

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE DIVISION <i>Large Coating, Printing and Aerospace Operations Team</i> APPLICATION PROCESSING AND CALCULATIONS	PAGE	1 of 8
	APP. NUMBERS	See Below
	PROCESSED BY	GS
	REVIEWED BY	SMKE
	DATE	4/26/13

**PO NO PC EVALUATION
TWO VACUUM BRAZE FURNACES**

Applicant's Name HONEYWELL INTERNATIONAL INC

Company I.D. 800003

Mailing Address 2525 W. 190TH ST.
TORRANCE, CA 90504-6061

Equipment Address 2525 W. 190TH ST.
TORRANCE, CA 90504-6061

EQUIPMENT DESCRIPTION

APPLICATION NO. 486026

Title V deminimis significant permit revision

APPLICATION NO. 475875 (po no pc, Device D235)

VACUUM BRAZING FURNACE NO. 1, ABAR ASPEN, MODEL HR-50X48, 225 KW ELECTRICALLY HEATED WITH ONE 50 HP BLOWER.

APPLICATION NO. 476239 (po no pc, Device D236)

VACUUM BRAZING FURNACE NO. 2, G M INDUSTRIAL FURNACES AND SYSTEM, MODEL HVF 701-XB, 450 KW ELECTRICALLY HEATED WITH ONE 50 HP BLOWER.

BACKGROUND/HISTORY

Appl. No.	Equipment	Reason for Application
475870	Title V Revision-Deminimis Significant	Title V Revision
475875	Braze Furnace no. 1	Installed, issue permit to operate
476239	Braze Furnace no. 2	Installed, issue permit to operate

Honeywell International Inc submitted the above permit applications with AQMD on November 20, 2007 to obtain permits to operate for two existing braze furnaces (a/n 475875 and 476239).

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE DIVISION <i>Large Coating, Printing and Aerospace Operations Team</i> APPLICATION PROCESSING AND CALCULATIONS	PAGE	2 of 8
	APP. NUMBERS	See Below
	PROCESSED BY	GS
	REVIEWED BY	SMKE
	DATE	4/26/13

Honeywell is a RECLAIM Cycle II and Title V group A facility. The initial Title V permit was issued on September 22, 1999 and the second Title V renewal permit was issued on March, 25, 2010.

This is the fifth revision since the second Title V renewal permit was issued. A/N 486026 was submitted for deminimis significant permit revision. Included in this revision is the administrative revision to change the responsible official in section A (Current responsible official is: Preston Mathis, Director- Integrated supply chain). Also included in this revision under separate evaluation is the addition of a dip tank (D233) and wash coat system(D234), modification to an APC system(C79, D39, D40) by venting dip tank and washcoat system, and change of conditions on two dip tanks(D75, D76) to include the dip tank and washcoat system in the group cap and convert from gal/day to lb VOC/month. Please refer to Reg XXX evaluation for a summary of this fifth revision.

The District's compliance database, for the last two years, for the facility (ID # 800003), shows two notices to comply and one notice of violation issued to the facility. N/C no. E03266 was issued on 3-9-2011 to report quarterly aggregate emissions for all sources - this was closed on 11-30-2011. N/C no. E03292 was issued on 11-30-2011 to apply the correct emission factor to calculate emissions from process unit D217 and to apply missing data procedure (MDP) properly for large source D104. This NC was closed on 12-2-2011. NOV # P57810 was issued on 12-12-2012, for the following reasons :(1) failure to report the electronic emissions using all proper codes; (2) submit 500-ACC report for CY2011; (3) report accurate fuel usages of Large Source; (4) report accurate fuel usages of Process Units; and (5) report accurate R219 emission. This NOV was closed on 1-10-2013, according to the enforcement database. There are no pending N/Cs or NOVs. No records of complaints were found in the compliance database. During the last inspection on 12-12-2012, the facility was found in compliance with all District rules and regulations except for the above mentioned NOV.

PROCESS DESCRIPTION

The braze furnaces are used to braze metal pieces together that are generally part of heat exchanger units in aircraft air conditioning systems. These systems are intended to be used in a variety of civilian and military aircraft units. There are two braze furnaces.

