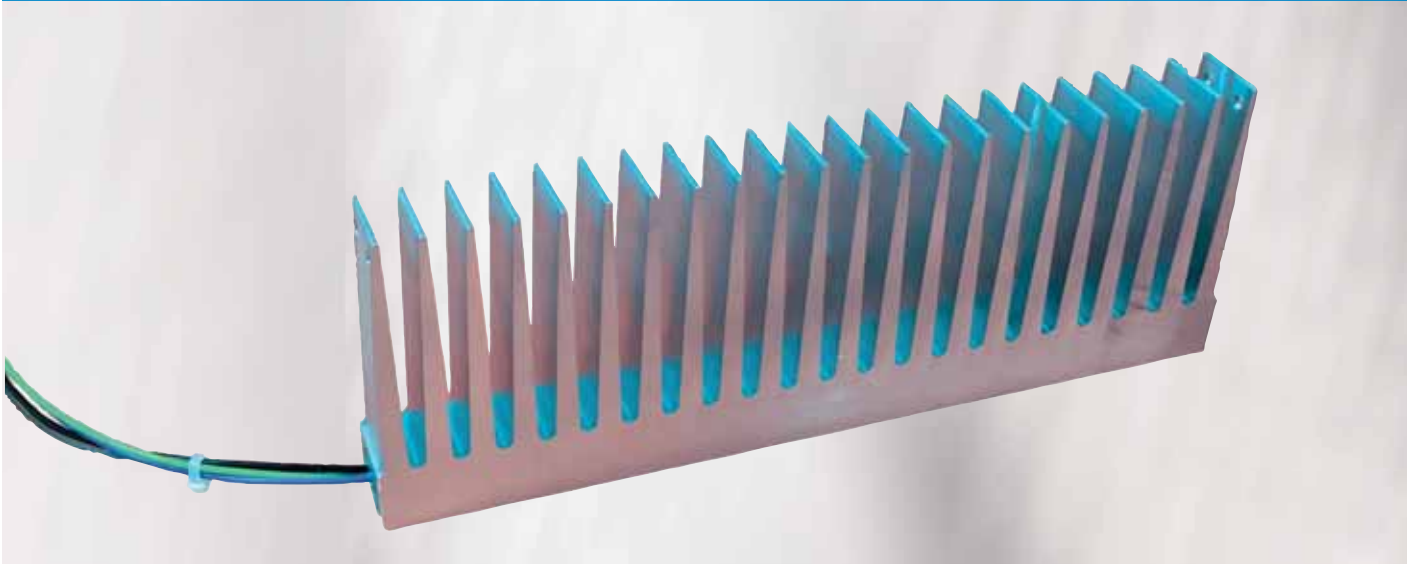


CEAG Products
Explosion protected distributions

CROUSE-HINDS
Series



Decentral Heating for Power Distributions
Ex-built-in heating for Zone 1



EATON

Powering Business Worldwide

Decentralized heaters for power distributions

Compact heater for direct mounting close to components for Ex Zone 1 and 2

Requirements for extremely cold regions

Explosion-proof products and components for use in extremely cold regions down to -55°C are subject to the requirements of explosion protection (thermal resistance, impact strength, etc.) as well as the functional characteristics at these low temperatures.

While explosion-proof housings are suitable for temperatures down to -55°C by means of design measures and material selection, manufacturers of residual current circuit breakers (FI) or line circuit breakers (LS) cannot ensure the safe function below -25°C / -45°C .

In order to use these products in the extreme cold regions, they must be kept within the specified temperature limits with the help of heaters..

Selection of heaters

In the past, **pipe heating systems** have often been used to heat components, but thermo scans have proved that this is insufficient. In particular, there is minimal heat transfer from the heating cables to the internal air, meaning the electrical components are not properly heated.

Self-regulating central heaters

require space and are only available with low power ratings due to their design. Since the heat is transferred to the components by convection, sufficient air flow space within the system must be added.

