Germo Stein®

Electrical Panel Rock Thermal Battery System

Incoming

Stone Heat ...

Healthy products

Wellness...

TÜV CERT CE

GERMO TEKNİK

Sanayi ve Dış Ticaret Ltd. Şti.

Fabric: Akçaburgaz Mh. Alkop Sanayi Sitesi 1592 Sk.
A7 Blok No: 21 Kat:2, Esenyurt / Istanbul - TURKEY

P: +90 212 852 42 42 • **F:** +90 212 852 23 92

info@germoteknik.com • **www.germoteknik.com**

Germo Stein®

Electrical Panel Rock Thermal Battery System

www.germoteknik.com

TÜV CERT CE

Heating

of Technology

Correct Address ...

Germo Stein®

Electrical Panel Rock Thermal Battery System

Dear customers, we would like to provide some information, in addition to drawing your attention to our product.

Germo Teknik was established in 1999 and operates in the energy sector. The company developed its Panel Rock Thermal Battery System as a result of the R&D studies commenced under the ***Germo Stein*** brand in 2011, at Germo Teknik, under the initiative of the founder, İbrahim Düz and a specialist team of engineers.

Subjected to all required international tests, the system has proven its power and thermal efficiency properties and attracted the attention of scientists by performing effective heating with high efficiency and low energy consumption.
Our main goal with ***Germo Stein*** Panel Rock Thermal Battery System is to minimize energy consumption and high investment costs through high thermal efficiency. When the contribution to nature and our economy through energy savings is taken into consideration, ***Germo Stein*** Battery Systems are state-of-the-art products with their flat surfaces, and clean, hygienic and ergonomic structures.

Germo Stein Panel Rock Thermal Battery System is a product which has reached its final stage in development. It is PATENTED, TÜV and CE certified. Also, it has testing and efficiency report certificate issued by ISTANBUL TECHNICAL UNIVERSITY. Our brand is registered.

Best regards,

GERMO Teknik San ve Dış Tic. Ltd. Şti.

Values Concerning "**Specific Heat**" and "**Heat Capacity**"

It was revealed that with the same energy compared to water, ***Germo Stein*** Panel Rock Thermal Battery heats up 6.25 times as fast as water, using identical quantities of energy supplied in order to determine the specific heat of ***Germo Stein*** Thermal Battery and water. Distinguishing features concern the Specific Heat of the substances.

The heat capacity (Specific Heat) concept was proposed by Scottish physicists and chemistry scientists and they distinguished concepts of heat and temperature. The heat capacity (Specific Heat) concept is also called the Dulong-Petit Law.

Why Germo Stein?

Energy Required for Heating Up Water

Heat applied to increase the temperature of 1kg of water by 1°C is 1kcal, which constitutes a disadvantage. Another disadvantage apart from the high Specific Heat of water is that it is slow to heat up.

Energy Required for Heating Up Germo Stein

Heat applied to increase the temperature of 1kg of ***Germo Stein***'s raw material by 1°C is 0.16kcal. ***Germo Stein***'s low Specific Heat and quick heating properties offer the most effective heating with minimal energy unique for its raw material.

Thus, combi boilers and regular boilers of high power rating are used to heat water quickly in standard (radiator) systems.

The raw material of ***Germo Stein*** Panel Rock Thermal Battery System consists of rock and metal particles produced with nano technology. It was revealed in our R&D studies that ***Germo Stein*** Panel Rock heats up more than 6.25 times as fast as water, with the same energy, in the results of the tests performed by using the Dulong-Petit Method in order to determine the Specific Heat of ***Germo Stein***'s raw material and water.
The raw materials of ***Germo Stein*** Panel Rock Thermal Battery System heat up faster since their Specific Heat is lower. They also have a late cooling property. Therefore, the most effective heating is ensured with minimal energy unique to the heat capacity of ***Germo Stein*** Panel Rock's raw materials. The use of ***Germo Stein*** Panel Rock Thermal Battery System in heating systems is more practical and economic. It also has a low initial investment cost.

GSM - 6

Germo Stein®

Electrical Panel Rock Thermal Battery System

Germo Stein
Germo Stein Offers Effective Heating with Natural Rock.

Fuel Consumption Comparison, Thermal Capacity, And Performance Test

İ.T.Ü. Fuel consumption, thermal capacity, and performance comparison tests were performed at the Duscio Laboratory of Istanbul Technical University's Faculty of Engineering, Department of Heat Engineering. These were made according to the "Closed Chamber Method" as described in TS EN 442-2-standard **"Radiator and Convector Test Methods"** on a natural gas hot water radiator and a **Germo Stein Electric Panel Stone Radiator** at the same capacity and under the same conditions. The quantity of natural gas consumed by the hot water radiator and electrical energy consumed by the electric radiator for heating purposes was determined.