Binder is mixed with a powder brazing alloy. The slurry is applied to parts in a permitted spray booth. The binder contains some VOC that is emitted during the brazing process. Vacuum brazing is the process of joining various metals together in a chamber below atmospheric pressure. The Nicrobraz binder cement is mixed with a proprietary brazing alloy (containing silicon, boron, chromium, iron and nickel) in a powder form to create a slurry mixture. Mixture is then applied on pieces of metal that are to be brazed together in an electric brazing furnace. The sole purpose of the binder in the mixture is to serve as a medium to adhere the metal powder to the part. The solvent in the Nicrobraz evaporates in the high temperature of the braze oven. The Nicrobraz binder is not used to keep the parts together prior to brazing, therefore it is not construed as an adhesive. The parts are first spot-welded, clamped or otherwise fixed.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE DIVISION <i>Large Coating, Printing and Aerospace Operations Team</i> APPLICATION PROCESSING AND CALCULATIONS	PAGE	3 of 8
	APP. NUMBERS	See Below
	PROCESSED BY	GS
	REVIEWED BY	SMKE
	DATE	4/26/13

The following is a summary of the brazing process.

- 1) Honeywell mixes Microbraz 520 binder cement with a proprietary brazing alloy (containing silicon, boron, chromium, iron and nickel) in powder form to create a slurry mixture. Microbraz contains approximately 83-88 percent by weight 1, 3-dioxolane solvent.
- 2) The mixture is then applied through various application methods (spray, squeeze bottle, brush, etc.) on pieces of metal that are to be brazed inside a permitted spray booth D31 (A/N 501166). The spray booth has 12 lbs/day of VOC emission limit. The other parts that are served by the furnaces are coated in a rollercoater (a/n 515813; device group D219 etc.) which has no VOC.
- 3) After parts are coated with the braze mixture, they are assembled, pressed, and or configured as required for the part being manufactured.
- 4) After the part preparation is complete, they are placed into one of two vacuum brazing furnaces.
- 5) The temperature in the braze furnace starts at ambient temperature (roughly 70-80 degrees).
- 6) The parts are loaded into the furnace and the door is sealed, there are no leaks into the furnace.
- 7) The interior of the braze furnace (98" long x 60" diameter) is evacuated of all air with a roughing pump to remove the majority of the air, a vacuum booster pump and a diffusion pump to reach the high vacuum.
- 8) The pumps take about 10-15 minutes to reduce the pressure to 5 E-05 Torr. During this period the VOCs will boil and volatilize. As an example, water will boil at room temperature under a vacuum of 17.5 Torr, therefore, any VOCs in the binder will definitely be lost as the vacuum drops. There is no heat applied yet because brazing cannot be performed properly unless all air is evacuated otherwise the welds will oxidize and the brazed joints will be weak and not meet the stringent specifications needed. The anticipated exhaust air flow is approximately 300 cfm at a temperature of 70-80 degrees.
- 9) At this point all air has been removed and the VOC's have completely volatilized off due to the increased vapor pressure within the high vacuum environment.
- 10) The heating cycle begins as the braze furnace is heated to the proper temperature (800 to 2050 deg F) for the parts being brazed. Vacuum is maintained, no air exits the furnace as the furnace must maintain a good seal to ensure that air does not enter the vacuum chamber and oxidize the braze metal. No hot air is vented during the heating cycle.
- 11) The vacuum pump is turned off and the cooling cycle begins. Argon gas is used to flood the vacuum chamber to maintain an air-free atmosphere until the furnace is cooled down using a closed loop cooling system.
- 12) Once the oven has reached atmospheric pressure with the addition of the argon gas and the parts have been cooled, the furnace is opened and parts are removed.

Average: 12 hr/day, 5 day/week, 50 weeks/year
Maximum: 24 hr/day, 7 day/week, 50 weeks/year

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE DIVISION <i>Large Coating, Printing and Aerospace Operations Team</i> APPLICATION PROCESSING AND CALCULATIONS	PAGE	4 of 8
	APP. NUMBERS	See Below
	PROCESSED BY	GS
	REVIEWED BY	SMKE
	DATE	4/26/13

EMISSIONS

The above operation is subject to Rule 442. This determination was made by an AQMD attorney and the letter explaining this interpretation is on file.

There will not be any rule 1401 compound emissions from this equipment; hence Rule 1401 does not apply.

The facility is applying VOC containing binder in a permitted booth device D31, and zero VOC binder in a rollercoaster D219, hence a permit condition will be imposed on both the braze furnaces that only parts coated in the permitted spray booth (D31) and rollercoaster (D219) shall be brazed in these furnaces. VOC emissions will only come from the binder applied in the spray booth.

