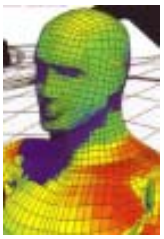
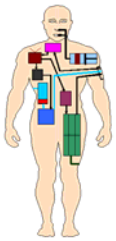


New Thermal Comfort Model for Newton!

8I3M coming to Victoria, BC, Canada.

New Flame Testing Equipment.



Our latest installations, and more.

Measurement Technology NeWs

Newsletter published by Measurement Technology NW

Summer/Fall 2009

Measurement Technology NW (Seattle, Washington), in partnership with ThermoAnalytics, announces a new Human Comfort Module that fully integrates with our ThermDAC manikin control software - adding human comfort prediction capabilities to all MTNW thermal manikin systems.

The new Human Comfort Module is an advanced add-on feature perfect for evaluating thermal comfort within the complex microclimate conditions related to protective clothing ensembles, building, automotive, mass transit (aircraft, train, ferry) climate control, personal cooling systems, and other transient, non-uniform environments. Researchers who have wrestled with this problem for years know how difficult it is to accurately model human heat loss. Some of the factors contributing to this complexity include:

- Thermal radiation view factors
- Radiation, convection, and conduction rates between clothing layers
- Thermal and moisture capacitance of clothing
- Clothing fit (including microvolumes)
- Real thermal properties of clothing ensembles
- Clothing to skin contact area
- Clothing to skin thermal resistance
- Real velocity field around the body
- Modeling the evaporation of sweat

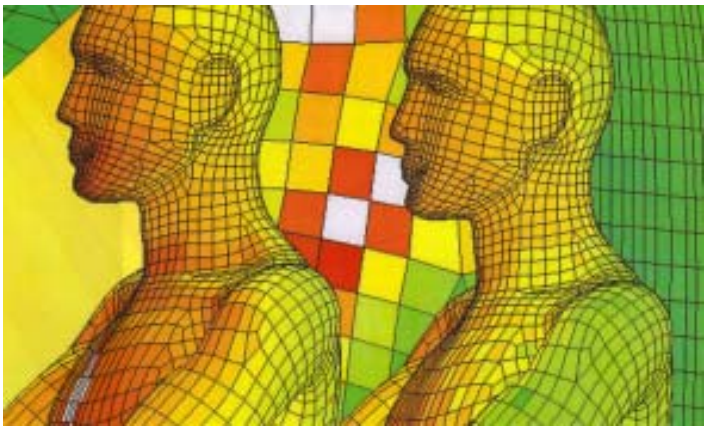
8I3MM

8th International Manikin & Modeling Meeting

Measurement Technology NW & Canadian Sport Centre Pacific invite you to beautiful Victoria, British Columbia, Canada for the 2010 ***8I3M*** *conference.*

Save the date! (August 23-27, 2010). Official schedule TBA.

In principle, a "virtual" thermoregulatory model can operate independently of a manikin. However, detailed knowledge of the transient, non-uniform, thermal environment is required.



For example, all of the view factors for thermal radiation must be correctly specified, local evaporation rates must be determined, knowledge of the clothing properties is required, a detailed transient flow field must be calculated, etc.

Hence, it is easy to understand the value of a manikin to eliminate the complexities and unknowns of the modeling process. When used in combination with the new Human Comfort Model, our Newton thermal manikin acts as a surface sensor that measures the rate of heat loss at each surface segment - responding to and interacting with the thermal environment to provide real data to the model, eliminating guesswork and improving the accuracy of thermal comfort research efforts. This manikin-model interaction operates in a continuous feedback loop, thus providing a transient measurement tool.

Computational methods utilize the widely respected Fiala and UC Berkeley models, and when combined with real-time, high resolution heat-loss data generated by ThermDAC, the Human Comfort Module allows users to compute the thermal sensation that is being experienced and output an intuitive prediction of human thermal comfort.

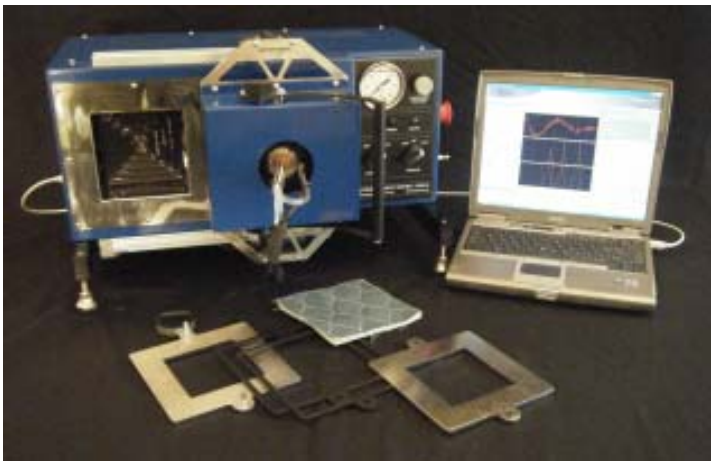
MEASUREMENT Technology NORTHWEST

4211 - 24th Avenue West
Seattle, WA 98199 USA

Measurement Technology NW manufactures a wide range of precision instruments for measuring and evaluating the thermal comfort of textiles, garments, and dynamic thermal environments such as aircraft, truck, and automobile interiors. Our complete line of thermal manikins and guarded hotplate systems are designed to support all current industry test standards for thermal insulation and moisture permeability.

