

**SITE SPECIFIC
REASONABLY AVAILABLE CONTROL TECHNOLOGY
(RACT) PETITION
OFFICE OF AIR MANAGEMENT**

**Rea Magnet Wire Company
3600 East Pontiac Street
Fort Wayne, IN 46896**

is hereby authorized to operate

eight (8) H-9 magnet wire coating ovens each equipped with a 2 part electric heated catalytic VOC incineration process. The eight ovens are designated as units 247, 248, 249, 250, 251, 252, 253, and 254. This approval also makes enforceable an 85% reduction in VOC emissions from magnet wire oven units 260 and 270.

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1 and 40 CFR 52.780, with conditions listed on the attached pages.

Construction Permit No.: CP 003-9913-00014	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

Operation Conditions

General Operation Conditions

1. That the data and information supplied in the application shall be considered part of this permit. Prior to any change in the operation which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1 (Construction and Operating Permit Requirements), the change must be approved by the Office of Air Management (OAM).
2. That the permittee shall comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder.

Effective Date of the Permit

3. That pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.

Title V Applicability

The Permittee has submitted their Part 70 application (T-003-6959-00014) on October 21, 1996 for the existing source. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

Preventive Maintenance Plan

5. That pursuant to 326 IAC 1-6-3 (Preventive Maintenance Plans), the Permittee shall prepare and maintain a preventive maintenance plan, including the following information:
 - (a) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices.
 - (b) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions.
 - (c) Identification of the replacement parts which will be maintained in inventory for quick replacement.

The preventive maintenance plan shall be submitted to IDEM, OAM upon request and shall be subject to review and approval.

Transfer of Permit

6. That pursuant to 326 IAC 2-1-6 (Transfer of Permits):
 - (a) In the event that ownership of these H-9 magnet wire coating ovens with 2 part electric heated catalyst is changed, the Permittee shall notify OAM, Permit Branch, within thirty (30) days of the change. Notification shall include the date or proposed date of said change.
 - (b) The written notification shall be sufficient to transfer the permit from the current owner to the new owner.
 - (c) The OAM shall reserve the right to issue a new permit.

Permit Revocation

7. That pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:

- (a) Violation of any conditions of this permit.
- (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.
- (c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.
- (d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.
- (e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

Availability of Permit

8. That pursuant to 326 IAC 2-1-3(l), the Permittee shall maintain the applicable permit on the premises of this source and shall make this permit available for inspection by the IDEM, or other public official having jurisdiction.

Performance Testing

9. That pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements) compliance stack tests shall be performed for volatile organic compounds (VOC) from one of the H-9 ovens utilizing ML enamel coating within 180 days after issuance of this approval to determine the overall VOC control efficiency. A stack test shall be performed on either oven unit 260 or 270 utilizing representative worst-case enamels to show compliance with the 85% reduction in overall VOC control efficiency. All tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.

- (a) A test protocol shall be submitted to the OAM, Compliance Data Section, 35 days in advance of the test.
- (b) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.
- (c) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.
- (d) Whenever the results of the stack test performed exceed the level specified in this permit, appropriate corrective actions shall be implemented within thirty (30) days of receipt of the test results. The Permittee shall minimize emissions while the corrective actions are being implemented.
- (e) Whenever the results of the stack test performed exceed the level specified in this permit, a second test to demonstrate compliance shall be performed within 120 days. Failure of the second test to demonstrate compliance may be grounds for immediate revocation of this permit to operate the affected facility.

Malfunction Condition

10. That pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):

- (a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) or appointed representative upon request.
- (b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAM, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.
- (c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).
- (d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

Emergency Reduction Plans

11. Pursuant to 326 IAC 1-5-2 (Emergency Reduction Plans; Submission):

- (a) The Permittee prepared and submitted written emergency reduction plans (ERPs) consistent with safe operating procedures on October 21, 1996.
- (b) If the ERP is disapproved by IDEM, OAM, the Permittee shall have an additional thirty (30) days to resolve the differences and submit an approvable ERP. If after this time, the Permittee does not submit an approvable ERP, IDEM, OAM, shall supply such a plan.
- (c) These ERPs shall state those actions that will be taken, when each episode level is declared, to reduce or eliminate emissions of the appropriate air pollutants.
- (d) Said ERPs shall also identify the sources of air pollutants, the approximate amount of reduction of the pollutants, and a brief description of the manner in which the reduction will be achieved.
- (e) Upon direct notification by IDEM, OAM, that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the approved ERP for the appropriate level. [326 IAC 1-5-3]

