Prevailing Winds / Indoor Air Current

Honeywell

Note: *This document is not intended to give conclusive data in determining where any gas detector should be placed. This material is to demonstrate one of many methodologies to conduct site testing for prevailing wind directions.*

Prevailing Winds

Honeywell

Site/location testing suggestion

Honeywell Smoke Generating Tubes

- Smoke generating tubes are designed for use in respirator fit tests
- Tubes are of the stannic chloride type required by OSHA for use in the irritant smoke fit test procedure
- The tubes can also be used for visualizing air currents
    - Indoor
        - HVAC air flow
        - Fume hoods
        - Detecting leaks from an air duct
- Testing the performance of outdoor applications
    - Prevailing winds determination

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Prevailing Winds

Honeywell

Site/location testing suggestion

Basic Operation

1. Smoke tubes are operated by simply breaking open each end
2. Inserting the tube into rubber squeeze bulb
3. Air pushed through the tube forcing the smoke vapor outward

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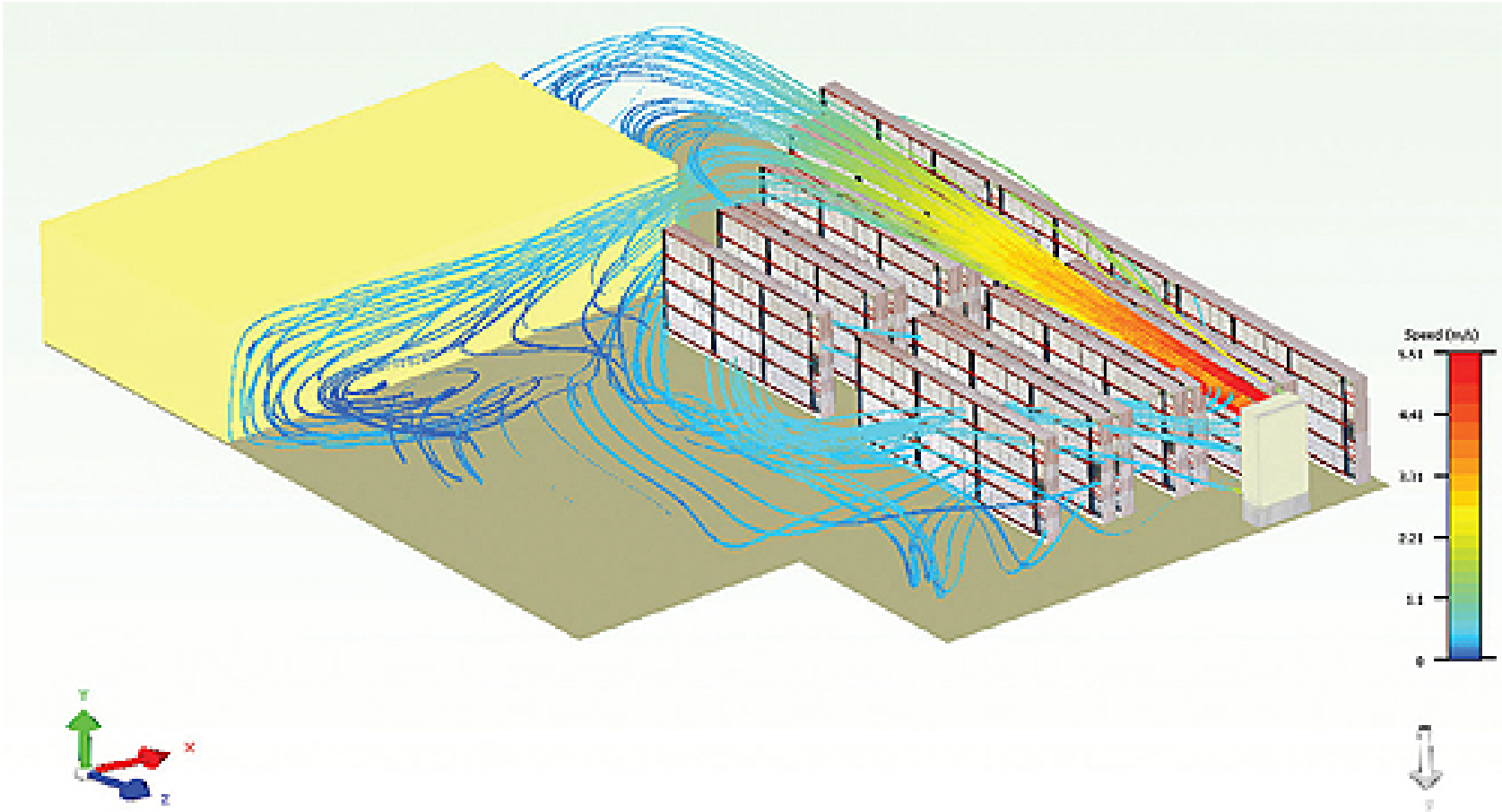
Indoor – Air current

