



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

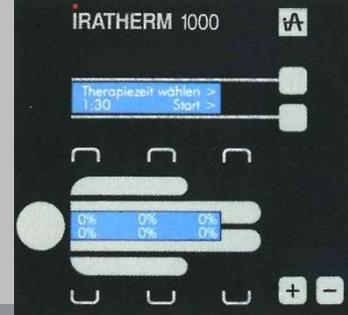
„Science in Alliance with Nature”



IRATHERM[®]1000

IRATHERM®1000

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, is able to increase the micro-circulation, speed up the metabolism, reduce muscle spasms, and activate the immune system in a similar way to natural fever. By encouraging heating, a wide spectrum of treatment indications is available, from prophylactic medicine to the treatment of chronic illness and malignant processes.

Effects of Moderate Hyperthermia

- Enhancement of perfusion in organs and tissues; intensification of supply and disposal
- Acceleration of metabolism
- Stimulation of hormone system
- Stimulation of the immune system
- Chronic inflammation can be ameliorated
- Reduction of muscle tone
- Acceleration of nerve conduction

Indications

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

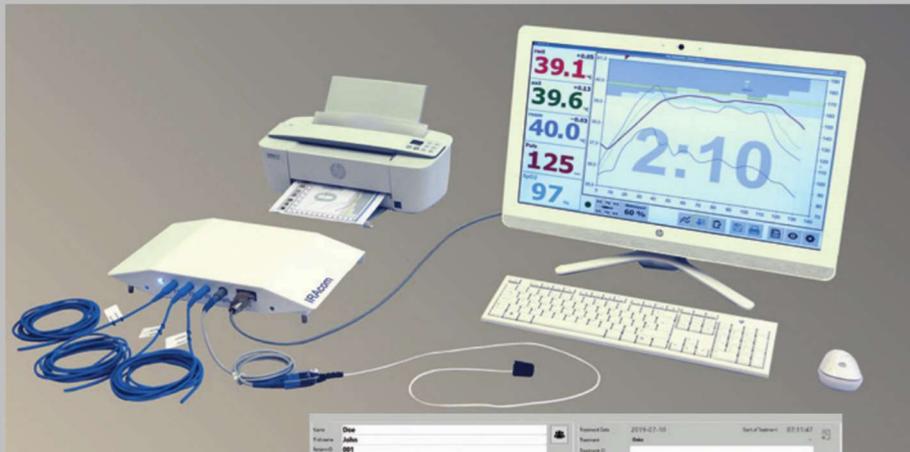
Further Indications

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

- Immune activations
- Bronchial asthma
- Axial spondyloarthritis
- Osteoarthritis
- Irritable bowel syndrome
- Detoxification

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 and data export



IRacom[®]

Hardware component for IRATHERM[®]1000 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[®]1000 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

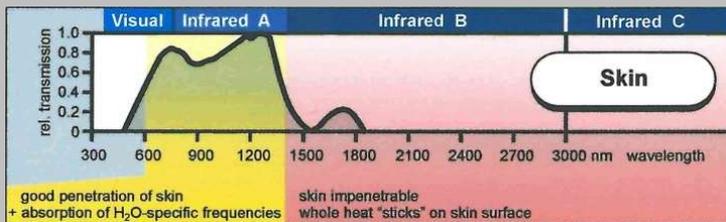
WINDOWS-compatible special software for for IRATHERM[®]1000 for the visualization of the hyperthermia session (WINDOWS[®]7 and WINDOWS[®]10).

Collection of patient data, anamnesis, therapy planning. Display of therapy time, up to 3 temperatures, pulse frequency and oxygen saturation, as well as temperature gradients. Signalling of limit exceedance of target temperature. Logbook for treatment notes. IRAsoft as a comparison portal for hyperthermia sessions. Zoom function for temperature-pulse graph. Calculation of temperature dose. Compact printout of all data for documentation and data export for statistical processing.

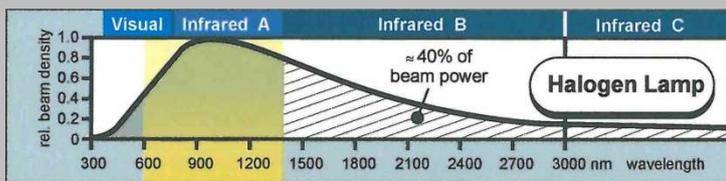
Why Use Water-Filtered Infrared-A Radiation?

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

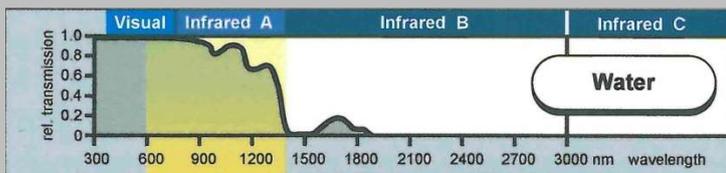
The spectral transmission of skin starts at a long wave visual light of about 600 nm wavelength (see "Visual") and passes the whole infrared-A until its upper long wave limit of about 1400 nm wavelength. In contrast to that, the skin is nearly impenetrable to heat radiation from the spectral regions 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".