Nickel and chromium are Rule 1401 TACs contained in the brazing alloy. The brazing furnace operates at a maximum temperature of 2050 deg F. The melting point of nickel is 2651 deg F and chromium is 3380 deg F so these metals are not expected to be emitted from the process. The base metal is either steel or stainless steel.

The spray booth D31 has 12 lbs/day VOC emissions limit. Most of the VOC is emitted in the spray booth and it is estimated that maximum of 20% of VOC is emitted from the furnaces. The furnaces will emit approximately 2 lbs/day of VOC emissions.

The VOC emissions are already accounted for in the permitted spray booth (Device D31, a/n 501166). According to the MSDS and data on cement 320 and 520 submitted by the facility, the VOC of cement 520 is 89% (higher than that of cement 320) which is 7.18 lbs/gallon of VOC. This operation is subject to Rule 442. The maximum usage from usage records is 24 oz/day (VOC emissions of 1.35 lbs/day) which is much less than 12 lb/day VOC emission limit of the spray booth.

RULES/REGULATION EVALUATION

RULE 212, PUBLIC NOTIFICATION

SECTION 212(c) (1):

This section requires a public notice for all new or modified permit units that may emit air contaminants located within 1,000 feet from the outer boundary of a school. This facility is not located within 1000 feet from a school; therefore, these applications will not be subject to the public notice requirements under this section.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE DIVISION <i>Large Coating, Printing and Aerospace Operations Team</i> APPLICATION PROCESSING AND CALCULATIONS	PAGE	5 of 8
	APP. NUMBERS	See Below
	PROCESSED BY	GS
	REVIEWED BY	SMKE
	DATE	4/26/13

SECTION 212(c) (2):

This section requires a public notice for all new or modified equipment and facilities, which have emission increases exceeding any of the daily maximums as specified in subdivision (g). There are no emission increases from this facility due to this project since the emissions from these furnaces have already been accounted for in the spray booth where the braze mixture is applied; therefore public notice will not be required.

(lb/day)	CO	NOx	PM10	ROG	Lead	SOx
Daily Max	220	40	30	30	3	60
Facility Increase	0	0	0	0	0	0

SECTION 212(c) (3):

This section requires a public notice for all new or modified sources, which have on-site emission increases resulting in a cancer risk of more than 1 in a million. Please see Rule 1401 section. There are no toxic compound emissions from this equipment, public notice is not required.

SECTION 212(g):

This section requires a public notice for all new or modified sources which undergo construction or modification resulting in an emission increase exceeding any of the daily maximum specified in the table below. As shown in the following table, the emission increases of criteria pollutants from these sources (these two furnaces, dip tanks, wash coat system and APC system in separate evaluation) are less than the daily maximums specified in this section. Public notice will not be required by this section.

LB/DAY	CO	NOX	PM₁₀	ROG	Lead	SOX
MAX. LIMIT	220	40	30	30	3	60
INCREASES	0	0	0	2 + 27*	0	0

* From the other project under separate evaluation

RULES 401 & 402, VISIBLE EMISSIONS & NUISANCE

Visible emissions and odors from this equipment are not expected with proper maintenance and operation. There are no complaints or notices for visible emissions, odors or nuisance issued in the last two years for this facility. Compliance is expected.

RULES 442, USAGE OF SOLVENTS

This equipment complies with the requirement of this rule under subsection (d) (1) by keeping emissions of VOCs to the atmosphere from all VOC-containing materials, equipment or processes subject to this rule, under 833 pounds per month for the facility. The facility has stated that the VOC emissions will be under 833 lbs/month. Their records show maximum emissions of 470 lbs/month for any given month in the last six months from the facility for equipment subject to Rule 442.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE DIVISION <i>Large Coating, Printing and Aerospace Operations Team</i> APPLICATION PROCESSING AND CALCULATIONS	PAGE	6 of 8
	APP. NUMBERS	See Below
	PROCESSED BY	GS
	REVIEWED BY	SMKE
	DATE	4/26/13

REGULATION XIII

- **RULE 1303(a), BEST AVAILABLE CONTROL TECHNOLOGY (BACT)**
(a) VOC EMISSIONS

BACT is met by keeping the emissions from the braze furnaces to less than 20 lbs/day combined, which is the BACT threshold limit for the ovens along with compliance with Rule 442.

- **RULE 1303(b) (1), MODELING**

Modeling is not required for VOC.

- **RULE 1303 (b) (2), EMISSION OFFSETS**

There is no increase in any criteria pollutant emissions from this facility due to this project since the VOC emissions are already accounted for in the spray booth where the binder is applied, therefore no offsets are required.

