

# Self-powered intelligent Thermostatic Radiator Valve (iTRV)

Micropelt MVA 004

battery-free, wireless,  
maintenance-free



**micropelt**  
Energy harvesting.

# Self-powered intelligent Thermostatic Radiator Valve (iTRV)

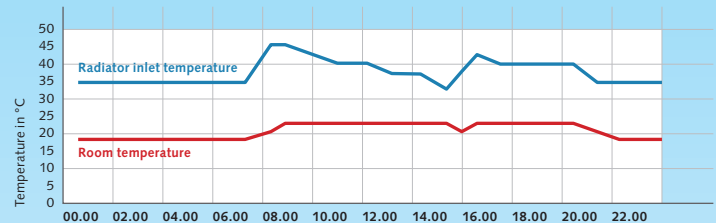
MVA 004



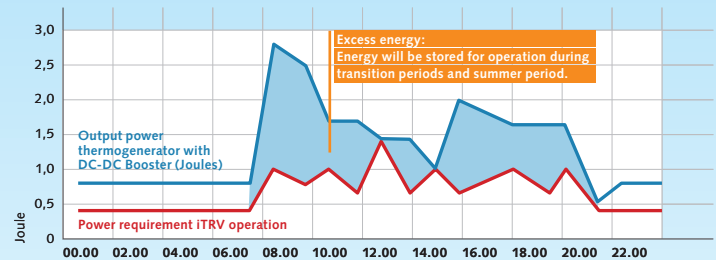
## Functions

- The thermogenerator converts temperature difference between radiator intake and ambient air into electricity.
- Excess energy generated in winter enables continuous operation during transition periods and summer.
- Maintenance-free operation on 365 days per year.
- Exact valve position guarantees precise room temperature.
- Communicates bi-directional with EnOcean radio EEP A5-20-01.
- Configurable through remote management/commissioning (ReMan/ReCom).
- Feedback information to visualize valve status and internal energy-management.
- Small, compact and lightweight: 55 x 95 mm (ø x d), 260 g.