Site Specific RACT Limit

12. Pursuant to 326 IAC 8-1-5, each H-9 magnet wire coating oven (units 247 through 254) shall achieve the following:

- (a) the VOC content of the coatings used shall not exceed 7.64 pounds per gallon coating as delivered to the applicator, excluding water,

- (b) the catalyst shall be replaced once every six months to ensure that the catalytic oxidizer is achieving the required overall efficiency,
- (c) VOC emissions shall be limited to 4.7 pounds of VOC per gallon of coating and 0.89 tons per year,
- (d) the capture system shall be operated in such a manner as to maintained an overall control efficiency of not less than 90%, and
- (e) the capture system fan shall be operated at any time any of the ovens are operated.

13. 85% VOC Reduction

Magnet wire coating oven units 260 and 270 shall permanently reduce VOC emissions by 85% of levels currently emitted. Each oven shall have the following corresponding limitations:

- (a) The thermal oxidizer for Oven Unit 260 shall be operated at or above the temperature determined during compliance tests to maintain a minimum 85% overall efficiency.
- (b) The thermal oxidizer for Oven Unit 270 shall be operated at or above the temperature determined during compliance tests to maintain a minimum 85% overall efficiency.
- (c) The Permittee may utilize a lower temperature for Oven Units 260 and 270 if it performs VOC testing utilizing Method 25 (40 CFR 60, Appendix A) for VOC or other methods as approved by the Commissioner to ensure compliance with the 85% overall efficiency at the lower temperature.
- (d) The Permittee shall monitor the temperature for the thermal oxidizers for Oven Units 260 and 270 once per shift while the ovens are in production.

14. Record Keeping Requirements

That a log of information necessary to document compliance with Operation Conditions 12 and 13 shall be maintained. These records shall be kept for at least the past 36 month period and made available upon request to the Office of Air Management (OAM). These records shall include a log of the VOC content of coatings, log of VOC emissions, the date, time of the catalyst replacement for the H-9 ovens and the date, time, and temperature of the thermal oxidizer for oven units 260 and 270 recorded once per shift. All corrective actions taken as a result of an exceedance of a limit, an excursion from the parametric values, or a malfunction that may have caused excess emissions must be included in such log.

**Please note - This form should only be used to report malfunctions
applicable to Rule 326 IAC 1-6 and to qualify for
the exemption under 326 IAC 1-6-4.**

326 IAC 1-6-1 Applicability of rule

Sec. 1. The requirements of this rule (326 IAC 1-6) shall apply to the owner or operator of any facility which has the potential to emit twenty-five (25) pounds per hour of particulates, one hundred (100) pounds per hour of volatile organic compounds or SO₂, or two thousand (2,000) pounds per hour of any other pollutant; or to the owner or operator of any facility with emission control equipment which suffers a malfunction that causes emissions in excess of the applicable limitation.

326 IAC 1-2-39 “Malfunction” definition

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. (Air Pollution Control Board; 326 IAC 1-2-39; filed Mar 10, 1988, 1:20 p.m. : 11 IR 2373)

***Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

Indiana Department of Environmental Management Office of Air Management

Technical Support Document (TSD) for Reasonably Available Control Technology (RACT) Petition

Source Background and Description

Source Name:	Rea Magnet Wire Company
Source Location:	3600 East Pontiac Street, Fort Wayne
County:	Allen
RACT Petition No.:	003-9913-00014
SIC Code:	3357
Reviewer:	M. E. Sims

The Office of Air Management (OAM) has received a request to establish a site-specific RACT emission limit under the provisions of 326 IAC 8-1-5 "Petition for site-specific reasonably available control technology (RACT) plan" from Rea Magnet Wire Company relating to the operation of eight (8) H-9 magnet wire coating ovens each equipped with a 2 part electric heated catalytic volatile organic compound (VOC) incineration process. The eight (8) ovens are designated as units 247, 248, 249, 250, 251, 252, 253, and 254.

H-9 oven units 247, 248, and 249 were permitted under registration CP 003-2003-00014 issued on February 24, 1992. Pursuant to this registration and 326 IAC 8-2-8 (Magnet Wire Coating Operations) these three (3) units shall not discharge into the atmosphere any VOC in excess of 1.7 lbs per gallon excluding water and the minimum destruction efficiency of the control device was not to be any less than 96.3 %. No stack test were required of these units.

