



# KEM-Leitprojekt SEM-Online - Smartes Energie-Management Online

## Fotodoku

**Schulungs- und Vernetzungstreffen der Klima- und Energie- ModellregionsmanagerInnen**  
Fachveranstaltung 1/2023 - 03.& 04.Oktober 2023 in der KEM Weiz-Gleisdorf (Kunsthhaus Weiz)

**16:30 Uhr**

Marktplatz - Dies & Das	
Gemeindeoffensive - Beiträge, die in den KEMs gebraucht werden	Klima- und Energiefonds
Schlau mit Agri PV	Irene Schrenk, KEM Energie <sup>3</sup>
IÖB Toolbox	Christian Praher, Austrian Energy Agency
Freiflächen-Photovoltaik – Schlüssel zur Stromwende?!	Christian Hütter, KEM Weiz-Gleisdorf
KEM Leitprojekt: SEM Online: Smartes Energiemanagement online	Michael Lamprecht, KEM Energie-Erlebnisregion Hügelland

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unterstützt durch:



	<p>Christian Hütter, KEM Weiz-Gleisdorf Josef Gerstmann, KEM Top 3 Zukunftsregion Wolfgang Weiss, AEE Intec Jasmin Pflieger, AEE Intec</p>
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Abbildung 1: KEM-Fachveranstaltung 2023 - Programmauszug



Abbildung 2: KEM-Fachveranstaltung 2023 - Austausch zu SEM-Online



Abbildung 3: KEM-Fachveranstaltung 2023 - Beratung zu SEM-Online



## ISEC 2024

3<sup>rd</sup> International Sustainable Energy Conference 2024, 10. & 11. April 2024 im Messecongress Graz

### Poster Session - Hall 5 / Saal 12b

Linking Renewable Energy Projects at Municipal Level with NECP Planning and Reporting  
Dr. Susanne Geissler, SERA global GmbH, AT

On Efficient Solar District Heating Systems – Status and Latest Results  
Dr. Markus Gölles, BEST, AT

Greenlab Designer Lite - A Tool to Assist the Energy Symbiosis Design of Industrial Parks  
Prof. Dr. Ma Zheng Grace, University of Southern Denmark, DK

H2REAL – Building a Hydrogen Valley  
Sascha Grimm, Wien Energie, AT

Energy storage in historical buildings using AI applications  
Dr. Abolfazl Hayati, University of Gävle, SE

Photovoltaic and Solar-Thermal Use Case Application Comparison with Witness Simulation and DCF Analysis  
FH-Prof. Dr. Bernhard Heiden, Carinthia University of Applied Sciences, AT

Towards a Digital Representation of Building Systems Controls  
Sebastian Herkel, Fraunhofer ISE, DE

Optimizing Heat Pump Operation of Residential Buildings using Calibrated R-C and Machine Learning Models  
Pablo Hernandez-Cruz, University of the Basque Country, ES

SOLCUBEGRAZ – Livinglab Including Renewable Heating and Cooling in an Urban Environment  
Dr. Bernd Humpl, VTU Engineering, AT

SEM-Online – Smart Energy-Management Online for SMES  
Christian Hütter, KEM Weiz-Gleisdorf, AT

Abbildung 4: ISEC 2024 - Programmauszug



Abbildung 5: ISEC 2024 – Postergalerie © Miriam Raneburger



Abbildung 6: ISEC 2024 – Postergalerie © Miriam Raneburger



# SEM - Online

## Smart Energy Management Online for SMEs

MMag. Christian Hütter, KEM Weiz-Gleisdorf; DI Michael Lamprecht, KEM Energie-Erlebnisregion Hügelland;  
DI Josef Gerstmann, KEM Top 3 Zukunftsregion; Mag. Robert Gether MBA, Businessregion Gleisdorf;  
DI DI Jasmin Pflieger, AEE INTEC; DI Dr. Wolfgang Weiß, AEE INTEC

Abbildung 7: ISEC 2024 - Video-Screenshot Nr. 1



Energiemaßnahmen für KMUs



Registrieren



Erste Maßnahmenvorschläge

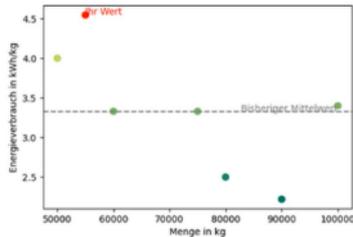
Figure 1

Homepage SEM-Online

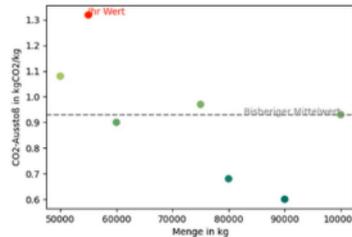
Abbildung 8: ISEC 2024 – Video-Screenshot Nr. 2

Benchmarks

Status Quo:



Ihr Energieverbrauch beträgt **4,55 kWh/kg**. Damit bewegen Sie sich **über** dem Durchschnitt Ihrer Branche.