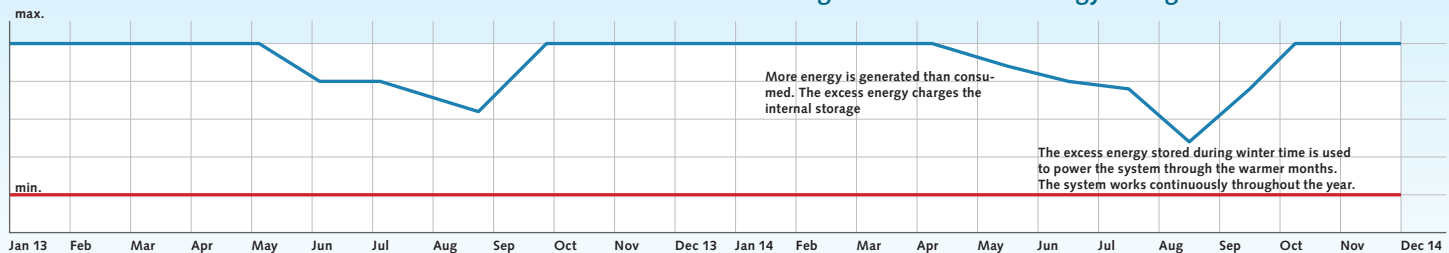
## Temperature difference in buildings



## Energy-budget



## Charge level of internal energy storage



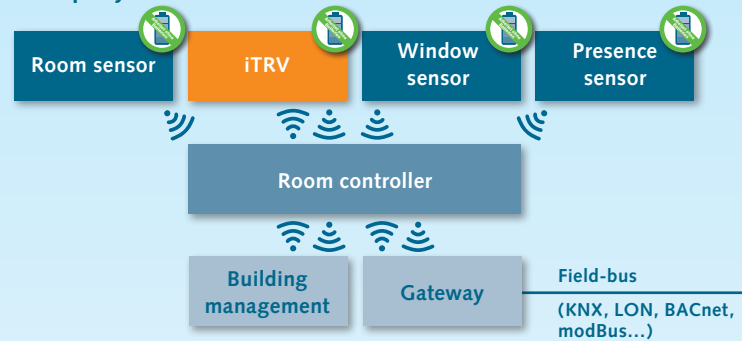
# Individual room temperature control

by wireless and battery-free sensors and iTRV

Compliant with EN15232  
Energy performance of buildings



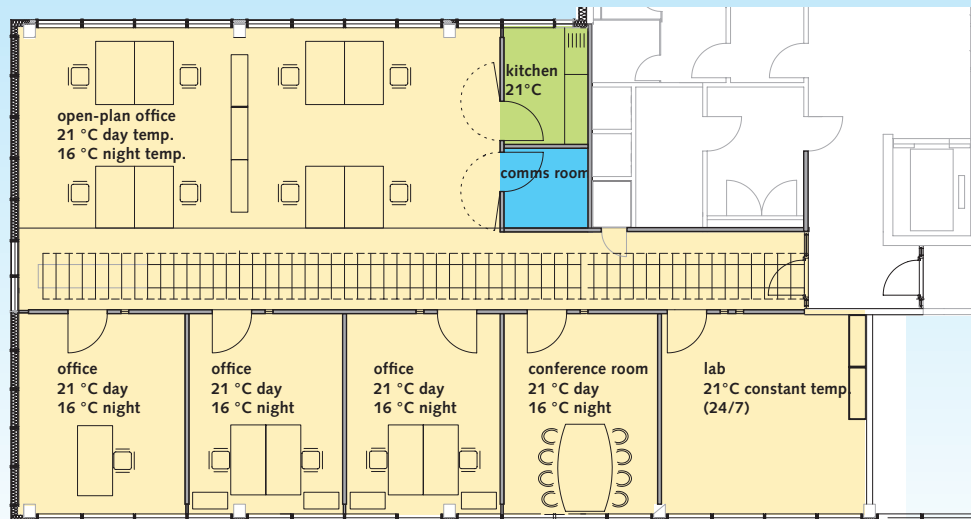
## Exemplary installation



## Benefits & Features

- 30 % energy-savings!
- Maintenance-free system, install and forget. The iTRV operates without batteries and wires!
- Retro-fit installation
- On demand, heating control for each room.
- Compatible with building automation systems through international EnOcean radio standard.

Individual room temperature control in office space:  
each room is heated individually according to demand.



# Energy Harvesting

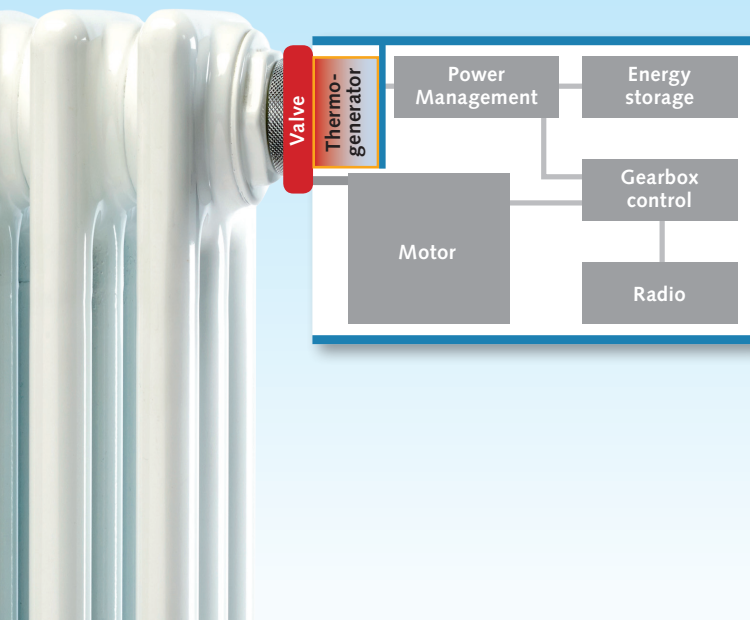
with Thermogenerator

# Technical Details



## Thermoelectric principle

- Thermogenerator converts temperature difference between radiator intake and ambient air into electricity.
- Energy Harvesting enables battery-free, maintenance-free and wireless operation by using radiator heat.
- Space saving, lightweight and retro-fit installation.
- Perfect for wireless sensor and actuator equipment for building automation applications.



## Technical details MVA 004:

Valve type:	M30 x 1.5
Adapters:	available for standard valve bodies
Calibration range:	> 5.0 mm
Operating range (0–100 %):	2.5 mm
Step width min.:	1%-steps (0.025 mm)
Travel speed:	0.95 mm/sec
Force in normal operation:	100N typical
Self-calibration:	automatically
Frequency:	868 MHz
Radio range:	approx. 30 m, depending on room situation
Radio protocol EnOcean (EEP):	A5-20-01 valve position %, target temperature °C
Feedback (EEP):	Charging condition, harvesting activity, valve position
Radio interval, normal operation:	every 10 mins
Radio interval after start-up:	every 10 sec during 10 mins
Radio failure interval:	1 h and protective position after 6 attempts at communication
Teach-in through remote management/ commissioning (ReMan/ReCom):	up to 3 gateways
Parametrization through ReCom:	Duty cycle (2/5/10 min) Offset ambient to target temperature internal temp. control loop
Feedback through ReCom:	Flow temperature (°C), storage voltage (V), harvesting voltage (V), RSSI
Control and temperature measurement:	yes
Temperature sensor accuracy:	+/- 0,5 K
Energy production min.:	90 standard heating days flow > 40°C
Freeze protection:	<6 °C valve on 50 %
Safety position:	>50 % valve opening
IP protection class:	IP4X
Ambient temperature during operation:	0 °C – 50 °C
Inlet temperature max.:	75 °C
Dimensions incl. valve adapter:	55 x 95mm (ø x d)
Weight:	260 g

## Micropelt – a brand of EH4 GmbH

Am Gansacker 10a  
D-79224 Umkirch, Germany  
Tel: +49 (0)7665 93 21 83-0  
e-mail: [info@micropelt.com](mailto:info@micropelt.com)  
[www.micropelt.com](http://www.micropelt.com)

