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in
Whole-Body
Hyperthermia
with
wIRA

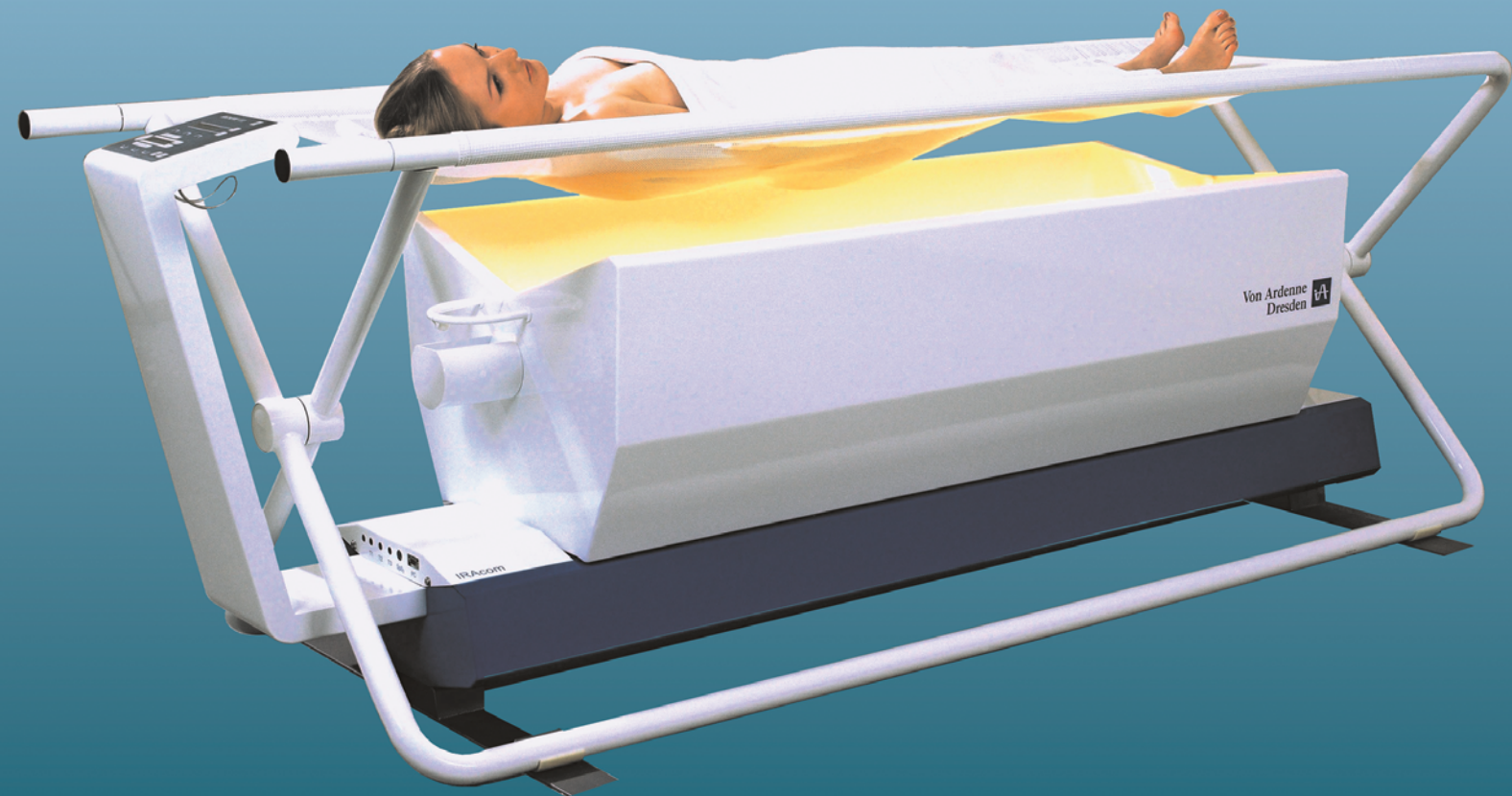
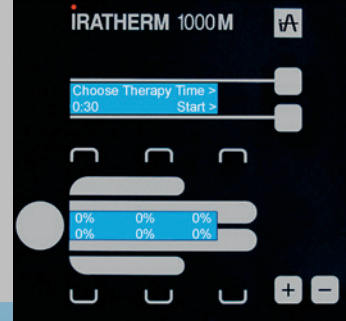
Water-Filtered
Infrared-A Radiation
for Mild and Moderate
Whole-Body Hyperthermia
in Physical Therapy,
Complementary Medicine
and Oncology



