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

apollo.32

SYSTEM DESCRIPTION

THE APOLLO.32 (AP.32) ULTRAPURE CLEANROOM FOG MACHINE USES LIQUID NITROGEN AND DEIONIZED WATER OR WFI WATER TO GENERATE ABOUT 5 CUBIC METERS OF ULTRA PURE FOG PER MINUTE WITH A FOG DENSITY OF 533 ML PER MINUTE DURING A 75 MINUTE OPERATING CYCLE. THE FOG OUTPUT IS ADJUSTABLE FROM 2-5 CUBIC METERS PER MINUTE. THE AP.32 PROVIDES FOG OF HIGHEST PURITY, CLEANLINESS AND PURE PAPER WHITE DENSITY BEING UNMATCHED BY ANY OTHER CLEAN ROOM SUITABLE FOG GENERATING TECHNOLOGY IN THE MARKET.
THE AP.32 COMPLIES WITH ISO 14644-3 VISUAL AIRFLOW REQUIREMENTS, SEMICONDUCTOR CLEAN ROOM GUIDELINES, USP 797 INSITU AIRFLOW ANALYSIS TO PROVIDE 3D AIRFLOW MODELING IN CLEAN ROOMS, ISO SUITES, STERILE ROOMS AND MEDICAL ROOMS.

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).

TYPICAL AP.32 APPLICATIONS

- LARGE AND VERY LARGE SCALE CONTINIOUS AIR FLOW VISUALIZATION AND/OR MAPPING STUDIES IN CLEAN ROOMS AND ON PROCESS TOOLS ACCORDING TO ISO 14644-3 ANNEX B7
- VISUALIZATION OF UNWANTED GAS EMISSION LOCATIONS AND DEAD ZONES
- SUPPORTS ANALYSIS FOR PHARMACEUTICAL USP 797 GUIDELINES AND AIRFLOW VISUALIZATION
- SUPPORTS NSF 49 NATIONAL SAFETY FOUNDATION AND THE FUTURE USP 800 HAZARDOUS DRUG COMPOUNDING FOR AIRFLOW VISUALIZATION
- SUPPORTS AIRFLOW VISUALIZATION TEST FOR SEMICONDUCTOR SEMI-STANDARDS GUIDELINES
- TRACKING ROUTES OF UNWANTED AIR FLOW INFILTRATION INTO CLEAN ROOMS
- EXHAUST AND VENTILATION STUDIES AROUND WAFER HANDLING SYSTEMS
- AIR BALANCE STUDIES IN PHARMACEUTICAL SUITES AND CLEAN ROOMS
- 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

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AP.32 BENEFITS

- ADJUSTABLE, ULTRA PURE AIRFLOW VISUALIZATION TO DESCRIBE DIRECTION, VELOCITY AND PATTERNS IN AIRFLOW
- MODULAR DESIGN FOR SIMPLE OPERATION AND MAINTENANCE
- DIRECT FOGGER CONTROL OR REMOTE CONTROL BY WIRELESS KEY FOB TO OPERATE BEHIND A CLOSED WALL OR CLOSED AREA
- NO CONTAMINATION CREATED, NO CONTAMINATION LEFT BEHIND
- NO CLEANUP OF ANY KIND AFTER FOG VISUALIZATION
- SUPERB 3D AIRFLOW MODELING CAPABILITIES WITH HIGH DENSITY FOG
- VERY LOW FOG EXIT PRESSURE, NO EXIT TURBULENCE AS FOG ENTERS AIRFLOW
- COMPACT, TRANSPORTABLE, SHIPPING CASE
- FOG STREAM OUTPUT AND FOG RAKE OUTPUT
- FOR USE IN STERILE ROOMS, ISO SUITES AND CLEAN ROOMS
- HIGH UNMATCHED VOLUME AND DENSITY OF FOG PROVIDES THE BEST AIRFLOW VISUALIZATION OF ANY FOGGER IN THE MARKET

TECHNICAL SPECS OF THE APOLLO.32 (AP.32)

FOG DURATION	UP TO 75 MINUTES
FOG VOLUME OUTPUT	UP TO 5 CUBIC METERS PER MINUTE WITH ADJUSTABLE OUTPUT FROM 2-5 CBM/MIN
TOTAL FOG VOLUME	APPROX. 410 CUBIC METERS, ULTRAPURE FOG DURING 75 MINUTE CYCLE
FOG DENSITY (ML/MINUTE) SUPPORTS VISIBLE FOG DISTANCE	UP TO 533 ML PER MINUTE CONVERTED TO ULTRAPURE FOG
VISIBLE AIR FLOW DISTANCE	10 TO 12 M VISIBLE AIR FLOW DISTANCE
FOG TYPE	ULTRAPURE FOG USING LN2 + DI-WATER OR WFI-WATER
CLASS OF CLEAN ROOM USE	CLASS 1 TO 10,000
COMPATIBLE GUIDELINES	ISO 14644-3 ANNEX B7, USP 797, SEMICONDUCTOR CLEAN ROOM GUIDELINES
TYPE OF ROOM	CLEAN ROOMS, STERILE ROOMS, ISO SUITES, MEDICAL ROOMS
WATER BOILER VOLUME	4,80 LITERS
LN2 DEWAR VOLUME	35 LITERS
METHOD OF OPERATION	DIRECT TOUCH PAD CONTROL OR REMOTE WIRELESS CONTROL
METHOD OF MOVEMENT	ROLLING SS ENCLOSURE
LIQUID WEIGHT	28.14 KG LN2 AND 4.8 KG DI-WATER
STANDARD POWER REQUIREMENTS	220 VAC, 50/60 HZ, 15 A
OPTIONAL POWER	110 VAC, 50/60 HZ, 15 A
DIMENSIONS	1.095 MM X 540 MM X 766 MM
FULL WEIGHT	77 KG