Ihr CO<sub>2</sub>-Ausstoß beträgt **1,32 kgCO<sub>2</sub>/kg**. Damit bewegen Sie sich **über** dem Durchschnitt Ihrer Branche.

Figure 5

Example of the Benchmark Section in the Dashboard

Abbildung 9: ISEC 2024 – Video-Screenshot Nr. 3



## SEM-Online – Smart Energy Management Online for SMEs

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DI Josef Gerstmann, KEM Top 3 Zukunftsregion; Mag. Robert Gether MBA, Businessregion Gleisdorf;  
DI DI Jasmin Pfleger, AEE INTEC; DI Dr. Wolfgang Weiß, AEE INTEC

### Introduction

Small and medium-sized enterprises (SMEs) are a key success factor for the energy transition. To tap into this potential and support companies on their path to climate neutrality, the three climate and energy model regions (**KEM Weiz-Gleisdorf**, **Energie-Erlebnisregion Hügelland** and **Top 3 Zukunftsregion**) are implementing the "SEM-Online" project together with **AEE INTEC** and the **Businessregion Gleisdorf**. The resulting tool should enable SME companies to receive initial suggestions for measures to improve their energy supply with just a few entries, which can be analysed in more detail with additional information later.

### Two-level tool approach

The tool operates on a two-level approach, as shown in Figure 1.

- (1) The first input form requires minimal data to provide a low threshold for companies. A **machine learning algorithm** is then used to suggest and evaluate measures based on the input. These measures may involve changing the heating supply to solar thermal heat or utilizing a heat pump for heat recovery. **Benchmarks** are calculated and displayed based on typical sector quantity measurements, such as the amount of flour used in bakeries (kg). These results are presented on a dashboard (see Figure 3).
- (2) For a more detailed analysis, level 2 is implemented, which requires additional data input to calculate a more **comprehensive proposal of the selected measure**. Companies can then evaluate the results and determine their applicability. If the company agrees, the data will be checked by experts at AEE INTEC and then integrated into the SEM-Online database to improve the machine learning algorithm.

From minimal input data to possible improvement measures – in two levels.

The impact of a detailed measure calculation on the benchmarks is then shown in the dashboard and the company can download the information and use it as a **starting point** for a possible implementation of the measures.

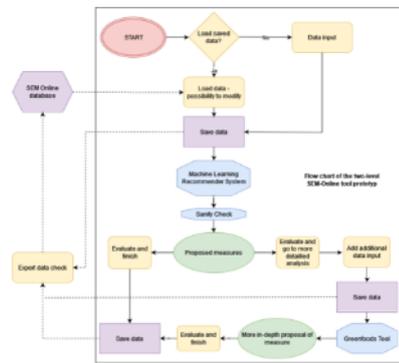


Figure 1: Flow chart of the SEM-Online tool logic.

### Demonstration of tool functionalities

The following screenshots display various aspects of the SEM-Online tool. Figure 2 illustrates the solar thermal heating calculation example page, while Figure 3 presents the benchmark section of the proposed dashboard. This section serves as an overview for the user to consolidate the results from the proposed measures and their detailed calculations, as well as to demonstrate the impact of the different proposed measures on the company's Status Quo benchmarks. The screenshot shows that companies can include any measures they have already taken to improve their data set. The tool is designed for Austrian SMEs, so the screenshots are in German.



Figure 2: Example of the solar thermal heating calculation

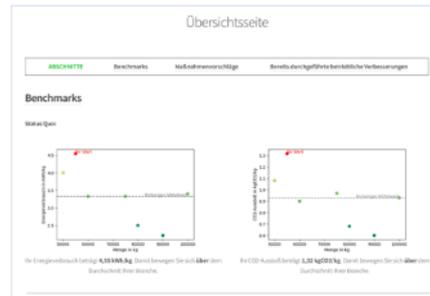


Figure 3: Example of the benchmark section in the dashboard

### Conclusio & Outlook

The tool will be extended by the implementation of further detailed analysis algorithms from the GREENFOODS tool, a previously established calculation tool for renewable energy integration. Additionally, the corresponding funding possibilities for the proposed measures will be integrated to provide companies with an overview. A business model for the future development of the tool is currently being investigated.

Klima- und Energie-Modellregionen  
Wir gestalten die Energiewende

ACKNOWLEDGMENT  
The project was commissioned as a flagship project of the listed KEM regions and funded by the Climate and Energy Fund.

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Abbildung 10: ISEC 2024 - Poster

**Treffen der Standortmanager:innen, Regionalmanagement Oststeiermark**  
01.10.2024 in Fürstenfeld



Abbildung 11: Standortmanagement, Foto



## KEM-Leitprojekt

### SEM Online

Smartes Energie Management Online

#### Industrielle Systeme



www.aee-intec.at

AEE – INSTITUTE FOR SUSTAINABLE TECHNOLOGIES

Abbildung 12: Standortmanagement-Treffen, Präsentationsauszug Nr. 1