This often results in heat accumulation which can only be re-

duced by adding free slots within the installation area, increasing the overall size of the switchgear. Still, even with extra air flow space, equipment mounted around the enclosure corners will not be sufficiently heated by convection.

Decentralized heating - the solution

A heater installed directly in the vicinity of the components can heat them homogeneously without the need for large convection paths. A direct heat transfer to the product increases the number of available mounting spaces per enclosure and reduces the necessary enclosure size.

Eaton has set a **milestone** here, in which climate data of facility sites in cold temperature regions were analysed. The analysis was used to define worst case parameters in extensive investigation, heat calculations and thermal simulations.

The result is an optimized, decentralized heating system, which ensures the necessary internal temperature of the components, even under adverse conditions such as 5m / s wind speed and -55°C ambient temperature, while still saving energy!

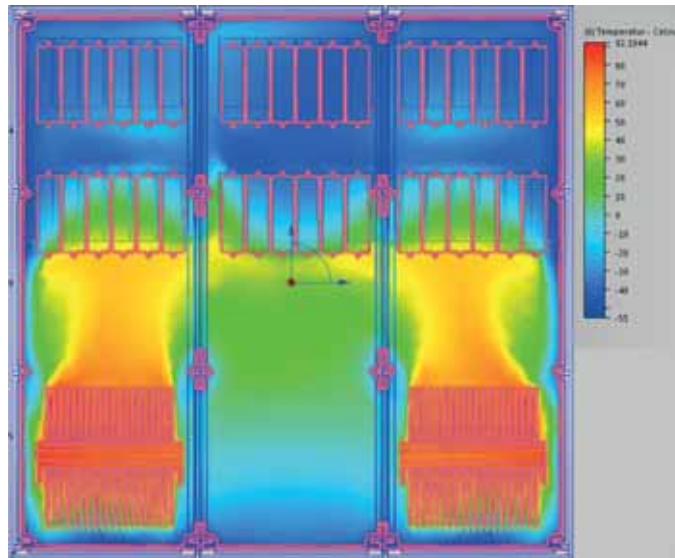
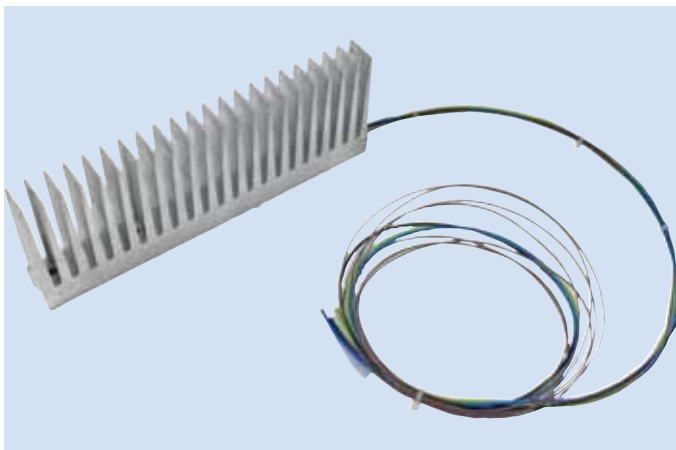


Figure 1: Heat distribution with traditional centralized heating at $T_{\text{amb}} = -55^{\circ}\text{C}$. Note the heat accumulation at the bottom row and insufficient heating of the components at the top of the enclosure.



Features

- Constant output power, easy to control
- Cost-effective design
- Perfect heat conduction
- Decentralized heaters, therefore no need for airflow
- No hot spots
- Thermostat integrated for failure
- Easy installation with integrated system components
- Energy saving
- Approved according to ATEX, IECEx and TRCU (EAC) for worldwide use and all current mains voltages

Decentralized heaters for power distributions

Same heat distribution

Irrespective of the component mounting position, the same heat distribution is achieved everywhere by the decentralized heating system.

