

This is a preview of "AMCA 222-08 (R2016)". Click here to purchase the full version from the ANSI store.

AMCA 222-16

Application Manual for Air Curtains



Air Movement and Control Association International

AMCA Corporate Headquarters

30 W. University Drive, Arlington Heights, IL 60004-1893, USA
communications@amca.org ■ Ph: +1-847-394-0150 ■ www.amca.org

© 2016 Air Movement & Control Association International

AMCA Publication 222-16

Application Manual for Air Curtains



Air Movement and Control Association International
30 West University Drive
Arlington Heights, Illinois
60004

AMCA Publications

Authority AMCA Publication 222-16 was approved by the AMCA membership on September 23, 2016

Copyright © 2013 by Air Movement and Control Association International, Inc.

All rights reserved. Reproduction or translation of any part of this work beyond that permitted by Sections 107 and 108 of the United States Copyright Act without the permission of the copyright owner is unlawful. Requests for permission or further information should be addressed to the Executive Director, Air Movement and Control Association International, Inc. at 30 West University Drive, Arlington Heights, IL 60004-1893 U.S.A.

Objections Air Movement and Control Association International, Inc. will consider and decide all written complaints regarding its standards, certification programs, or interpretations thereof. For information on procedures for submitting and handling complaints, write to:

Air Movement and Control Association International
30 West University Drive
Arlington Heights, IL 60004-1893 U.S.A.

European Air Movement and Control Association
Nutkin Cottage
Barracks Road, Assington
Suffolk CO10 5LP
UK

Asia AMCA Sdn. Bhd.
No. 7 Jalan SiLC 1/6,
Kawasan Perindustrian SiLC Nusajaya,
79200 Nusajaya, Johor, Malaysia

Disclaimer AMCA uses its best efforts to produce standards for the benefit of the industry and the public in light of available information and accepted industry practices. However, AMCA does not guarantee, certify or assure the safety or performance of any products, components or systems tested, designed, installed or operated in accordance with AMCA standards or that any tests conducted under its standards will be non-hazardous or free from risk.

Review Committee

Frank R. Cuaderno (Chair)	Mars Air Systems, LLC
Mats Careborg	Systemair, Inc.
Brian Jones	Powered Aire, Inc.
Peter Bethlehem	Biddle bv
Sameh ezzat	Hammam Industries & Co.
David A. Johnson	Berner International Corp.
Joe Brooks	AMCA International staff

Contents

1. Purpose.....	1
2. Scope.....	1
3. Definitions/Units of Measure/Symbols.....	1
3.1 Definitions.....	1
3.2 Units of measure.....	3
3.3 Symbols and subscripted symbols.....	4
4. Overview.....	5
4.1 Basic design.....	5
4.2 Benefits.....	5
4.3 Applications.....	6
5. Theory.....	8
5.1 General theory.....	8
5.2 Types of ACUs.....	8
6. Construction and Components.....	9
6.1 Non-explosive environments.....	9
6.2 Explosive environments or hazardous locations.....	11
7. Performance Testing, Rating and Safety Standards.....	13
7.1 Aerodynamic performance testing.....	13
7.2 Sound performance testing.....	13
7.3 Safety standards.....	13
7.4 Public health standards.....	13
7.5 Energy standards.....	13
8. Selection.....	14
8.1 Intended use and application.....	14
8.2 Opening size, obstructions and restrictions.....	14
8.3 Construction types.....	14
8.4 Power source/voltage.....	14
8.5 Controls.....	14
8.6 Certifications.....	15
8.7 Optional accessories.....	17
9. Installation and Commissioning.....	20

AMCA Publication 222

Application Manual for Air Curtains

1. Purpose

The purpose of this application guide is to familiarize the reader with air curtain unit (ACU) technology.

2. Scope

This document covers ACU theory, construction, performance standards, applications, benefits, selection, installation, commissioning, service and maintenance.

3. Definitions/Units of Measure/Symbols

3.1 Definitions

3.1.1 Air curtain (airstream)

A directionally-controlled air curtain, moving across the entire height and width of an opening, that reduces the infiltration or transfer of air from one side of the opening to the other and/or inhibits flying insects, dust or debris from passing through. For the purposes of this publication, "air curtain" and "airstream" are synonymous.

3.1.2 Air curtain depth

The air curtain dimension perpendicular to both the direction of airflow and the air curtain width; the short dimension of the air curtain.

3.1.3 Air curtain width

The air curtain dimension perpendicular to both the direction of airflow and the air curtain depth; the long dimension of the air curtain.

3.1.4 Air curtain unit (ACU)

An air moving device that produces an air curtain.

3.1.5 Air discharge nozzle

A component or assembly, which may include adjustable vanes in the ACU, that directs and controls the air curtain.

3.1.6 Air discharge nozzle depth (N_d)

The inside dimension perpendicular to both the direction of airflow and the air curtain width.

3.1.7 Air discharge nozzle width (N_w)

The inside dimension perpendicular to both the direction of airflow and the nozzle depth.

3.1.8 Air discharge angle (θ)

The angle between the plane of the protected opening and the direction in which the air curtain leaves the discharge.

3.1.9 Psychrometrics (From ANSI/AMCA Standard 210)

3.1.9.1 Dry-bulb temperature (t_d)

The air temperature measured by a dry temperature sensor.

3.1.9.2 Wet-bulb temperature (t_w)

The temperature measured by a temperature sensor covered by a water-moistened wick and exposed to air in motion. When properly measured, it is a close approximation of the temperature of adiabatic saturation.