



Energy Design Guide for Metal Building Systems

Second Edition



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Cleveland, Ohio 44115

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PREFACE

The MBMA Energy Design Guide for Metal Building Systems is a culmination of all of the pertinent information on how to design, construct, and maintain metal buildings to be energy efficient.

Most municipalities in the United States have adopted an energy code. This guide is a resource for informing building owners, architects, specifiers, contractors, builders, and metal building manufacturers about the compliance options for satisfying the building envelope provisions of these energy codes.

The use of this Guide is totally voluntary. Each building manufacturer or designer retains the prerogative to choose its own design and commercial practices and the responsibility to design its building systems to comply with applicable specifications and contract documents.

Although every effort has been made to present accurate and sound engineering and design information, MBMA assumes no responsibility whatsoever for the application of this information to the design or construction of any specific building system.

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Abbreviations and Acronyms

AEDG	Advanced Energy Design Guide	IgCC	International Green Construction Code
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers	in	inch
Btu	British thermal unit	kW	kilowatt
Btu/hr x ft² x °F	British thermal unit per hour times square foot times degree Fahrenheit	LCA	Life Cycle Assessment
C	Thermal Conductance	LCI	Life Cycle Inventory
CDD	Cooling degree-day	LEED	Leadership in Energy and Environmental Design
cfm	cubic feet per minute	LEED AP	LEED Accredited Professional
ci	continuous insulation	LS	Liner System
CZ	Climate Zone	NAECA	National Appliance Efficiency Conservation Act
EIA	Energy Information Administration	psf	pounds per square foot
EIFS	Exterior Insulation Finishing System	PV	Photovoltaic
EPA	Environmental Protection Agency	R	Thermal Resistance
EPAct	Energy Policy Act	SC	Spacing Criterion
EPCA	Energy Policy and Conservation Act	SC	Shading Coefficient
°F	Fahrenheit	SEER	Seasonal Energy Efficiency Ratio
FC	Filled Cavity	SFR	skylight area to floor area
ft	foot	SHGC	Solar Heat Gain Coefficient, dimensionless
ft²	square foot	SRI	Solar Reflectance Index
ft³	cubic foot	SSR	Standing Seam Roof
hr	Hour	T-24	California Title 24
HDD	Heating degree-day	TDV	Time Dependent Value
HID	High Intensity Discharge	TFR	Through Fastened Roof
HVAC&R	Heating, Ventilation, Air-Conditioning and Refrigeration	U	Thermal Transmittance
IBC	International Building Code	UL	Underwriters Laboratories Inc.
IECC	International Energy Conservation Code	VAV	Variable Air Volume System
IEQ	Indoor Environmental Quality	VOC	Volatile Organic Compound
		VT	Visible Transmittance
		W/ft²	Watts per square foot
		Wp	Watts power

Abbreviations/Acronyms of Organizations and contact information provided on the next page.