The results of the tests performed showed that the electrical energy quantity consumed by the **Germo Stein Electric Panel Stone Radiator** was **0.968 kWh**, on average.

The natural gas consumed by the hot water radiator, was on average **0.264 m3/h.** The electrical energy of the natural gas consumed was equal to **2.853 kWh*.** Furthermore, the electric consumption with circulation pump was **0.15 kWh.** The electrical energy value for the total natural gas consumed was equal to 2.853 + 0.15 and the energy consumption with circulation pump was equal to **3.003 kWh.** In conclusion, in fuel consumption comparison tests the **Germo Stein Electrical Panel Stone Radiator** consumed **3.1 times less energy than the hot water radiator.**

Natural gas higher calorific value = 10.946003 kWh/m3, Volume correction coefficient = 0.987296

Data obtained from the address http://www.igdas.com.tr as of October 2015. 10.946003 X 0.987296 X 0.264 = 2.853 kWh

PRODUCT CODE : GSM - 6

Power	Height	Length	Depth	Heated Area	Weight
1800 Watt	570 mm	540 mm	170 mm	32 - 38 m2	30 Kg

Color Options

GST-01 GST-02 GST-03 GST-04 GST-05

www.germoteknik.com

GS - 3

Germo Stein
Combines Heating and Comfort!

Germo Stein®
Electrical Panel Rock Thermal Battery System

Germo Stein is a heating system created by combining different rock and metal particles formulized with superior design nano technology. ***Germo Stein*** reaches a homogenous surface temperature upon heating up quickly.

The basic function of ***Germo Stein*** System is to offer more effective heating with minimal energy and prevent excessive energy consumption, thanks to high thermal efficiency to minimize investment costs. In addition to the contribution it provides to nature and our economy through energy savings, ***Germo Stein*** Battery Systems are modernistic state-of-the-art products that are clean with their flat surfaces, having a hygienic and ergonomic structure.

Germo Stein Panel Rock Thermal Battery System. Operated with electrical power. Transfers the delivered energy to the environment completely as heat, without requiring additional installations and devices.

In addition, the Panel Rock Thermal Battery stores the heat within itself and continues to deliver heat in case of power failure. Thus, various architectural issues in terms of aesthetics are solved in the implementation of heating projects.

PRODUCT CODE : GS - 3

Power	Height	Length	Depth	Heated Area	Weight
900 Watt	570 mm	540 mm	70 mm	14 - 20 m2	15 Kg

Color Options

GST-01 GST-02 GST-03 GST-04 GST-05

www.germoteknik.com

GS - 4

Germo Stein is Modern, Stylish and Aesthetical

Germo Stein®
Electrical Panel Rock Thermal Battery System

In the results of tests performed at independent laboratories by Europe's renowned test institute TÜV Rheinland and ***ISTANBUL TECHNICAL UNIVERSITY***, the efficiency and reliability of ***Germo Stein*** Panel Rock Thermal Battery System was proven.

Since the Specific heat of ***Germo Stein***'s Raw Material is low, it offers maximum heat in every area with low energy consumption, thanks to "panel rock thermal battery". Providing a distinctive atmosphere for spaces with modern and elegant design, it offers its users wider spaces. Having front and rear surfaces with identical properties offers a well-balanced heat distribution advantage.

Possessing superior technical properties, ***Germo Stein*** Panel Rock Thermal Battery is a product which meets all needs that can be expected from a radiator. It has a design which offers elegance to any kind of space with its flat surface and clear lines. Also, models which are designed as mobile heaters offer users an optional and convenient usage area without requiring installation work.

PRODUCT CODE : GS - 4

Power	Height	Length	Depth	Heated Area	Weight
1200 Watt	570 mm	680 mm	70 mm	20 - 26 m2	20 Kg

Color Options

www.germoteknik.com

GS - 5

Germo Stein
is the Right Place for Heating Technology

Germo Stein®
Electrical Panel Rock Thermal Battery System

A number of air cells were designed on the surface area of ***Germo Stein*** Panel Rock Thermal Battery System for air circulation, by taking engineering and geometrical calculations into consideration. At the same time, the air heats up effectively and is transferred to the environment upon reaching its maximum velocity thanks to aluminum cells.

Resistors for conventional electrical heaters available on the market operate at high temperatures. Another of their disadvantages is the decrease of oxygen and drying of air, since the air is continuously in contact with the high temperature surfaces of the resistors.