New products add High-Temperature Testing Systems to the MTNW lineup!

Measurement Technology NW's new Stored Energy Test (SET) Device is designed to measure both transmitted and stored heat energy in firefighter protective clothing material systems under a specific set of exposure conditions. The combination of transmitted and stored heat within protective textiles and composites has been found to be sufficient to cause burn injuries under certain circumstances, and this new device is intended to replicate and measure these conditions.



MTNW's Stored Energy Test Device includes a radiant heat source, specimen holder, sensor assembly, transfer tray with water-cooled carriage, pneumatically-actuated compressor assembly, data acquisition/control system, and PC with burn damage analysis software.

In this test device a horizontally or vertically positioned fabric specimen is exposed to a radiant heat source (producing an energy output similar to the spectral density of a structural fire) for a fixed period of time. During exposure a data collection sensor, positioned above the innermost surface of the test sample, measures the heat energy transmitted through the fabric. At the end of the exposure time the fabric specimen is then compressed against the data collection sensor, which continues to measure the heat energy stored within the sample - as per the pending ASTM standard.

The total energy transmitted and stored by the fabric specimen is used to predict whether a second degree burn injury will occur. If a second degree burn injury is predicted, the time to a second degree burn injury is reported.

Our Flame Test Hands are constructed from a unique composite shell capable of withstanding multiple flame exposures that approach 1800°C, with no visible loss of integrity. Removable fingers are solid-cast from similar material, and each hand comes with nine integrated flame exposure calorimeter sensors. Four (4) exposure sensors are located in the forearm area, three (3) are on the back of the hand, and two (2) are on the palm of the hand.

The shape of the hand form permits easy glove donning and doffing without any of the fingers being moved. A typical exposure range with a glove covering the hand is up to a 12 second, 2.0 cal/cm^2 sec flame exposure, followed by two minutes of data collection.

The total heat energy transmitted to and recorded by the sensors is compiled and used to predict whether a second degree burn injury will occur. If a second degree burn injury is predicted, the time to injury is reported.

The new MTNW Flame Test Hand System includes hand form with removable fingers, high-accuracy calorimeter sensors, data acquisition/control system, as well as a Dell PC computer with ThermDAC software and burn model.

Measurement Technology NW's new Flame and High-Temperature Testing Equipment includes our powerful ThermDAC 8.0 control software with advanced Burn Prediction model. ThermDAC is the premier solution for fast, precise, repeatable thermal test results.

Recent thermal installations and other good news.

MTNW thermal manikin and guarded hotplate systems can be found across the globe, with new installations springing up in Europe, North America, Asia, and Australia.

A few special highlights from our recent shipments include the sophisticated sweating, walking, and breathing Newton thermal manikins we delivered to **Tsinghua University (China),** and **North Carolina State University (USA).** At NC State the system will become part of their new MIST chemical testing chamber installation. Both these advanced Newton models feature all connections routed through the manikin's walking stand mounting post - located at the top of the head - for minimal interference during garment tests and easy sealing for chemical exposure experiments. Other new installations include **TTRI (Taiwan), KATRI (Korea), Kansas State University (USA),** and **RMIT University (Australia).** TTRI and Kansas State also opted for our new flesh-color manikin paint scheme, providing a more natural manikin appearance.

Did you know that our engineers can do system retrofits too? Older MTNW manikin systems at **KTDI (Korea)** and **NCTRF (USA)** received new, up-to-date control systems to give them many years of additional service life. NCTRF's retrofit project involved "Bo", a one-of-a-kind heat pipe sweating thermal manikin that we built for the Natick labs back in 1996. In addtion to the modern control system, "Bo" received new head and hands along with a complete physical tune-up!

There was also activity on the hotplate side of the family. SGHP sweating guarded hotplates were delivered to **Leeds University (England), Donghua University (China), ITS (Hong Kong), CSIRO (Australia), Washington State University (USA),** and **IIT-Delhi/NITRA (India)**.

Also worth mentioning is a customized 4x4-inch sweating hotplate system with climate conditioning enclosure that was created for **Warwick Mills (USA)**. The system's small 4x4 test plate was well-suited to the size of pre-production R&D prototype materials that Warwick Mills needed to test.

New products, and continuous product improvement are major driving forces here at MTNW, and we take great pride in the development of new features and superior quality control processes for all our manikin and hotplate models.