Safe tripping due to defined working temperature

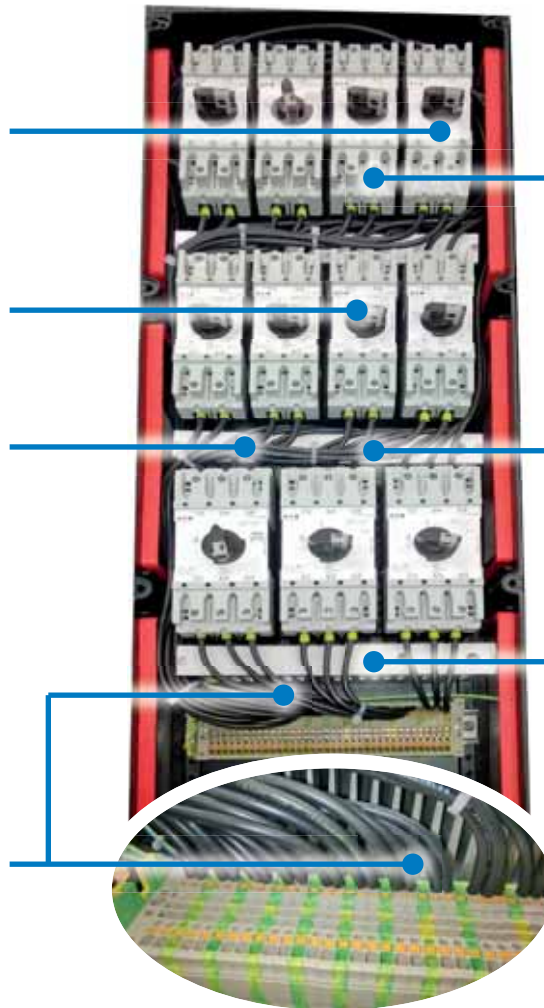
All safety components work within the temperature range guaranteed by the manufacturer. No dangerous blockages due to hardened lubricant.

Compact size

Because the decentralized heater is compact and easy to install, the wiring can be installed as usual.

Terminals

The connection terminals are fully populated as the space requirement of the heating is low.



Full assembly possible

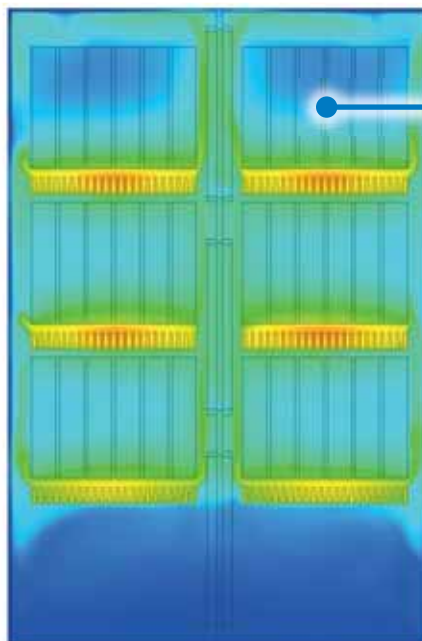
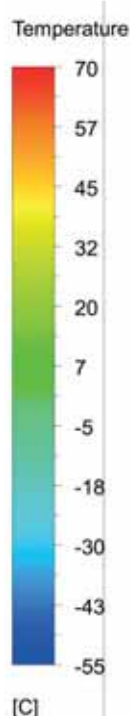
Since only the equipment mounted directly in the vicinity is heated, no free spaces for convection need be provided.

Space savings

The decentralized heating system enables up to 30 % space savings in comparison to a traditional centralized heating. In practice this allows smaller enclosures for the same function.

No convection necessary to distribute heat, so the switch-gear size is smaller

The decentralized heating only heats the areas where the heaters are installed. This saves energy costs against a central heating system.