Since the resistors in ***Germo Stein*** Panel Rock Thermal Battery System are embedded into the rock layer, the air is heated without coming into contact with high temperatures.

PRODUCT CODE : GS - 5

Power	Height	Length	Depth	Heated Area	Weight
1500 Watt	570 mm	820 mm	70 mm	26 - 32 m2	25 Kg

Color Options

GST-01 GST-02 GST-03 GST-04 GST-05

www.germoteknik.com

Germo Stein

Germo Stein Heat from Rock: Healthy Product, Healthy Life

Germo Stein ensures humidification of air with its specially designed operation system. Apparent temperature increases and dry air issue is eliminated.

- Specific densities of bacteria and suspended dust particles, which are present in every environment, are increased through humidification and thus allowed to fall down.
- Since burn up of particles and bacteria is prevented during the heating operation, disturbing odors are also eliminated.
- Thus, the environment remains clean and fresh. Soot and dirt on the walls, windows and curtains are eliminated.
- A cleaner environment is ensured for elderly people and children with asthma.

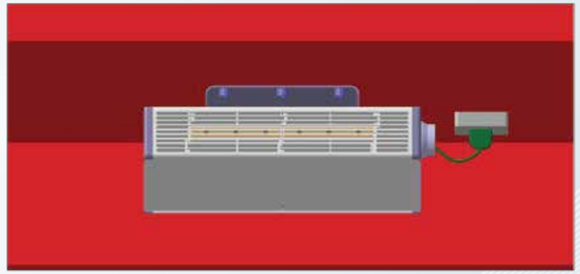
Nature Friendly *Germo Stein*

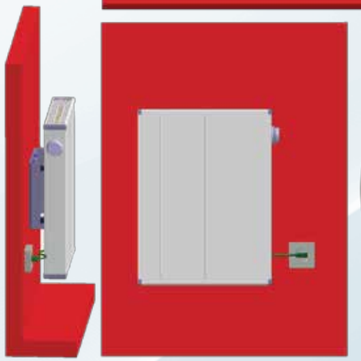
Germo Stein Panel Rock Thermal Battery System operates on electricity.

Therefore, it does not emit carbon and is a nature-friendly product. It is made of natural materials suitable for recycling.

Panel Rock Thermal Battery equipped with unique Nano technology also offers ergonomic advantages to users, with its quick-heating and slow-cooling properties.

Easy to Install, Low Investment Cost





Germo Stein heaters are installed easily and maintenance-free. They create an odor free and clean environment. They operate quietly without causing visual and noise pollution.

Units which consume space such as boilers, combi boilers, fuel tanks, external units and piping in other heating systems are not needed.

Convenient Operation with Potentiometer

Germo Stein Panel Rock Thermal Battery System is designed to allow settings on the basis of a 24 hour operation principle and control of the system via potentiometer. The surface temperature option ranges between 0 °C -90 °C and can be set independently. Also, using a room thermostat the temperature of the room is kept constant, thus, the most effective heating is offered with the least amount of energy, offering both maximum savings and maximum efficiency.

Germo Stein Usage Areas

Everywhere from houses to boats, from factories to offices...

Apartment blocks, villas, offices, construction site containers, prefabricated houses, hospitals, vessels, yachts and factories... in short, all indoor and semi-indoor areas. ***Germo Stein*** is ideal for any place where heating is needed.

Its elegant look and the convenience of its functional installation allow the user to enjoy the privilege in any space.

Germo Stein

Offers A Lot Of Advantages.

- Heat to be applied in order to increase the temperature of 1kg of water by 1°C is 1kcal.
- Heat to be applied to increase the temperature of 1kg of Germo Stein's raw materials by 1°C is 0.16 Kcal.
- ***Germo Stein*** offers effective and quick heating with less energy.
- ***Germo Stein*** translates into lower costs and increased comfort.
- It offers maximum efficiency and the most effective heating with its dual surface structure.
- It provides comfortable living areas.
- It is easy and safe to use.
- It reduces initial investment cost.
- It offers hygiene with its flat surface.
- It is environmentally friendly.
- It poses no danger of intoxication and fire.
- It does not need details such as piping and installation, which are aesthetically unappealing.
- It is easy to install. When desired it can be moved and mounted in another place. A mobile version is available.
- ***Germo Stein*** completely against manufacturing defects, including all parts and labor are guaranteed for 2 years.