IRATHERM® 1000M

for mild (up to 38.5 °C)
and moderate (up to 40.5 °C)
Whole-Body Hyperthermia

Fever-Like Therapy for Hospital and Medical Practice



VON ARDENNE has, for forty years, been undertaking research, development and application of systems for warming up the whole body; and has become established as the world leader in whole body hyperthermia using water-filtered infrared-A radiation (wIRA). IRATHERM® reproduces the equivalent part of infrared sun radiation, which can be used to warm up the body in an open design of equipment. Mild and moderate whole-body hyperthermia, to which the skin has a high tolerance, can increase the micro-circulation; speed up the metabolism; reduce muscle tone; and activates the immune system in a similar way to natural fever. By stimulating the organism's self-healing powers, a wide spectrum of treatment indications is available, from prophylactic medicine and environmental medicine to the treatment of chronic diseases and malignant processes.

Effects of Moderate Hyperthermia

- Increase in perfusion in organs and tissues; intensification of supply and disposal
- Metabolic acceleration
- Stimulation of the hormone system
- Stimulation of the immune system
- Reduction in muscle tone
- Acceleration of nerve conduction

Indications

- Arterial hypertension
- Chronic back pain
- Fibromyalgia syndrome
- Psoriasis arthritis
- Ankylosing spondylitis
- Systemic scleroderma
- Major depressive disorder
- Cancerous diseases (an adjuvant measure to standard therapies and immune modulation)

Further Indications

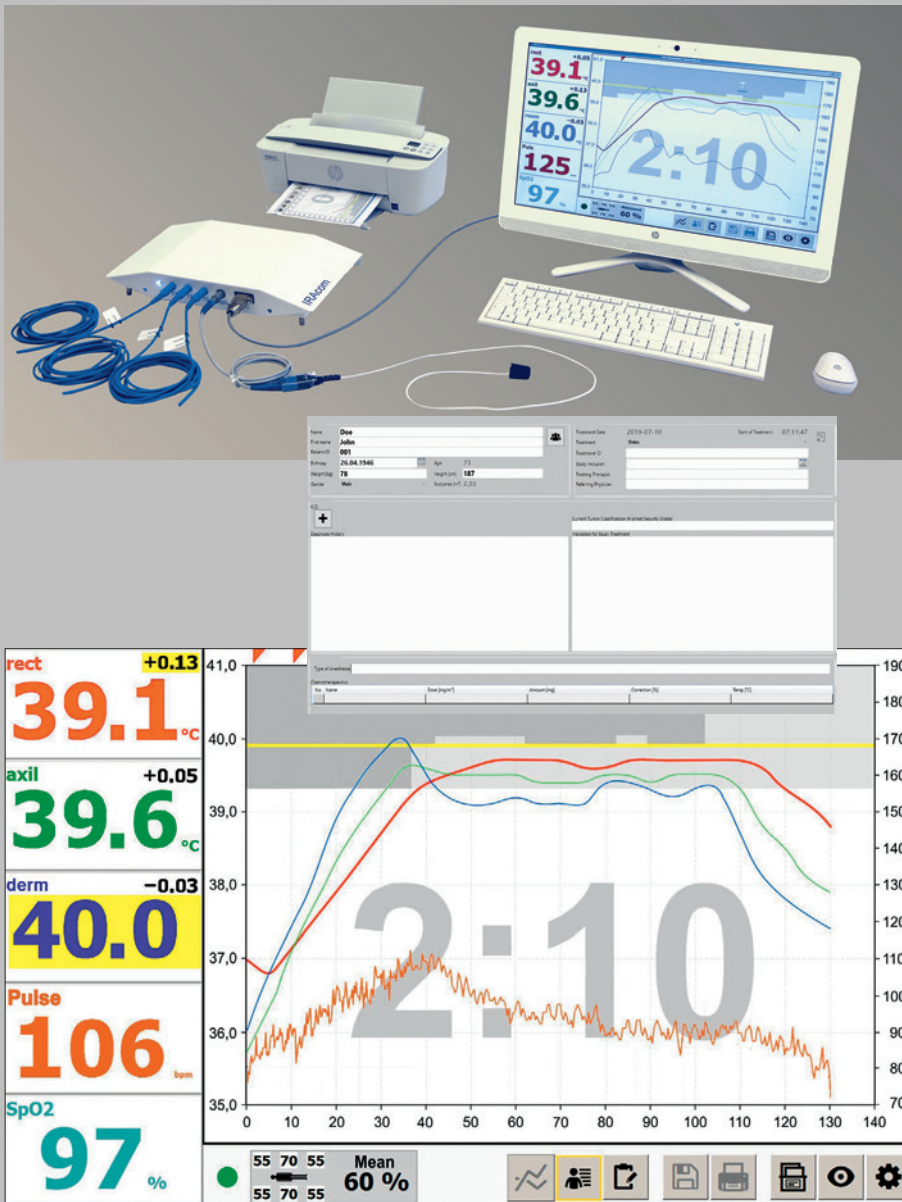
from "Whole-Body Hyperthermia Guideline" of the German Society for Hyperthermia, partially determined with other whole-body hyperthermia systems

