



MILESTONE 1.2

1. GENERAL INFORMATION

PROJECT: SECONDARY SCHOOL SOLITUDE-GYMNASIUM

CONTEXT: STUTTGARD, GERMANY

ORIGINAL USE: SCHOOL 1970

USE: SCHOOL

DESIGNER(S): ND

COMPLETION DATE: 2014



KEYWORDS: Monitoring technology, Communication technology, the Reduction of Energy Consumption, Building envelope, Ventilation systems, Indoor environmental quality, Indoor air quality



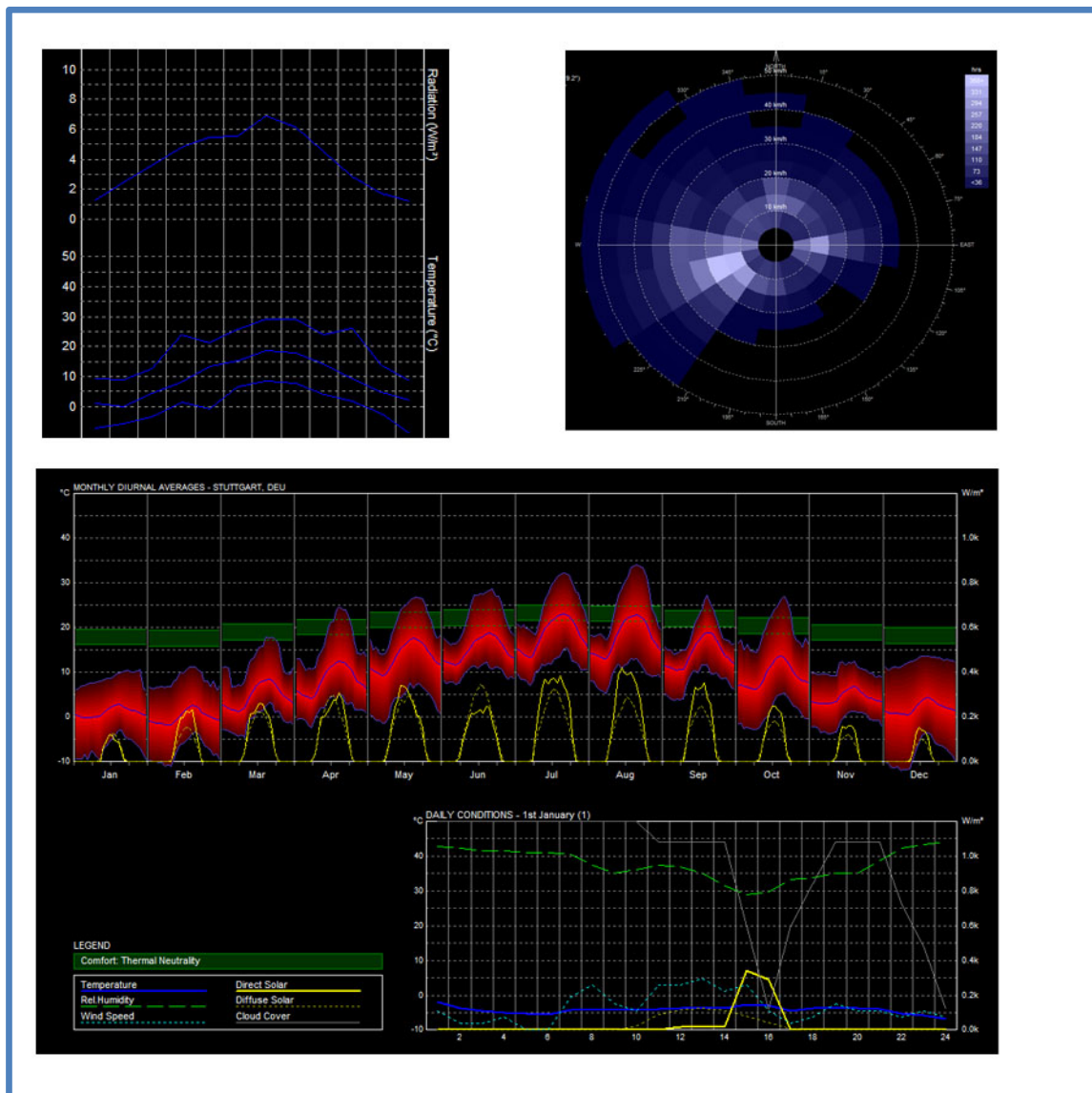
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2. CLIMATIC FEATURES