New Sweating Skin Material

MTNW sweating thermal manikin systems built prior to June 2009 used Powerstretch fabric skins that often caused blue streaks to appear on the manikin skin surface. While this discoloration is cosmetic and does not affect performance, our engineers have recently identified a new material that has proven to be an superior sweating skin for our manikin systems. This new wicking stretch fabric is thinner than the blue Powerstretch - for lower evaporative resistance and more accurate skin temperature measurements - and the new material does not bleed color to the manikin. No stains!

Two New European Agents

We've recently made two new European additions to the list of MTNW authorized agents. **Mesdan S.p.A.**, a respected name in textile testing equipment (via their Mesdan Lab division), is representing us in Western and Central Europe.

In the countries of Romania, Bulgaria, and Moldova, MTNW will be represented by **Romegatest SRL**. Located in Romania, Romegatest is a source for quality textile testing equipment for Eastern European research labs.

See the bottom of this page for agent contact information.

MTNW's website now includes a blog!

This new blog is an attempt to keep all of us here at MTNW better connected with all of you – our past, present, and future customers. It is a place to come to for news about our quirky little company, helpful information about our products, and a place where readers can also be contributors – sharing successes, describing problems, asking questions, and posting thoughts on what we can all do better to advance the causes of the thermal comfort testing community.

Readers will hear from us regularly, with inside information on MTNW equipment, tips for advanced product operation, industry news we think is relevant to our particular niche, solutions to equipment issues that others have faced, and anything else that occurs to us when it comes time to post another article. We'll do our best to keep it interesting, and please remember that comments and contributions from our blog readers is both encouraged and very much appreciated.

www.mtnw-usa.com

Measurement Technology NW has established relationships with top thermal instrumentation companies around the world. These representatives help us provide ongoing consultation, project coordination, installation assistance and service support.

In South Korea: Technox, Inc., (Mr. Her, Young-Chul), E-mail: tni@technox.co.kr
In Taiwan: Tien Shiang Scientific Instruments Company LTD, (Mr. C. S. Yao), E-mail: tinshing@ms16.hinet.net
In Turkey: Kontrol LTD, (Mr. Serhan Tozar), E-mail: kontroltest@ttnet.net.tr
In Japan: IDS-ENV, (Mr. Masahiro Kajioka), E-mail: kajioka@ids-env.co.jp
In China: Test International, (Mr. David Pan), Email: davidpan@test-tech.com.cn
In Western & Central Europe: Mesdan S.p.A., (Mr. Claudio Bertolotti), Email: sales@mesdan.it
In Eastern Europe: Romegatest SRL, (Mr. Florin Dumitrache), Email: florindm@rdslink.ro

The US Army's state-of-the-art **"IPEMS"** project breaks new ground, and a new 13-zone **"Simon"** joins our MTNW thermal manikin family!

New 13-zone "Simon" thermal manikin:
For lab tests and research projects that do not require the higher zone resolution found in our 20, 26, and 34-zone Newton models, MTNW now has an 13-zone model we call Simon. Our newest manikin wraps sophisticated ThermDAC testing capabilities into an economical, high-value package suitable for sleeping bag tests, general garment or protective apparel evaluation, and environmental assessment. Testing labs trying to justify purchase of their first thermal manikin, or labs with testing backlogs that are considering the pros/cons of a second thermal manikin system will find that Simon is a great choice for handling many common test applications.

Available as either a 50th percentile Western Male or Asian Male, both Simon models feature a simplified hand & foot and poseable friction joints at the hips and shoulders only.

Simon shown with optional flesh-color paint

As shown at left in a completed Simon system, this new manikin includes 13 independent thermal zones at:

Head
Torso *(front/back)*
Arm *(left/right)*
Hand *(left/right)*
Leg-Front *(left/right)*
Leg-Back *(left/right)*
Foot *(left/right)*

The design helps control costs and improve production efficiencies while yielding a thermal manikin that retains all of the advanced measurement and control features that have made MTNW systems the most popular thermal manikins available today.

For specifications and pricing on any MTNW product, just call, fax, or email us!

MTNW in Phase 1 design stage for "IPEMS" project:
In November 2008, Measurement Technology NW and a group that included Midwest Research Institute, Boston Dynamics, Smith Carter CUH2A, and HHI Corporation, was selected by the US Army to design and build the "IPEMS" project (**I**ndividual **P**rotective **E**nsemble **M**anikin **S**ystem), including state-of-the-art chemical testing facilities and a first-of-its-kind robotic thermal manikin system for performing high-resolution testing of protective clothing and equipment under live chemical exposure conditions.

The IPEMS manikin will be a free-standing, self-balancing robotic manikin that simulates human physiology for realistic tests of protective equipment in a controlled environment.

Measurement Technology NW is responsible for IPEMS's skin surface and thermal control systems. Boston Dynamics will handle the robotic manikin internal design and fabrication. Smith Carter CUH2A will be responsible for the Containment Chamber design, and HHI Corporation is responsible for Exposure Chamber construction and installation. Midwest Research Institute (MRI) is the project's prime contractor and overall systems integrator.

Work has now moved into the Phase 1 design stage, with full project completion (estimated) in 2011.

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