CERTIFICATE

TÜVRheinland

of Conformity
Low Voltage Directive 2006/95/EC

Registration No.: AN 60103699 0001

Report No.: 27121958 001

Holder: GERMO TEKNİK SAN.VE DIŞ TİC.LTD.ŞTİ.
ALKOP SANAYİ SİTESİ
AKÇABURGAZ MAH.1592 SOK.A/7 NO:21
ESENYURT-İSTANBUL
Türkiye

Product: Electric Room Heater
(Fixed room heater)

Identification: GS-3, GS-4, GS-5

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence Holder's disposal. This is to certify that the tested sample is in conformity with all provisions of Annex I of Council Directive 2006/95/EC, in its latest amended version, referred to as the Low Voltage Directive. This certificate does not imply assessment of the series-production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex III of the Directive.

Certification Body

Date

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may be used if all relevant and effective EC Directives are complied with. CE

T.C.
TÜRK PATENT ENSTİTÜSÜ
FAYDALI MODEL BELGESİ

No: TR 2014 07876 Y

Prof. Dr. Habip ASAN
Enstitü Başkanı

T.C.
TÜRK PATENT ENSTİTÜSÜ
MARKA TESCİL BELGESİ

GERMOSTEIN

Prof. Dr. Habip ASAN

DS NO: 2105/3268 23.10.2015

REPORT

HOT WATER RADIATOR AND ELECTRIC RADIATOR THERMAL CAPACITY AND PERFORMANCE TEST

Test Location: Istanbul Technical University, Faculty of Mechanics, O. F. Genceli Heat Technique Laboratory.
Test Requested by: GERMO TEKNİK Sanayi Ve Diş Ticaret Limited Şirketi

Tested Material: Two radiators (2 pieces), one hot water radiator and one electric radiator, which were submitted by the party requesting the test, were tested. The party requesting the test declared that the electric radiator was their own product and its model name was GS-5. This radiator was affixed with the mark of the brand "Germo Stein® Paneltaş ısı enerji akü sistemleri" and its dimensions were 600mm (H) x 820mm (L) x 70mm (W). The capacity of the electric radiator is adjustable with the "dimmer switch" featured on it. The hot water radiator bore the mark of the brand REKOR and TSE (Institute of Turkish Standards) mark. Its dimensions were measured to be 600mm (H) x 810mm (L) x 100mm (W). During the tests, the adjustment of the capacity for the hot water radiator was made by adjusting the flow rate of the hot water circulating through it. Photos of the samples are provided in ANNEX-1.

Request for the Test: The hot water radiator and electric radiator submitted for testing were requested to be tested at the same capacity, to determine the electrical energy consumption of the hot water radiator and electric radiator, respectively, for heating purposes.

Test Method: Tests were performed at the Duscio Laboratory in İTÜ's Faculty of Mechanical Engineering, Department of Heat Engineering using a system established according to the "Closed Chamber Method", as described in TS EN 442-2-standard "Radiators and Convectors - Test Methods". Hot water was supplied to the hot water radiator through a heating boiler of 22kW capacity operated with an ON-OFF control included in the system; electrical energy to the single-phase electric radiator was supplied from the mains. Details of the test method are described in ANNEX-2.

Test Results: The measured temperatures and flow rates' mean values, as well as calculated capacity and consumption values for the tests performed are provided in ANNEX-3. Time-dependent changes of the values measured in the tests are provided as graphics in ANNEX-4. Samples will be retained at İTÜ's Faculty of Mechanical Engineering Heat Engineering Laboratory for a minimum period of two years.
Average conditions, radiator capacities, and energy consumptions in the performed tests are provided briefly in the following table.

	Air temperature outside of the chamber	Barometric pressure	Air temperature inside the chamber	Radiator capacity	Natural gas consumption	Active electricity consumption	Electric radiator power factor	Radiator external surface temperature at hottest point
	T_A, [°C]	P_A, [mbar]	T_o, [°C]	q_R, [W]	V_{DG}, [m³/h]	P, [W]	Cos φ	T_{Rmaks}, [°C]
Hot Water-Heated Radiator	30	1013	20.8	968	0.264			70.0
Electric Radiator	30	1013	20.6	968		968	0.848	88.0

Asst. Prof. Dr.
İ.Yalçın URALCAN

Research Assistant Senior Engineer
İbrahim H. TONYALI

Technician
Mehmet Z. KUMCU

Yukarıdaki imzaların
Y. Doç. Dr. İ. Yalçın URALCAN,
Araş. Gör. Yük. Müh. İbrahim H. TONYALI
ve Teknisyen Mehmet Z. KUMCU'ya
ait olduğu tasdik olunur.

Gülnar TÜRKASLAN
İTÜ Makina Fakültesi
Fakülte Sekreteri

Bu rapor, reklam amacıyla çoğaltılamaz, katalog, web sayfası vb. ortamlarda yayınlanamaz.