Honeywell

HVAC will have an impact to air flow in a given facility



Indoor – Air current

Honeywell

HVAC Airflow Direction

Operation

1. Smoke tubes are operated by simply breaking open each end
2. Inserting the tube into rubber squeeze bulb
3. Air pushed through the tube releases the stannic chloride, which decomposes on contact with moisture in the air to form a smoke trace
4. The tubes can be re-used until no more smoke is evolved
   a) Rubber caps are provided to seal the tubes between uses

Indoor – Air current

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Ventilation Hood Testing

Operation

1. Smoke tubes are operated by simply breaking open each end
2. Inserting the tube into rubber squeeze bulb
3. Air pushed through the tube releases the stannic chloride, which decomposes on contact with moisture in the air to form a smoke trace
4. The tubes can be re-used until no more smoke is evolved
   a) Rubber caps are provided to seal the tubes between uses

Outdoor - Prevailing Winds

Honeywell

Even on a day of mild weather, patterns can be dramatic. There's much more to the wind than a west to east flow.

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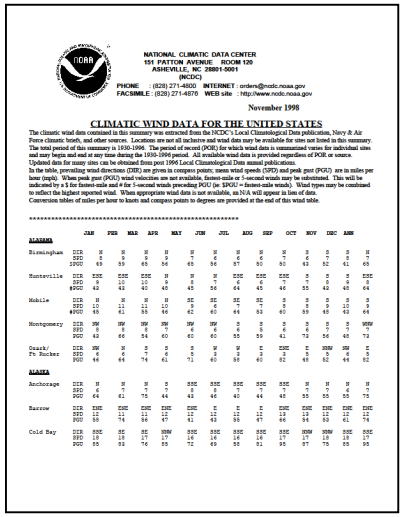
Outdoor - Prevailing Winds

Honeywell

There are several sources of data showing ‘average’ wind directions however one must be aware that other factors can play a key role in gas detector placement.

Examples include:
Weather fronts, structures, man-made and natural barriers, etc…

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
Houston	DIR	N	N	N	N	SE	SE	SE	SE	SE	SE	SE	SE	SE
	SPD	8	9	9	9	8	8	7	6	7	7	8	8	8
	PGU	44	61	51	56	52	68	52	78	44	58	46	56	78



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November 1998

CLIMATIC WIND DATA FOR THE UNITED STATES

The climatic wind data contained in this summary was extracted from the NCDC's Local Climatological Data publication, Navy & Air Force climatic briefs, and other sources. Locations are not all inclusive and wind data may be available for sites not listed in this summary. The total period of this summary is 1930-1996. The period of record (POR) for which wind data is summarized varies for individual sites and may begin and end at any time during the 1930-1996 period. All available wind data is provided regardless of POR or source. Updated data for many sites can be obtained from post 1996 Local Climatological Data annual publications.
In the table, prevailing wind directions (DIR) are given in compass points; mean wind speeds (SPD) and peak gust (PGU) are in miles per hour (mph). When peak gust (PGU) wind velocities are not available, fastest-mile or 5-second winds may be substituted. This will be indicated by a 5 for fastest-mile and 4 for 5-second winds preceding PGU (ie. 5PGU = fastest-mile winds). Wind types may be combined to reflect the highest reported wind. When appropriate wind data is not available, an N/A will appear in lieu of data.
Conversion tables of miles per hour to knots and compass points to degrees are provided at the end of this wind table.