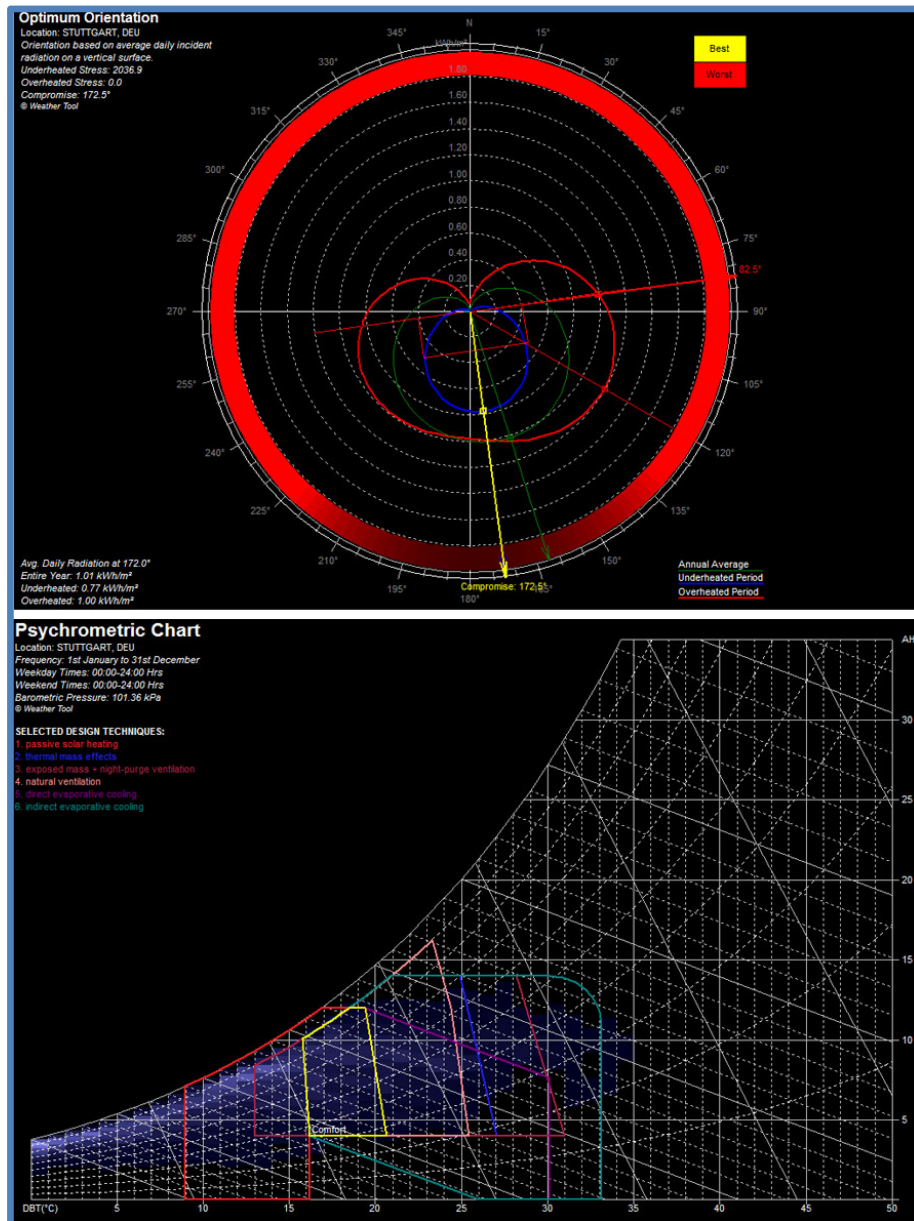
CLIMATE SUMMARY:

- MONTHLY DATA: RADIATION (W/mq); MAX, MID, MIN TEMPERATURE °C
- PREVALLING WIND (WIND FREQUENCY – Hrs)
- HOURLY DATA – MONTHLY DIURNAL AVERAGES
- DAILY CONDITION (1ST JAN



3.BIOCLIMATIC FEATURES

- OPTIMUM ORIENTATION
- COMBINATION OF PASSIVE ENERGY STRATEGIES



4. URBAN AND/OR BUILDING FEATURES

The Solitude-Gymnasium is a secondary school located in the north-western outskirts of Stuttgart. The entire school had to be renovated because of structural damages at the buildings. Since the energy consumption of the building was very high in comparison to other schools of Stuttgart an energy retrofit was planned. By means of the financial support of the European Commission within the project “School of the Future – Towards zero emission with high performance indoor environment” the total school will be improved in order to decline the energy consumption crucially. The objective of the project for the demonstration partner City of Stuttgart is to reduce the total energy consumption of the Solitude-Gymnasium by the factor 3 and the heat consumption by 75 %. Besides the indoor environmental quality within the class rooms will be improved.