H-9 oven units 250, 251, 252, 253, and 254 were permitted under construction permit CP 003-3297-00014 issued on March 21, 1994. Under the provisions of this construction permit and 326 IAC 8-2-8 these five (5) units were required to use coatings with a VOC content not to exceed 7.64 lbs per gallon coating as delivered to the applicator excluding water. The minimum overall VOC destruction efficiency for the control device for these ovens was 78 %. A stack test was required of one (1) of the ovens to show compliance with these limits.

This stack test was conducted on March 13, 1995 on H-9 oven unit 254. Rea Magnet Wire Company submitted a report on the VOC overall control efficiency from this stack test which was reviewed by OAM Compliance Data Section with the following summary of the test results:

Average Rate During Test (VOC Usage)	0.847 lb-VOC/hr
Maximum Permitted Rate (VOC Usage)	2.0 lbs-VOC/hr
Average Capture Efficiency	100 %
Incinerator Average Destruction Efficiency	99.05 %
Incinerator Average Catalyst Temperature	960 deg. F
Overall Control Efficiency	99.05 %
Minimum Permitted Overall Control Efficiency	78 %
Status	IN COMPLIANCE

While developing their Title V permit application (received by IDEM on October 21, 1996) Rea Magnet Wire Company determined that these eight (8) ovens could not achieve the control efficiencies required to comply with the 326 IAC 8-2-8 limits. Rea Magnet Wire Company also believes that the emission limits established in CP 003-3297 Operation Condition Number 5 (shown below) do not satisfy the requirements of 326 IAC 8-2-8.

CP 003-3297, Operation Condition 5

That the overall VOC control efficiency of the catalytic incineration processes be at least 78%. Overall VOC control efficiency is defined as the capture efficiency multiplied by the destruction efficiency. The magnet coating ovens shall be deemed in compliance with 326 IAC 8-2-8 provided that:

- (a) the VOC content of the coatings used shall not exceed 7.64 pounds per gallon coating as delivered to the applicator, excluding water,
- (b) the temperature of the catalyst pre-heater shall not be less than the temperature required to achieve the overall VOC control efficiency of 78%,
- (c) and that the capture system be operated in such a manner as to maintain an overall efficiency of at least 78%, and
- (d) sensors and recording equipment measuring the capture system fan operation, and incineration temperature shall be operated at any time any of the ovens are operated.

Rea Magnet Wire Company contends that to meet the requirements of 326 IAC 8-2-8 the overall control efficiency will need to be 98 %. Rea Magnet Wire Company has temporarily discontinued use of oven units 247, 248, and 249. Oven units 250, 251, 252, 253, and 254 are operated at 92 % overall control efficiency with emissions of 4.18 lbs per gallon of coating (4.31 lbs/day).

On January 8, 1998 a "Petition To Modify Registration Number CP 003-2003 and Permit Number CP 003-3297 Either To Remove Requirements of 326 IAC 8-2-8 or To Replace Those Requirements With Site Specific RACT Limits Established Under 326 IAC 8-1-5" was received in the IDEM Commissioner's Office. This petition sought to either:

- (a) remove the applicability requirements of 326 IAC 8-2-8 for the H-9 ovens or
- (b) establish an alternative site-specific RACT emission limit of 4.7 pounds of VOC per gallon of coating and the capture system be operated in such a manner as to maintain an overall efficiency of approximately 88%. These limits would apply to all eight (8) H-9 ovens.

On June 23, 1998 a "Supplement To Petition For Site-Specific RACT For H-9 Ovens" was received by OAM. In this supplement, Rea Magnet Wire Company offered to make federally enforceable an 85% reduction to VOC's from oven units 260 and 270.

Review Of Request To Remove Requirements of 326 IAC 8-2-8

Rea Magnet Wire Company requested that IDEM delete the second paragraph of the Registration (paragraph shown below) and delete Operation Condition Number 5 (shown earlier) from the Permit because each H-9 oven emits less than 15 pounds of VOC's per day.

Second Paragraph of Registration 003-2003

Pursuant to 326 IAC 8-2-8 (Magnet wire coating operations, copy enclosed) no owner or operator of a magnet wire coating oven shall discharge into the atmosphere any volatile organic compound in excess of 1.7 pounds per gallon excluding water. The overall efficiency of the controls for Volatile Organic Compounds (VOC) must be no less than 96.3% in order to comply with this rule.

Rule 326 IAC 8-2-8 applies to ovens with actual emissions of greater than 15 pounds per day of VOC'S before controls. Rea Magnet Wire Company has stated that oven units 250, 251, 252, 253, and 254 operate at 4.31 lbs per day at an overall control efficiency of 92% per oven. This equates to before control emissions of 53.88 lbs per day.

