

AFM APOLLO.32 – LNG BASED FOG MACHINE FOR CONTINUOUS & LARGE SCALE CLEANROOM AIRFLOW VISUALIZATIONS ACC. TO ISO 14644-3 ANNEX B7)

apollo.32



SYSTEM DESCRIPTION

THE ULTRAPURE COMBINED LNG & DEMI WATER FOG MACHINE AFM APOLLO.32 DOES PROVIDE FOG OF HIGHEST PURITY, CLEANLINESS AND (PURE PAPER WHITE) DENSITY BEING UNMATCHED BY ANY OTHER CLEAN ROOM SUITABLE FOG GENERATING TECHNIQUE AND EXISTING SYSTEM SUCH AS ULTRASONIC OR FLUID OR CO2. THE APOLLO.32 IS SUITABLE FOR AIRFLOW VISUALIZATIONS IN CLEANROOMS ACCORDING TO ISO 14644-3 ANNEX B7 IN ALL CR CLASSES IN OPERATION AND AT REST.

TECHNICAL PRINCIPLE

HIGH PURITY FOG BASING ON DE-IONIZED WATER (DEMIWATER) OR WATER FOR INJECTION (WFI) IS GENERATED BY MIXING HOT WATER WITH LIQUID NITROGEN USING A UNIQUE MIXING PROCESS. THE GENERATED ULTRAPURE WATER FOG IS NEUTRALLY BUOYANT, NON-CONTAMINATING AND HIGHLY VISIBLE (PURE PAPER WHITE FOG).

APPLICATIONS

- LARGE AND VERY LARGE SCALE CONTINUOUS AIR FLOW VISUALIZATION AND/OR MAPPING STUDIES IN CLEAN ROOMS AND ON PROCESS TOOLS ACCORDING TO ISO 14644-3 ANNEX B7
- CONTAINMENT TRANSPORT STUDIES ON PROCESS TOOLS AND COMPLETE PROCESS SECTIONS AND LINES
- OPTIMIZATION OF EQUIPMENT LOCATIONS IN ORDER TO MINIMIZE CONTAINMENT TRANSPORT TO CRITICAL AREAS
- FINDING UNSUSPECTED PARTICULATE AND GASEOUS CONTAINMENT SOURCES
- TRACKING ROUTES OF AIR INFILTRATION INTO CLEANROOMS
- PRESSURE BALANCING (ROOMS AND SPACES)
- OPERATORS TRAININGS

BENEFITS

- HIGH, UNMATCHED VOLUME AND DENSITY OF ULTRAPURE DE-IONIZED WATER FOG = INCREASED VISIBILITY OF AIRFLOW
- CONTAMINANTS DUE TO FOG QUALITY MINIMIZED CLOSE TO ZERO = PROCESS NOT TO BE AFFECTED AND NO WIPE DOWNS REQUIRED AFTER ACCOMPLISHED JOBS
- DROPLETS MICRO SIZED AND UNIFORMLY SIZED = EXTENDED EFFECTS OF FOG IN THE AIRFLOW
- FOG TIME HIGH = MORE AVAILABLE TIME ON SITE TESTING
- FOG DISTANCE AS FAR AS POSSIBLE = EXTENDED EFFECTS OF FOG IN THE AIRFLOW
- ALL METAL COMPONENTS MADE OF STAINLESS STEEL = NO METAL CONTAMINATION TO THE FOG

PERFORMANCE SPECIFICATION

- **FOG DURATION @ MIXED MODE: 6 TO 8 HRS WITH A SINGLE LNG FILLING ***
- **ROOM SPACE VISUALIZABLE IN 10 MIN @ FULL OUTPUT: UP TO 410 CBMS ****
- **FOG DISTANCE: MIN TO 15 TO 20 METRES *****
- CLASS ROOM: ALL CLASSES

* THEN LNG-DEWAR EXCHANGE OR REFILLING. WATER CONSUMPTION EXTREMELY LOW.