- **RULE 1401, NEW SOURCE REVIEW OF CARCINOGENIC AIR CONTAMINANTS**

As discussed in the report above, there are no toxic emissions from this project. This project is exempt from Rule 1401. This equipment shall be subject to March 4, 2005 version of Rule 1401 with the exception of chromium and nickel and a permit condition shall be imposed.

REGULATION XXX:

The proposed project is considered as a “de minimis significant permit revision” to the second Title V renewal permit issued to this facility March 25, 2010. Rule 3000(b)(6) defines a “de minimis significant permit revision” as any Title V permit revision where the cumulative emission increases on non-RECLAIM pollutants or hazardous air pollutants (HAP) from these permit revisions during the term of the permit are not greater than any of the following emission threshold levels:

Air Contaminant	Daily Maximum (lbs/day)
HAP	30
VOC	30
NO _x	40
PM ₁₀	30
SO _x	60
CO	220

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE DIVISION <i>Large Coating, Printing and Aerospace Operations Team</i> APPLICATION PROCESSING AND CALCULATIONS	PAGE	7 of 8
	APP. NUMBERS	See Below
	PROCESSED BY	GS
	REVIEWED BY	SMKE
	DATE	4/26/13

Rule 3003(j) specifies that a proposed permit for the initial Title V permit shall be submitted to EPA for review. To determine if a project qualifies for a “de minimis significant permit revision”, emission increases resulting from all permit revisions that are made after the submittal of proposed permit to EPA shall be accumulated and compared to the above threshold levels. This is the fifth permit revision to the Title V Permit since the last renewal. Also included in this revision is the addition of a dip tank and washcoat system, modification to an APC system with carbon adsorber and two spray booths to also vent the new dip tank and washcoat system, and change of permit condition to change the group coating daily usage cap to a group monthly VOC emission cap including the new dip tank and washcoat system. The cumulative emission increases resulting from this proposed permit revision are summarized as follows:

	Revision	HAP	VOC	NOx	PM₁₀	SOx	CO
1 st	Add new laser cutter and dust collector, a/n 497492 and 512708	0	0	0	0	0	0
2 nd	Modification of the Nickel powder application system a/n 515813 - P/C	0	0	0	0	0	0
3 rd	Admin: Convert P/C to P/O for a/ns 498864 (boiler), 498865 (surface prep line), 498866 (scrubber), 501172 (spray booth) and 515813 (Ni powder system)	0	0	0	0	0	0
4 th	Admin: Remove permit condition I296.1(device D217)	0	0	0	0	0	0
5 th	Addition of two braze furnaces (a/n 475875 and 476239),	0	0	0	0	0	0
	Addition of a dip tank (a/n 475872) and a wash coat system (a/n 475873), modification & c/c to APC system to vent dip tank and washcoat system (a/n 475874), and c/c for two dip tanks to change group VOC cap (a/n 549189 & 549192)	0	0	0	0	0	0
	Cumulative Total	0	0	0	0	0	0
	Maximum Daily	30	30	40	30	60	220

Since NOx is a RECLAIM pollutant for this facility, an analysis must be made to ensure that the proposed permit revision is not considered a “significant permit revision” even though the cumulative increase in NOx emissions is less than the threshold level of 40 lbs/day. Rule 3000(b)(28)(D) defines a “significant permit revision” as any modification at a RECLAIM facility that results in an emission increase of RECLAIM pollutants over the facility’s starting Allocation plus the non-tradable

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE DIVISION <i>Large Coating, Printing and Aerospace Operations Team</i> APPLICATION PROCESSING AND CALCULATIONS	PAGE	8 of 8
	APP. NUMBERS	See Below
	PROCESSED BY	GS
	REVIEWED BY	SMKE
	DATE	4/26/13

Allocations. There are no NOx emission increases from this project. As a result, the proposed permit revision is not considered as a “significant permit revision”.

CONCLUSIONS/RECOMMENDATIONS

The proposed project is expected to comply with all applicable District Rules and Regulations. Since the proposed project is considered as a “de minimis significant permit revision”, it is exempt from the public participation requirements under Rule 3006 (b). A proposed permit incorporating this permit revision will be submitted to EPA for a 45-day review pursuant to Rule 3003(j). If EPA does not raise any objections within the review period, a revised Title V permit will be issued to this facility with Permits to Operate issued for this equipment in Section D.