IDEM believes that the applicability of 326 IAC 8-2-8 to the Rea Magnet Wire Company H-9 ovens is appropriate and therefore the request to delete this applicability from the registration and construction permit is denied.

Request For Alternative Emission Limit Under 326 IAC 8-1-5

Rea Magnet Wire Company submitted a petition in accordance with 326 IAC 8-1-5 (a) seeking:

- (a) an alternative emission limit of 4.7 pounds of VOC per gallon of coating versus the 326 IAC 8-2-8 limit of 1.7 pounds of VOC per gallon of coating and
- (b) the capture system be operated in such a manner as to maintain an overall control efficiency of approximately 88% versus 96.3% in Registration 003-2003 and 78% in CP 003-3297.

Among the rational stated by Rea Magnet Wire Company for granting the alternative limits (which will be discussed later) included the following:

- (a) Operation Condition 5 of CP 003-3297 does not satisfy the requirements of 326 IAC 8-2-8. An error was made by IDEM in the equivalency calculation to determine the required overall control efficiency of 78.8% for the H-9 ovens.
- (b) The H-9 ovens cannot feasibly comply with the limits set out in 326 IAC 8-2-8 because they cannot achieve 100% capture efficiency. IDEM interpretation of the stack test data for H-9 oven unit 254 was incorrect in concluding a 100% average capture efficiency resulting in an overall control efficiency of 99.05%.

IDEM Determination of Required Overall Control Efficiency in CP 003-3297

Rea Magnet Wire Company contends that IDEMs used an incorrect method to determine the overall control efficiency required by the H-9 ovens. The original calculations from CP 003-3297 are provided below.

Required Overall Efficiency Calculations as calculated in CP 003-3297

$$O = ((V - E) / V) * 100$$

where: O = overall efficiency

V = actual lb VOC/gal coating excluding water
(daily volume weighted average)

E = 326 IAC 8-2-8 emission limit (1.7 lb/gal)

where daily volume-weighted average = 3(lb VOC/hr) / 3gal/hr for the following coatings:

Coating	lb VOC/gal exc. water	gal/hr	lb VOC/hr
ML enamel	7.64	1.73	14.43
nylon	7.47	0.07	0.52
solvar	6.3	0.29	1.83
Total		2.09	16.78

$$V = 16.78 \text{ lb VOC/hr} / 2.09 \text{ gal/hr} = 8.03 \text{ lb VOC/gal excluding water}$$

$$O = ((8.03 - 1.7) / 8.03) * 100 = (6.33 / 8.03) * 100 = (0.788) * 100 = 78.8\% \text{ overall efficiency}$$

There are two steps in determining the control efficiency necessary to comply with 326 IAC 8 rules when using non-compliance coatings. The first step is to calculate an equivalent emission limit in pounds per gallon solids and the second step is to calculate the required overall VOC control efficiency using the equivalent emission limit and the VOC content of the actual coating expressed in pounds per gallon coating solids as applied.

Review of these calculations clearly shows that an equivalent emission limit was not calculated and the basis for the calculations is not pounds per gallon coating solids. In addition to these errors the lb VOC/hr value for ML enamel is also incorrect in that $(7.64) \times (1.73) = 13.22$ not 14.43.

H-9 Oven Unit 254 Stack Test Data

A series of three consecutive VOC emission stack tests were performed on H-9 oven unit 254 on March 13, 1995 to quantify VOC hood capture and overall destruction efficiency via EPA methods 25 and 25A. The following table summarizes VOC hood capture efficiency and destruction efficiency for each of the three runs.

Run Number	Hood Capture Efficiency (%)	Destruction Efficiency (%)
1	92.10	98.9
2	98.67	99.07
3	122.34	99.17

As shown above, run number 3 had a capture efficiency greater than 100%. Use of this number in determining the overall control efficiency was handled differently by IDEM and Rea Magnet Wire Company. The overall control efficiency is determined by taking the average of the three hood capture efficiencies and multiplying this value by the average of the three destruction efficiencies.

IDEM compliance staff witnessing the stack test saw no reason to throw out the capture efficiency value for run number and used the value to determine the overall control efficiency. IDEM's average capture efficiency was determined to be:

$$(92.10 + 98.67 + 122.34) / 3 = 104.37\%$$

This was truncated to 100% capture efficiency. The average destruction efficiency was determined to be:

$$(98.9 + 99.07 + 99.17) / 3 = 99.05\%$$

Therefore the overall control efficiency determined by IDEM was:

$$(\text{capture efficiency}) \times (\text{destruction efficiency}) \times (100) = (1.0) \times (.9905) \times (100) = 99.05\%$$

This is the value recorded by IDEM for the official stack test for the H-9 ovens.

