



Level



Pressure



Flow



Temperature



Liquid  
Analysis



Registration



Systems  
Components



Services



Solutions

## EngyCal<sup>®</sup> – The RH33 BTU meter and RS33 steam calculator



### Find your energy wasters

- Monitoring and billing of liquid or steam heat and cooling quantities
- Custody transfer approval per MID and EN 1434
- Bi-directional measurement in heating and cooling systems
- Remote display via Ethernet and fieldbus interface
- Electronic pairing of temperature sensors by means of individual sensor characteristic curves stored in the device



Look for our link emblem inside to access  
more information about Endress+Hauser and our products

Endress+Hauser



People for Process Automation

# Energy monitoring with EngyCal®

Energy costs represent a relevant competition factor for most companies. The price of energy has increased considerably within the last few years. The aim is, therefore, to minimize energy usage thus lowering energy costs.



Where can the energy wasters be found?  
Where is energy efficiently produced and used?  
Specifically the heating applications for the production of warm, hot water or process heat need to be looked at in detail.

## BTU meter EngyCal® RH33



The EngyCal® RH33 BTU meter is used to measure the heat and cold in plants with liquid energy carriers. Due to the excellent long-term stability and highest accuracy of the measurement the device contributes to the process optimization and cost control. Extensive data logging and evaluation software for data analysis show the potentials for cost reduction.

DEUTSCHER KALIBRIERDIENST **DKD**

Kalibrierlaboratorium / Calibration laboratory

Akkreditiert durch die / accredited by the  
Akkreditierungsstelle des Deutschen Kalibrierdienstes

Endress+Hauser **E31**

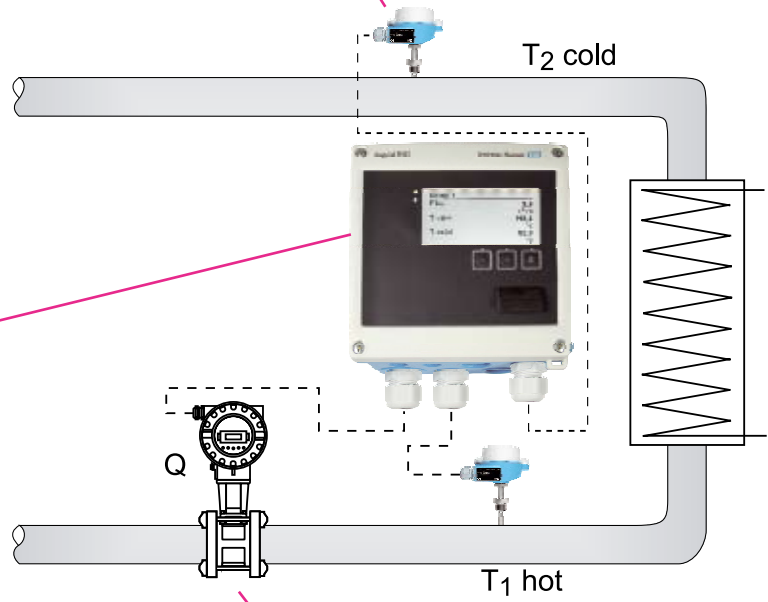


**Measuring temperature:**

- Highly accurate temperature measurement due to Callendar Van Dusen coefficient electronic sensor matching (especially for cold applications)
- Custody transfer, highly accurate calibrated thermometers with MID certification
- Customer defined calibration on request in our own DKD certified laboratory
- Industrial thermometers, cable sensors, ...

**EngyCal® RH33:**

- Applications with water, water glycol mixtures and other liquids such as thermal oils, etc.
- Industrial strength IP66 field housing
- Counter for energy, mass, volume, as well as two rate counters (8 rate models)
- Error quantity counter for transparency in case of fault or alarm
- Supervision of limit values with alarm report
- Communication interfaces for M-Bus, Modbus RTU, Modbus TCP, Ethernet TCP/IP
- Custody transfer approval according to MID and PTB type approval for BTU meters up to 572°F (300°C)
- Comprehensive data logging



**Measuring flow:**

Modern flow measurement technology from Endress+Hauser. These stand out due to high accuracy and reliability, low wear and tear, low aging and the reduction of hydraulic losses at the measurement point. EngyCal® RH33 supports all types of flowmeters.

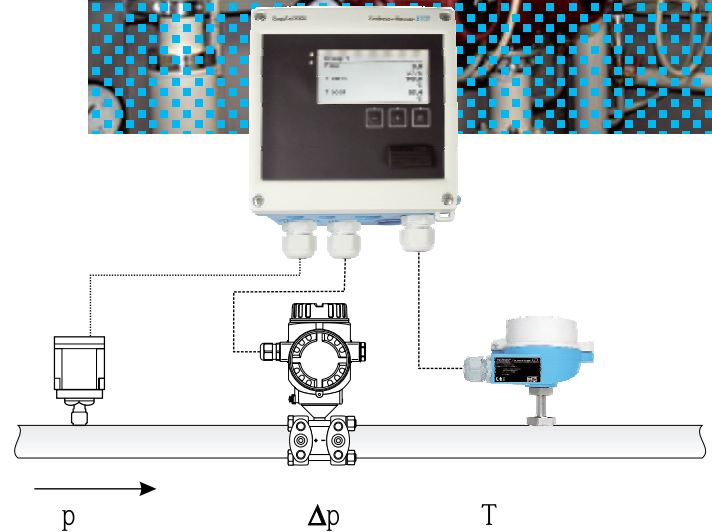
# Steam calculator

## EngyCal<sup>®</sup> RS33



EngyCal<sup>®</sup> RS33 records mass flow and the heat energy in steam or saturated steam applications. These are, for example, applications in the supervision of boilers or cleaning and sterilization processes in the food & beverage and pharmaceutical industries.