PERFORMANCE SPECIFICATION OF THE APOLLO.32 (AP.32)

- FOG DURATION @ MIXED MODE: 75 MIN OF CYCLE TIME WITH A SINGLE LN2 FILLING (THEN QUICK & EASY LNG-DEWAR EXCHANGE OR REFILLING (WATER CONSUMPTION EXTREMELY LOW)
- ROOM SPACE VISUALIZABLE IN 10 MIN @ FULL OUTPUT: UP TO 410 CBM OF PAPER WHITE FOG *
- FOG DISTANCE: 10 TO 12 (20 TO 24**) METRES
- CLASS ROOM: ALL CLEANROOM CLASSES

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

** IF Y-SPLITTER AND TWO HOSES PARALLELY IN USE

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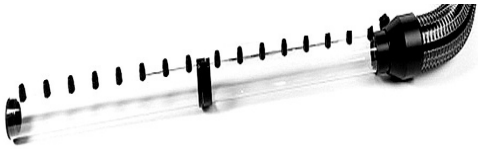
LINE	PICTURE	ITEM #	ITEM DESCRIPTION
1		AFM-APOLLO.32	apollo.32 ULTRAPURE COMBINED LNG & DI-WATER FOG MACHINE PROVIDING HIGHEST PURITY AND PAPER WHITE LIKE DENSE FOG. SUITABLE FOR CONTINOUS & LARGE SCALE AIRFLOW VISUALIZATIONS IN CLEAN-ROOMS ACCORDING TO ISO 14644-3 ANNEX B7 IN ALL CR CLASSES IN OPERATION AND AT REST. COMING WITH STANDARD 10 M OF FLEXIBLE TUBING.
● ACCESSORIES ● ACCESSORIES ● ACCESSORIES ● ACCESSORIES ●			
2		FL.1300.80-STR	STRAIGHT PATTERN FOG LANCE TRANSAPRENT 1.300 X 80 MM (L X Ø)
3		FL.1300.80-T	T-PATTERN FOG LANCE TRANSAPRENT 1.300 X 80 MM (L X Ø)
4		TW.60	THROTTLE VALVE W/HANDLE 60 (Ø 60 MM) FOR A 0-100 % PERFORMANCE ADJUSTMENT FOR ADJUSTMENT OF FOG INTENSITY, OUPUT AND SPEED
5		TUBE.5000	5 M FLEXIBLE TUBE EXTRA LONG (L X Ø: 5.000 X 80 MM)
6		TUBE.10000	10 M FLEXIBLE TUBE STANDARD (L X Ø: 10.000 X 80 MM)

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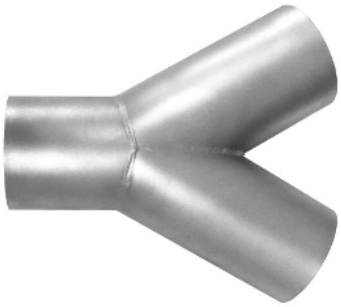
LINE	PICTURE	ITEM #	ITEM DESCRIPTION
7		TUBE.CON	TUBE TO TUBE CONNECTOR COUPLING SINGLE TUBINGS
8		NOZ.250	250 MM BROAD OUTPUT NOZZLE MOUNTED TO TUBING FOR GENERATION OF BROAD FOG PATTERNS AND WATERFALL PATTERNS
9		NOZ.500	500 MM BROAD OUTPUT NOZZLE MOUNTED TO TUBING FOR GENERATION OF BROAD FOG PATTERNS AND WATERFALL PATTERNS
10		Y.AFM	Y-PATTERN TUBE TO TUBE CONNECTOR FOR 1 IN 2 TUBING ARANGEMENTS, TUBE EXTENSIONS OR COUPLING OF TWO AFM-NEO SYSTEMS

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

LINE	PICTURE	ITEM #	ITEM DESCRIPTION
11		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. BOOSTING, SUPPORTING AND ENHANCING OVERALL SYSTEM PERFORMANCE (VISIBILITY OF FOG & VISUALISATION DISTANCE) BY APPROX. 50 %*. 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.
12		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.
13		WR.PS	BUILT IN WIDE RANGE POWER SUPPLY COVERING EU, NA AND ASIAN POWER SUPPLY