- Immune activation
- Bronchial asthma
- Axial spondylarthritis
- Osteoarthritis
- Irritable bowel syndrome
- Detoxification

Subject to technical change without notice!

Monitoring with IRacom® and IRAsoft 5.0

Hardware and Software for Monitoring



Recording, Displaying and Documentation of Hyperthermia-Relevant Data

- 3 temperatures
- Ear pulse
- Oxygen saturation
- 6 wIRA-radiators
- Treatment data
- Logbook
- Printout & data export



IRacom®

Hardware component of the IRATHERM® 1000M for signal processing. It is used to provide temperatures, pulse, oxygen saturation and radiator power for a PC with the IRAsoft 5.0 software.

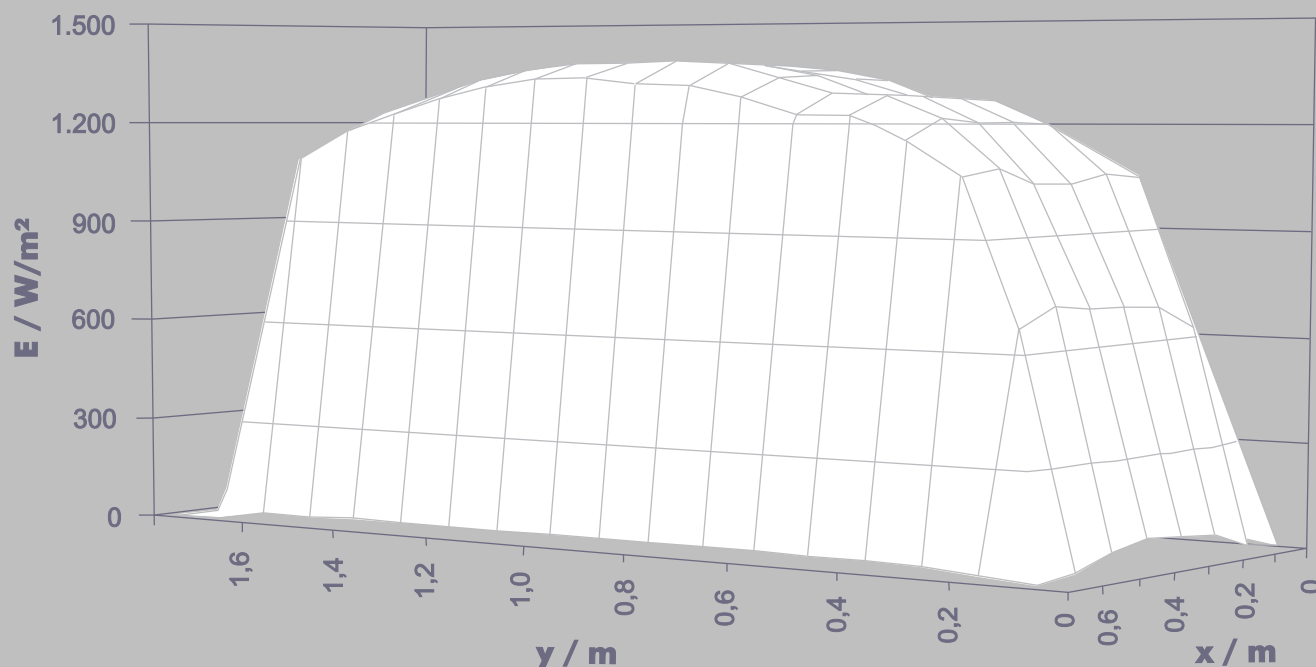
IRATHERM®1000M Highlights from wIRA

- Exclusively skin-tolerable water-filtered infrared-A heat radiation (wIRA) (only infrared A / no infrared B + C, i.e. only deep heat / no surface heat)
- Uniform irradiance across the entire patient
- Patient-individual heat supply in place and intensity using 6 special radiators
- High power reserve for heat radiation (6.9 kW connected load)
- Rapid increase in body-core temperature (to 39 °C in approx. 45 min)
- High lying comfort on a point elastic special net of highest strength
- Permanent and all-round access of the therapist to the patient
- No claustrophobic stress due to the open design
- No risk of cataracts, as special radiators are arranged below the patient
- No toxic pollution due to secreted body sweat, since sweat drips through the mesh
- Silent removal of radiation filtered out by cooling water (approx. 40%)
- Cost and time-saving cleaning after therapy session
- User-friendly monitoring
- Elegant system design
- High compliance

IRAsoft 5.0