By the continuous calculation of density and enthalpy using international steam tables as well as integrated temperature and pressure compensation and wet steam alarm, highest accuracy and security is achieved. Process transparency is made possible by recording the complete data and by separate recording of steam or energy quantities during a possible alarm condition. For flow measurement according to the differential pressure method a fully compensated, iterative calculation, as per ISO 5167, guarantees highest accuracy under all process conditions.



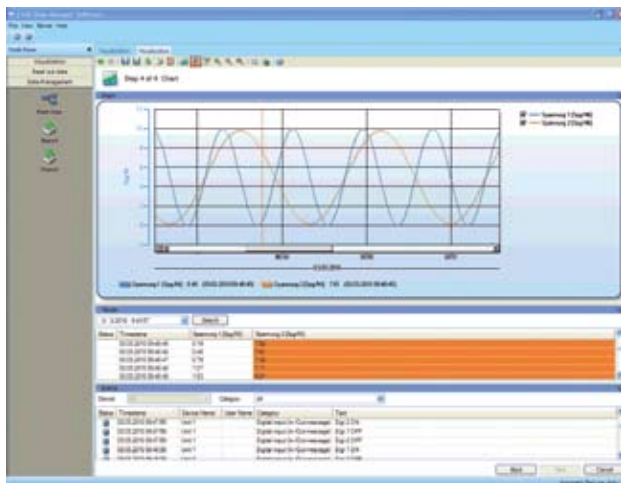
# Visualization software and database

## Field Data Manager Software



Do you want to compare measured energy values with target figures? Investigate and analyze peak values? Store and document process data manipulation freely and display this in an easily readable format?

The Field Data Manager Software operates using a central data management system which includes a number of visualization functions for historical data such as stored measurements, calibration history, and setup/configuration data.



Based on a SQL database data can be selected (device-dependent) and manipulation freely saved from the device using a variety of interfaces such as Ethernet, USB, SD card.

Extensive visualization possibilities give the stored data transparency. The user is automatically guided through the individual steps in the software which guarantees intuitive operation as well as a simple and fast report generation.

An integrated system service makes possible the automatic display and storage of data, automatic report generation, automatic manipulation protected export of data as well as automatic printouts, (also as .pdf files) or export in Excel or csv format.

Safety as regulated by FDA 21 CFR11, requires a complete audit trail in the device and in the software. This audit trail needs to be tamper proof. A user administration with user roles and password protection is required. This means each action of a user within the software has to be documented and can be found any time it is required by an auditor. All the above mentioned requirements are met by FDMsoftware, in a single installation (one user workstation) as well as in a client-server-solution.

## Technical data

Inputs	
Measurement type	1x current/pulse input (flow), 2x current/RTD inputs (temperature, pressure), 2x digital inputs (e.g. counter reset)
Measurement range	0/4 to 20 mA (+10% over range), Pt100, Pt500, Pt1000, frequencies to 12.5kHz, debouncing can be selected.
Outputs	
Output signal	Current/impulse output, 2x digital outputs (open-collector), Loop power supply output (24VDC +/-15%, max. 70 mA)
Relay output	
Relay type	2x normally open contacts
Max. switch load	AC: 250 V, 3 A; DC: 30 V, 3 A
Switch output	
Function	Limit value monitoring, alarm
Power supply	
Power supply	100-230 V (AC: -15%/+10%) or 24 V (DC: -50%/+75%; AC: +/-50%)
Environmental conditions	
Protection class	Field housing: IP66, NEMA 4X ; Panel mounted: IP65 front, IP20 rear; DIN rail: IP20
Special features	
Model	Wall/stand pipe mounting, panel mounted, IEC 60751 DIN rail mounted
Housing	Fiberglass reinforced plastic
Display elements	LCD dot-matrix (160x80) with white rear illumination, color change under fault conditions
Operation	3 front mounted push buttons; various operating languages selectable
Software	FieldCare, setup software, Field Data Manager Software for data visualization and manipulation protected data storage
Certificates and approvals	MID custody transfer certification (water) and PTB type approval for BTU meters. CE, UL listed, CSA GP
Interfaces	Front mounted USB (setup), Ethernet TCP/IP, Modbus TCP, Modbus RTU, M-Bus
Data storage	Minute, hour, day, month, year; min/max; alarms, two due dates.
Calculations	According to IAWPS-IF97
Temperature sensors	Pt100, calibrated and paired using CvD coefficients

## Temperature

Different processes require different solutions. Endress+Hauser offers an excellent and complete temperature portfolio. Our competence ranges from choice of material to production of the smallest primary sensor, electronics and up to a complete multipoint thermometer is available under one roof.

## Flow

Liquids and steam flow measurement is one of the most important areas in today's field instrumentation. Efficient and innovative devices from Endress+Hauser measure the flow. In order to operate both reliably and accurately under various conditions, we use different technological principles. This yields a unique range of flow measurement devices which covers almost all industrial requirements.



## Additional Information

Detailed information regarding the EngyCal® RH33 BTU meter and the RS33 steam monitor can be found in TI151R/24/en (RH33) and TI154R/24/en (RS33) technical information and at [www.us.endress.com/energymanager](http://www.us.endress.com/energymanager).

ISO 9001 Certified

02.10/SCUSA

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