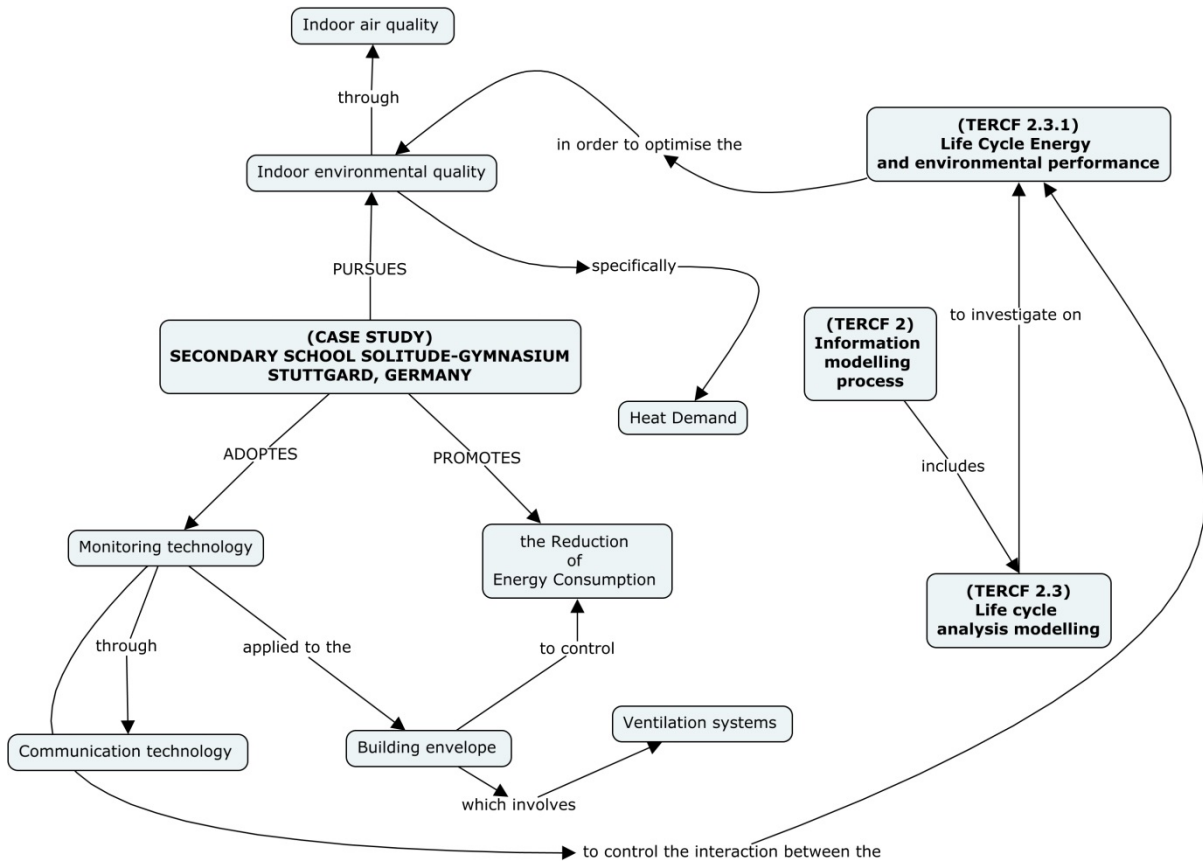


Building	Component	U-value [W/m²K]	Technology
Big pavilion	Walls	0.23	ETICS/curtain wall facade (14 cm of PS/MW)
	Main roof	0.19	16 cm of expanded polystyrene (EPS)
	Middle roof	0.20	14 cm of EPS
	Windows north	0.90	Triple-glazed
	Windows south	1.30	Double-glazed
	Glazed façade hallway	1.20	Double-glazed
Building of scientific classes	Walls	0.18	ETICS/curtain wall facade (18 cm of PS)
	Roof	0.15	22 cm of EPS
	Dome lights	1.10	
	Windows	0.90	Triple-glazed
Main building	Glazed façade	0.70 glazing 1.20 frames 0.30 panels	Triple-glazed
	Walls	0.18	ETICS/curtain wall facade (18 cm of PS)
	Roof	0.17	19 cm of EPS
Gym	Windows	0.90	Triple-glazed
	Walls	0.18	18 cm of mineral wool (MW)
	Roof	0.20	17.5 cm EPS
	Windows	0.90	Triple-glazed



5. FOCUS QUESTION AND MAP

How to manage energy consumption?





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6. REFERENCES

Stephan Kempe, Christoph Höfle, Jürgen Görres, Heike Erhorn-Kluttig, Hans Erhorn, Heinz-Michael Beckert, School of the Future: Deep renovation of the Solitude-Gymnasium in Stuttgart, Energy Procedia 78 (2015) 3312 – 3317



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