WINDOWS-compatible special software for the IRATHERM®1000M for the visualization of the hyperthermia session (WINDOWS®7 and WINDOWS®10). Collection of patient data, anamnesis, therapy planning. Display of therapy time, up to three temperatures, pulse and oxygen saturation as well as temperature gradients. Signaling of limit exceedance of target temperature and increase in body-core temperature. Logbook for treatment notes. IRAsoft as a comparison portal for hyperthermia sessions. Zoom function for temperature-pulse graphics. Calculation of the temperature dose. Compact printout of all data for documentation and data export for statistical processing.

Great Homogeneity of Irradiance E on Level of Patient x-y



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Technical Data

IRATHERM® 1000M

Water-filtered infrared-A radiation	600 until 1300 nm wavelength
Irradiance	0 ... about 1400 W/m^2
Power consumption	6.9 kVA three-phase current; 400/230 V
Cooling-water consumption	min. 4 liter/min
Dimensions	250 L x 100 W x 85 H in cm
Weight	140 kg



Von Ardenne Institute
of Applied Medical Research
GmbH

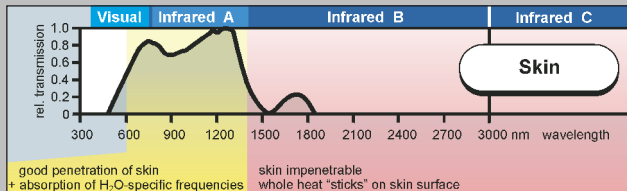
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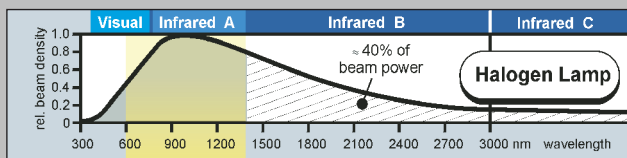
Why Use Water-Filtered Infrared-A Radiation?

For the generation of skin-tolerable, deep-acting heat radiation!

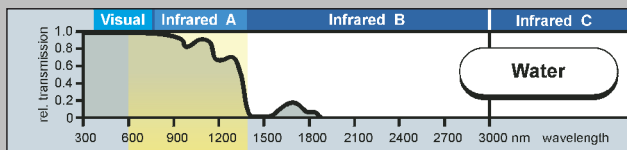
The spectral transmission of skin starts at a long wave visual light of about 600 nm wavelength (see "Visual") and passes the whole infrared-A until its upper long wave limit of about 1,400 nm wavelength. In contrast to that, the skin is nearly impenetrable to heat radiation from the spectral regions of infrared-B and infrared-C. Therefore, one can speak of "deep-acting heat" in the case of infrared-A heat radiation, whereas with infrared-B and infrared-C radiation we speak only of "surface heat".