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		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
ALABAMA														
Birmingham	DIR	W	W	W	W	W	W	W	W	W	S	S	S	W
	SPD	8	9	9	9	7	6	6	6	7	6	7	8	7
	2PGU	49	59	65	56	65	56	57	50	50	63	52	61	65
Huntsville	DIR	ESE	ESE	ESE	W	W	W	ESE	ESE	ESE	S	S	S	ESE
	SPD	9	10	10	9	8	7	6	6	7	7	8	8	8
	5PGU	42	42	40	40	45	56	64	45	46	55	42	40	64
Mobile	DIR	N	N	N	N	SE	SE	SE	SE	S	S	S	S	S
	SPD	10	11	11	10	9	8	7	7	8	8	9	10	9
	4PGU	65	61	55	66	62	60	64	53	60	59	65	63	66
Montgomery	DIR	NW	NW	NW	NW	NW	NW	S	S	S	S	S	S	WSW
	SPD	9	9	9	9	8	6	6	6	6	6	7	8	7
	PGU	49	46	54	60	60	60	55	59	41	73	56	49	73
Ozark/ Ft Rucker	DIR	NW	W	S	S	S	W	W	E	ESE	E	NNW	NW	E
	SPD	8	8	7	8	8	8	8	8	8	8	8	8	8
	PGU	46	46	74	61	71	60	53	60	62	60	52	46	62
ALASKA														
Anchorage	DIR	N	N	N	S	SSE	SSE	SSE	SSE	SSE	N	N	N	N
	SPD	6	7	7	7	8	8	7	7	7	7	7	6	7
	PGU	64	61	75	44	40	46	40	44	48	55	55	55	75
Barrow	DIR	ENE	ENE	ENE	ENE	ENE	ENE	E	E	E	ENE	ENE	ENE	ENE
	SPD	12	11	11	10	12	12	11	10	10	12	12	12	12
	PGU	58	74	56	47	41	43	45	47	46	54	53	61	74
Cold Bay	DIR	SSE	SE	SE	NNW	SSE	SSE	SSE	SSE	SSE	NNW	NNW	SSE	SSE
	SPD	18	18	17	17	16	16	16	16	17	17	18	18	17
	PGU	55	51	76	55	72	69	58	51	55	57	75	55	55

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CLIMATIC WIND DATA FOR THE UNITED STATES
Courtesy of NOAA

Outdoor - Prevailing Winds

Honeywell

Preparation

1. Create a log book for test results
2. Use a compass for direction indicator
1. Be sure compass magnetic north is lined up with the compass north
3. Obtain the Honeywell Smoke Tube Kit
4. Conduct some trace testing
    i. Recommendation of multiple / long term testing per location to confirm 'true' prevailing winds
    ii. As shown in previous slide wind direction may vary from month-to-month
    A. Smoke tubes are operated by simply breaking open each end
    B. Inserting the tube into rubber squeeze bulb
    C. Air pushed through the tube releases the stannic chloride, which decomposes on contact with moisture in the air to form a smoke trace
    D. The tubes can be re-used until no more smoke is evolved
        i. Rubber caps are provided to seal the tubes between uses
5. Log the appropriate results

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
Houston	DIR	N	N	N	N	SE	SE	SE	SE	SE	SE	SE	SE	SE
	SPD	8	9	9	9	8	8	7	6	7	7	8	8	8
	PGU	44	61	51	56	52	60	52	78	44	58	46	56	78

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Outdoor - Prevailing Winds

Honeywell

Prevailing Winds Direction Log

Date	Smoke Direction	Compass Degrees
21-Feb	N-E	43
11-Mar	E	89
17-Apr	E	92
20-May	S-E	121
13-Jun	E	95
7-Jul	S-E	123
15-Aug	E	101