Safe operation thanks to our know-how

Hundreds of test setups, thousands of simulation calculations and the know-how of a world market leader in terms of explosion protection guarantee you and your plant the safe operation at all times, even under the most adverse environmental conditions such as high wind speeds with simultaneously lowest ambient temperatures down to -55 ° C.

In this simulation, this extreme case has been adopted and both the calculations and the subsequent experimental setup confirm proper heating so that electrical components operate safely.

All temperature-sensitive components such as MCBs or RCDs operate at temperatures above -20 ° C.

Figure 2: Heat distribution with new decentralized heating at Tamb = -55C. Note the consistent heating of all components to their safe operating temperature.



Eaton's Crouse-Hinds Business

The safety you rely on.

See the complete offering of Hazardous and Industrial Products at www.crouse-hinds.de.

**U.S. (Global Headquarters):
Eaton's Crouse-Hinds
Business**

1201 Wolf Street
Syracuse, NY 13208

(866) 764-5454
FAX: (315) 477-5179
FAX Orders Only:
(866) 653-0640

CrouseCustomerCTR@Eaton.com

For more information:

If further assistance is required, please contact an authorized Eaton Distributor, Sales Office, or Customer Service Department.

Australia

Phone +61-2-8787-2777
Fax +61-2-9609-2342
crousehindsanz@eaton.com

China

Phone +86-21-2899-3600
Fax +86-21-2899-4055
ECHsales@eaton.com

Great Britain

Phone +44-247-630-89 30
Fax +44-247-630-10 27
sales5@eaton.com

India

Phone +91-124-4683888
Fax +91-124-4683899
cchindia@eaton.com

Canada

Toll Free +1-800-265-0502
Fax +1-800-263-9504
Fax orders only:
+1-866-653-0645

Korea

Phone +82-2-3484-6783
Fax +82-2-3484-6778
CCHK-sales@
cooperindustries.com

**Mexico/Latin America/
Caribbean**

Phone +52-555-804-4000
Fax +52-555-804-4020
mxmercadotecnia@cooperindustries.com

Spain

Phone +34-9-37362710
Fax +34-9-37835055
sales.CCH.es@cooperindustries.com

Middle East (Dubai)

Phone +971-4-427-2522 / 2500
Fax +971-4-429-8521
CHMEsales@Eaton.com

The Netherlands

Phone +31-10-2452145
Fax +31-10-2452121
CHRD_mail@Eaton.com

Norway

Phone +47-32-244600
Fax +47-32-244646
CHLloffice@eaton.com

Singapore:

Phone +65-6645-9888
Fax +65-6297-4819
CHSI-Sales@Eaton.com

Turkey

Phone +90-216-464-20-20
Fax +90-216-464-20-10
infoEGTurkey@eaton.com

Russia

Phone +7-495 510-24-27
Fax +7-495 510-24-28
info@cooper.ru.com
www.cooper-russia.ru

Eaton's Crouse-Hinds Business

Neuer Weg – Nord 49
D-69412 Eberbach

Phone +49 (0) 6271/806-500
Fax +49 (0) 6271/806-476
E-mail info-ex@eaton.com
Internet www.crouse-hinds.de

Eaton

1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

© 2017 Eaton Corporation
All Rights Reserved
Printed in Germany
Publication No. BR 300 8000 XXXX
August 2017

Changes to the products, to the information contained in this document, and to prices are reserved; so are errors and omissions. Only order confirmations and technical documentation by Eaton is binding. Photos and pictures also do not warrant a specific layout or functionality. Their use in whatever form is subject to prior approval by Eaton. The same applies to Trademarks (especially Eaton, Moeller, and Cutler-Hammer). The Terms and Conditions of Eaton apply, as referenced on Eaton Internet pages and Eaton order confirmations.

Eaton's Crouse-Hinds Business

1201 Wolf Street
Syracuse, NY 13208
(866) 764-5454
CrouseCustomerCTR@Eaton.com

Eaton is a registered trademark.

All other trademarks are property of their respective owners.



Powering Business Worldwide