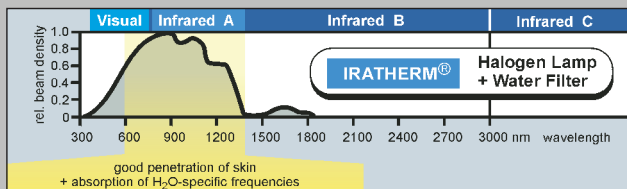
Red light lamps or halogen lamps are well-known and powerful heat radiators. The latter mostly operates on higher power. The following presentation of spectral distribution of a halogen lamp shows that its heat radiation contains 40% of the unwanted, skin-straining infrared-B and infrared-C radiation.



Water is the appropriate choice of filter to eliminate infrared-B and infrared-C radiation because water, similar to skin, has a selective transmission of infrared radiation. This property results from the fact that the skin of an adult consists to 75% of water. Just like skin, water is a good transmitter of infrared-A radiation. While infrared-B and infrared-C are nearly completely absorbed, only small absorption bands (near 950 nm and 1,150 nm) are given in the spectral region of infrared-A.



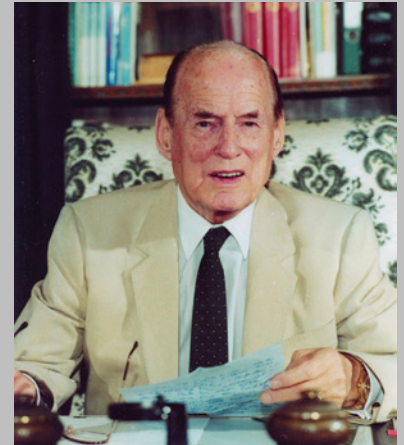
By placing a water filter in front of a halogen lamp, the result is a heat radiation, with a spectral distribution nearly equal to the spectral transmission of the skin.



Water-filtered infrared-A radiation, as generated by special IRATHERM®-radiators, is a type of heat radiation ideally suited to human skin. Using water-filtered infrared-A radiation the IRATHERM® allows a much higher irradiation level than that of commercial infrared or halogen lamps at same skin tolerance.

Water-filtered infrared-A is heat radiation similar to natural sun radiation because natural sun radiation is formed with the help of the humid atmosphere of the earth. Over thousands of years, our biggest organ, the skin, has adapted itself very well to water-filtered heat radiation.

Tradition in Science Engineering Medicine



Prof. Manfred von Ardenne *1907 – † 1997

- 1931 World premiere of fully electronic television
- 1934 Electronic spectral photometer
- 1934 Invention of night vision device (image converter)
- 1937 Invention of scanning electron microscope of high resolution
- 1939 Universal electron microscope of high resolution
- 1957 Swallow-able intestinal transmitter, signaling pressure and pH
- 1962 Operating room with electronic patient supervision
- 1965 Two-chamber bath tub for extreme whole-body hyperthermia
- 1966 Heat exchanger for extracorporeal hyperthermia for regional perfusion
- 1967 Sensibilization of tumor cells against hyperthermia via over-acidification
- 1970 systemic Cancer Multistep Therapy (sCMT)
- 1972 Oxygen Multistep Therapy (O₂MT)
- 1978 27 MHz high-frequency hyperthermia with systemic and added local application
- 1987 Whole-body hyperthermia with water-filtered infrared-A radiation (IRATHERM®-principle)
- 1992 IRATHERM® 2000 for extreme whole-body hyperthermia (until 42.5 °C)
- 1994 IRATHERM® 1000 for mild and moderate whole-body hyperthermia (until 40.5 °C)
- 2003 IRacom® monitoring for mild and moderate whole-body hyperthermia
- 2011 IRAbord for the multivariant use of IRATHERM® 1000 as a patient couch
- 2017 IRAsoft software for mild and moderate whole-body hyperthermia