** DEPENDING TO NOZZLE IN USE AS OUTLET, SITE CONDITIONS AND OPERATOR SKILLS/EXPERIENCE

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TECHNICAL SPECIFICATIONS

- 32 LITRES LNG DEWAR
- 5 LITRES DI-WATER TANK
- STAINLESS STEEL BOILER WITH A HEATING CIRCLE
- DI-WATER/LNG MIXING SECTION (STAINLESS STEEL)
- STAINLESS STEEL MACHINE HOUSING
- USERFRIENDLY DOTMATRIX SOFTPAD DISPLAY (SIMILAR TO AFM-NEO STANDARD)
- EMERGENCY SHUT DOWN (STOP) BUTTON
- 4 CASTORS (2 WITH BREAKS)
- 80 MM Ø FOG OUTLET = WATER FILLING PIPE
- ELECTRONICAL WATER FILL LEVEL SURVEY VIA CAPACITIVE SENSOR
- TEMPERATURE SURVEY AND SAFETY TEMPERATURE SWITCH FUNCTION
- SOFT START ELECTRONIC
- POWER: 240 VAC, 50 HZ (IP 44), 2000-3000W (DEPENDING TO CONFIGURATION OF HEATING SECTION)
- COMPACT DIMENSIONS (L X W X H): 1.095 X 540 X 766 MM
- WEIGHT: 77 KG
- POWER CABLE
- USER MANUAL
- CE DECLARATION OF CONFORMITY
- 24 MONTHS WARRANTY

SURCHARGE ACCESSORIES

- TUBE.3.000/5000 = FLEXIBLE TUBE EXTRA LONG (L X Ø: 3.000/5.000 X 80 MM)
- NOZ.250 = 250 MM BROAD OUTPUT NOZZLE MOUNTD TO TUBING
- NOZ.500 = 500 MM BROAD OUTPUT NOZZLE MOUNTED TO TUBING
- LNG.FL.1600 = APOLLO.32 LNG FOG LANCE 1.600 MM FOG LANCE (Ø 60 MM)
- LNG.FL.2000 = APOLLO.32 LNG FOG LANCE 2.000 MM FOG LANCE (Ø 80 MM)
- Y.LNG = Y-PATTERN TUBE TO TUBE CONNECTOR FOR 1 IN 2 TUBING ARRANGEMENTS
- EXT.500 = 500 MM EXTENSION PIPE (Ø 80 MM) FOR ACCESSING REMOTE AREAS
- EXT.1000 = 1000 MM EXTENSION PIPE (Ø 80 MM) FOR ACCESSING REMOTE AREAS
- COUP.EXT.TUBE = COUPLING (Ø 80 MM) FOR EXT.500 AND/OR EXT.1000
- RC.AFM = RF REMOTE CONTROL FOR ALL MAJOR SYSTEM FUNCTIONS AND MODES
- LED.BOOST *** = LED LUMINAIRE WITH ADJUSTABLE SPOT SIZE AND TWO SPECIAL MULTI LENSE ARRAYS FOR CREATING RECTANGULAR OR LINE PATTERNS. CREATES A HIGHER CONTRAST AND BY THIS AN IMPROVED FOG VISIBILITY AT SPECIFIC IN FIELD ILLUMINATION APPLICATIONS.
- ETC. (SEE LIST OF ACCESSORIES NEXT PAGE)

PRESTIGIOUS REFERENCES OF APOLLO.32 AND EARLIER LNG SERIES BY SISTEMA-MK



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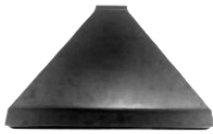