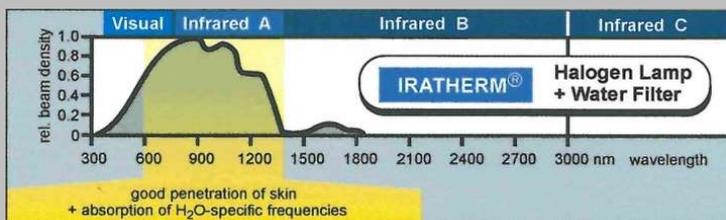
Red light or halogen lamps are well-known and powerful heat radiators. The latter mostly operates on higher power. The following presentation of spectral distribution of a halogen lamp shows that its heat radiations contains 40% of the unwanted, skin-straining infrared-B and infrared-C radiation.



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.



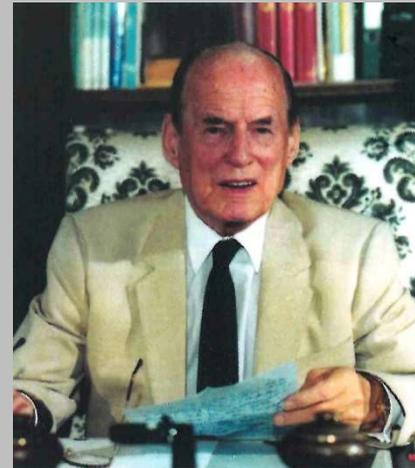
By placing a water filter in front of a halogen lamp, the result is a heat radiation, with a spectral distribution nearly equal to the spectral transmission of the skin.



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.

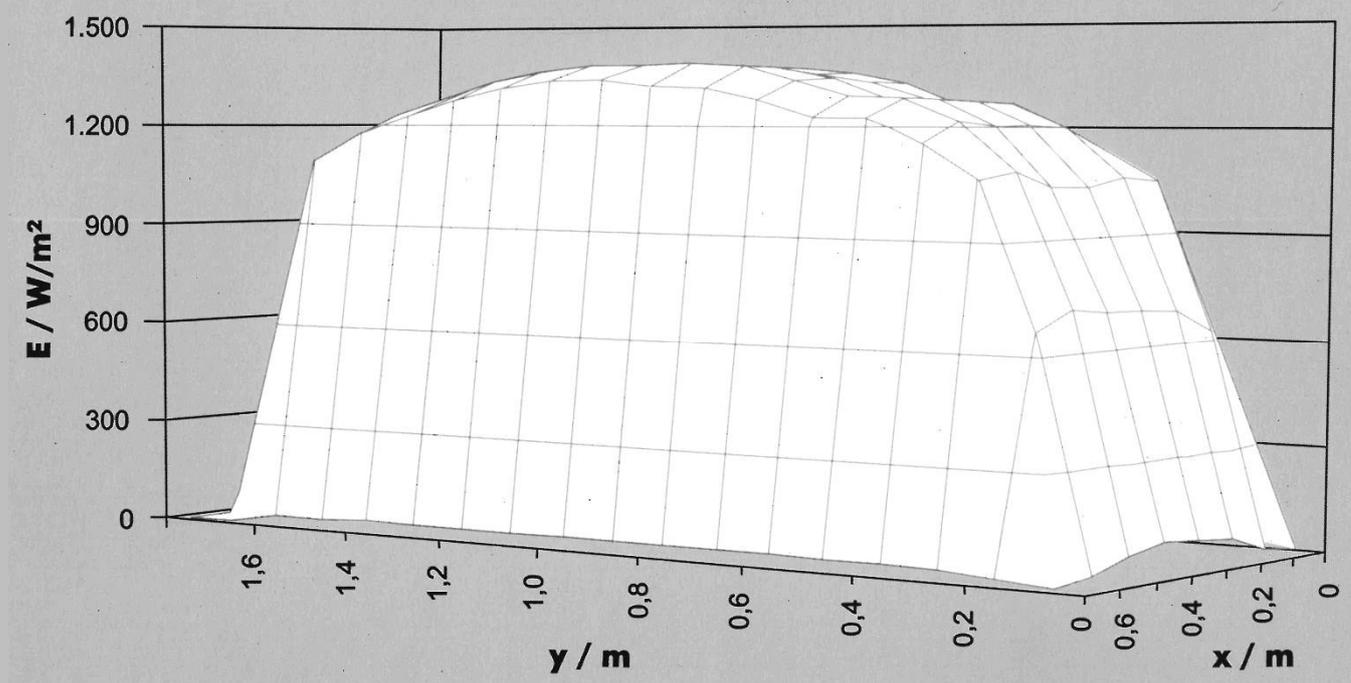
Tradition in Science Engineering Medicine



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 signalling 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 Sensibilisation 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®1000system as a patient couch
- 2017 IRAsoft software for mild and moderate whole-body hyperthermia

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



Technical data

IRATHERM®1000

Water-filtered infrared-A radiation	600 until 1300 nm wavelength
Irradiance	0... about 1400 W/m ²
Power consumption	max. 6.9 kW, three-phase current; 400/230 V
Cooling-water consumption	4 liter / min
Dimensions	250 L x 100 W x 90 H in cm
Weight	140 kg

IRacom®

Power consumption	55 VA; 230 V
Dimensions	20 l x 40 b x 7 h in cm
Weight	2.5 kg

Manufacturer



Von Ardenne Institut für Angewandte Medizinische Forschung GmbH	Zeppelinstrasse 7 ☎ +49 351 2637 400 ☎ +47 351 2637 444	D-01324 Dresden info@ardenne.de www.med.ardenne.de
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Distribution in Central-Europe



HT Systems sp. z o.o.	Belgradzka str. 5 ☎ +48 22 300 91 85 ☎ +48 22 644 50 77	02-793 Warszawa info@htsystems.com.pl www.ardenne.pl
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