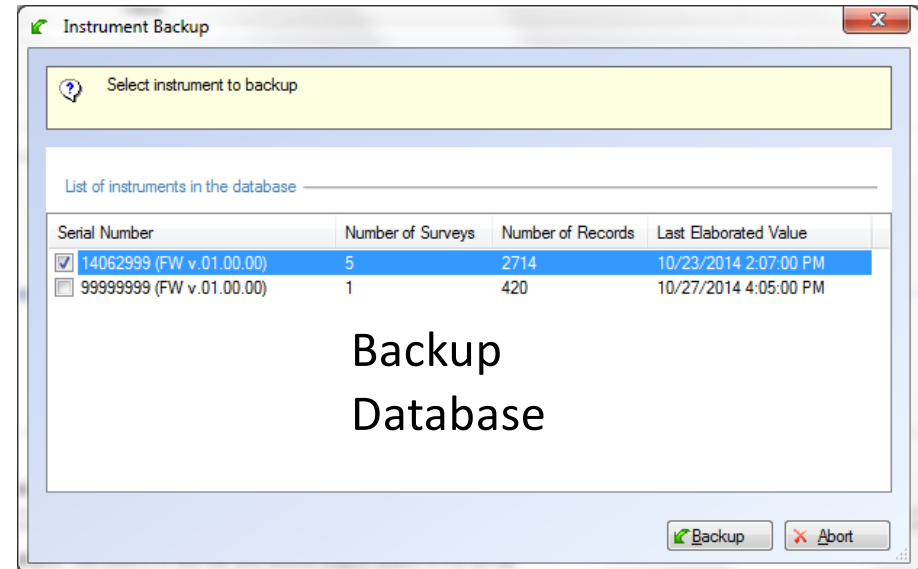
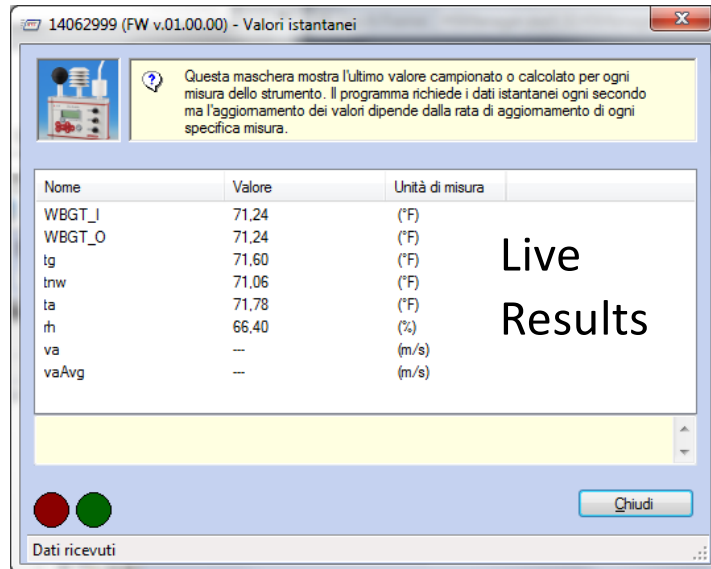
Original Data Elab 60 minutes

| | Date Time | tg (°C) | tnw (°C) | ta (°C) | rh (%) | WBGT_I (°C) | WBGT_O (°C) | HI (°C) |
|---|-------------------------|---------|----------|---------|--------|-------------|-------------|---------|
| ▶ | 10/21/2014 5:00:00 PM | 25.75 | 24.69 | 25.33 | 53.50 | 25.18 | 25.17 | 26.24 |
| | 10/21/2014 6:00:00 PM | 25.41 | 24.92 | 25.23 | 57.19 | 25.07 | 25.05 | 25.42 |
| | 10/21/2014 7:00:00 PM | 24.14 | 23.98 | 24.23 | 58.97 | 24.03 | 24.04 | 24.25 |
| | 10/21/2014 8:00:00 PM | 23.92 | 23.74 | 24.00 | 58.83 | 23.79 | 23.80 | 24.00 |
| | 10/21/2014 9:00:00 PM | 23.79 | 23.58 | 23.87 | 58.43 | 23.64 | 23.65 | 23.87 |
| | 10/21/2014 10:00:00 ... | 23.59 | 23.42 | 23.71 | 58.51 | 23.47 | 23.48 | 23.71 |
| | 10/21/2014 11:00:00 ... | 23.41 | 23.27 | 23.53 | 58.87 | 23.31 | 23.32 | 23.53 |
| | 10/22/2014 12:00:00 ... | 23.31 | 23.17 | 23.42 | 58.85 | 23.21 | 23.22 | 23.42 |
| | 10/22/2014 1:00:00 AM | 23.23 | 23.09 | 23.35 | 58.98 | 23.13 | 23.14 | 23.35 |
| | 10/22/2014 2:00:00 AM | 23.11 | 22.97 | 23.23 | 57.95 | 23.01 | 23.03 | 23.23 |
| | 10/22/2014 3:00:00 AM | 23.04 | 22.89 | 23.15 | 55.70 | 22.94 | 22.95 | 23.15 |
| | 10/22/2014 4:00:00 AM | 22.99 | 22.84 | 23.13 | 53.06 | 22.89 | 22.90 | 23.13 |
| | 10/22/2014 5:00:00 AM | 22.91 | 22.76 | 23.04 | 50.66 | 22.80 | 22.82 | 23.04 |
| | 10/22/2014 6:00:00 AM | 22.80 | 22.68 | 22.93 | 49.93 | 22.72 | 22.73 | 22.93 |
| | 10/22/2014 7:00:00 AM | 22.72 | 22.63 | 22.85 | 49.73 | 22.66 | 22.67 | 22.85 |
| | 10/22/2014 8:00:00 AM | 22.98 | 22.80 | 23.01 | 48.54 | 22.85 | 22.85 | 23.01 |

Properties

C:\ProgramData\LSI-Lastem\HSManger\Database\HSDB.acddb

Some Example Software Screen Displays



What Are Some Related Items To Go With LSI Heat Shield Monitor?

- ◉ Anemometer
 - Hot wire or wind cup
- ◉ Satellite units
 - Alternate locations or head and foot of same person
- ◉ Kit case for secure transportation
- ◉ Mounting tripod for main and satellite units