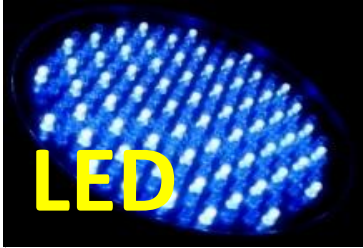

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LINE	PICTURE	ITEM #	ITEM DESCRIPTION
1		AFM-APOLLO.32	<p>apollo.32</p> <p><u>ULTRAPURE</u> COMBINED LNG & DI-WATER FOG MACHINE PROVIDING <u>HIGHEST PURITY AND PAPER WHITE LIKE DENSE FOG</u>. SUITABLE FOR <u>CONTINUOUS & LARGE SCALE</u> AIRFLOW VISUALIZATIONS IN CLEANROOMS ACCORDING TO ISO 14644-3 ANNEX B7 IN ALL CR CLASSES <u>IN OPERATION AND AT REST</u>.</p>
2		LNG.FL.1600.60	APOLLO.32 LNG FOG LANCE 1.600 MM FOG LANCE (Ø 60 MM) WITH BUTTERFLY VALVE FOR FLOW ADJUSTMENT
3		LNG.FL.2000.80	APOLLO.32 LNG FOG LANCE 2.000 MM FOG LANCE (Ø 80 MM)
4		TUBE.5000	ADDITIONAL/SECOND FLEXIBLE TUBE EXTRA LONG (L X Ø: 5.000 X 80 MM)
5		TUBE.3000	ADDITIONAL/SECOND FLEXIBLE TUBE STANDARD (L X Ø: 3.000 X 80 MM)
6		TUBE.CON	TUBE TO TUBE CONNECTOR COUPLING SINGLE TUBINGS
7		RE.AFM	RANGE EXTENDER FOR AFM.NEO DOUBLING OPERATION CYCLE WITH ONE TANK FILLING BY EXTRACTING LARGE DROPLETS FROM AEROSOL. CAN BE EQUIPPED EITHER AFTER PURCHASE.
8		NOZ.250	250 MM BROAD OUTPUT NOZZLE MOUNTED TO TUBING
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9		NOZ.500	500 MM BROAD OUTPUT NOZZLE MOUNTED TO TUBING
10		Y.AFM	Y-PATTERN TUBE TO TUBE CONNECTOR FOR 1 IN 2 TUBING ARRANGEMENTS, TUBE EXTENSIONS OR COUPLING OF TWO AFM-NEO SYSTEMS
11		EXT.500	500 MM EXTENSION PIPE (Ø 80 MM) FOR ACCESSING REMOTE AREAS
12		EXT.1000	1.000 MM EXTENSION PIPE (Ø 80 MM) FOR ACCESSING REMOTE AREAS COUPLING (Ø 80 MM) FOR EXT.500 AND/OR EXT.1000
13		LED.BOOST ***	LED LUMINAIRE WITH ADJUSTABLE SPOT SIZE AND TWO SPECIAL MULTI LENSE ARRAYS FOR CREATING RECTANGULAR OR LINE PATTERNS. CREATES A HIGHER CONTRAST AND BY THIS AN IMPROVED FOG VISIBILITY AT SPECIFIC IN FIELD ILLUMINATION APPLICATIONS. <u>BOOSTING, SUPPORTING AND ENHANCING OVERALL SYSTEM PERFORMANCE (VISIBILITY OF FOG & VISUALISATION DISTANCE) BY APPROX. 50 %*</u> . LENSE ARRAY #1 (EASY TO SNAP IN) OFFERS TURNING THE LIGHT PATTERN INTO ANY ANGLE. LENSE ARRAY #2 (USED WITH ADDITIONAL FILTER-HOLDER) SUPPORTS BLOCKING OF STRAY LIGHT AROUND THE CENTER BEAM. COLOUR TEMPERATURE: 3000-3200K (INCLUDING DIMMING). POSSIBLE REMOTE CONTROL VIA DMX. POWER CONSUMPTION @LESS THAN 100W AT FULL POWER.
14		RC.AFM	RF REMOTE CONTROL FOR ALL MAJOR SYSTEM FUNCTIONS AND MODES MODE A (STRD. MODE): "SWITCH MODE" - PRESS BUTTON 1 OR 2 OR 3 OF THE REMOTE CONTROL FOR ACTIVATING FOG GENERATION = 'FOG'. PRESSING BUTTON 1 OR 2 OR 3 AGAIN WILL DEACTIVATE 'FOG'. MODE B (ALT. MODE): "FLASH MODE" - PRESS BUTTON 1 OR 2 OR 3 OF THE REMOTE CONTROL FOR ACTIVATING 'FOG'. BY RELEASING BUTTON 1 OR 2 OR 3 'FOG' STOPS.