Rea Magnet Wire Company discarded the capture efficiency value for run number 3 considering it an outlying data point. They instead used the average VOC mass flow rate in the oven hood from runs number 1 and 2 to compute the hood capture percent for run number 3. By this method, Rea Magnet Wire Company calculated a capture efficiency for run number 3 of 88.71%.

This value was then average with the run number 1 and 2 values for the following average capture efficiency for the three runs:

$$(92.10 + 98.67 + 88.71) / 3 = 93.16\%$$

Using this capture efficiency value with the destruction efficiency value (which was the same as calculated by IDEM) the overall control efficiency determined by Rea Magnet Wire Company was:

$$(0.9316) \times (0.9905) \times (100) = 92.27\%$$

Both values exceeded the required overall control efficiency of 78% as calculated originally in the TSD. No further resolution of the discrepancy with the run number 3 capture efficiency was pursued.

Initial Investigation of RACT Petition Request

Upon receiving the request for the RACT alternative emission limit, the compliance files were check for results from an official stack test on the H-9 ovens. Seeing the overall control efficiency reported by IDEM as 99.05% and reading in the RACT petition that the control efficiency required to comply with 326 IAC 8-2-8 was 98%, my initial inclination was to deny the RACT petition. This is what lead to the discovery that the required overall control efficiency determined in the original TSD was flawed.

Re-calculating the required control efficiency disclosed that indeed the required control efficiency should have been 98%.

The corrected overall control efficiency calculations are provided below:

Step 1 - equivalent emission limit

$$E = L / ((1 - (L/D))) \quad \text{where: } L = \text{applicable emission limit (1.7 lbs VOC / gal coating)}$$
$$D = \text{density of VOC in coating (7.36 lbs VOC / gal coating)}$$

$$E = 1.7 / ((1 - (1.7 / 7.36)) = 1.7 / (1 - 0.23) = (1.7 / 0.77) = \mathbf{2.21 \text{ lbs VOC / gal-solids}}$$

Step 2 - overall required control efficiency

$$O = ((V - E) / V) * 100 \quad \text{where: } O = \text{overall efficiency}$$
$$V = \text{actual lb VOC/gal coating solids as applied (daily volume weighted average)}$$
$$E = \text{equivalent emission limitation pounds of VOC per gallon of coating solids as applied}$$

The value for "V" is taken from the emission calculation spreadsheet for surface coating for the worst case coating, which in this case is the ML enamel. This value as I can determine from researching the files is 136.36 lb VOC per gallon coating solids as applied.

Therefore the overall required control efficiency is :

$$O = ((136.36 - 2.21) / 136.36) * 100 = (134.15 / 136.36) * 100 = (0.9838) * 100 = \mathbf{98.38 \%}$$

Discussing the stack test results with OAM compliance staff resulted in recalculating the overall control efficiency from the stack test data. Compliance staff stated that the following values should be used to determine the overall control efficiency:

average capture efficiency	93.6%
average destruction efficiency	98.88%

This calculates to an overall control efficiency of $((0.936) \times (0.9888)) \times 100 = \mathbf{92.55\%}$. **This is less than the calculated required overall control efficiency.**

Review of H-9 Ovens

The ovens are called H-9 because they are horizontal ovens and nine feet in length. The ovens are used for unique and highly engineered insulated wire products for applications in electric motors, electrical generating equipment, and electrical distribution transformers. The ovens represent an older technology and there are no replacements for these ovens as they have the capability of applying up 110 coats. The ovens use felt applicators to apply the coatings due to the fine size wires produced. The use of felt applicators require higher solvent coatings than other wire magnet operations.

The ovens are currently operated by Rea Magnet Wire Company at approximately 92% control efficiency which equates to an emission rate of 4.18 pounds of VOC per gallon of coating. Each oven is equipped with an external two part electric catalyst for VOC incineration. The first stage catalyst has an efficiency of 85% and the second stage catalyst has an efficiency of 75%. The overall destruction efficiency of this two part catalyst system is 96.25% $(1 - ((1 - 0.85) \times (1 - 0.75))) \times 100$. Actual emissions for each oven are 4.31 lbs per day. Annual emissions for each oven are approximately 0.8 tons per year or approximately 6.4 tons total (8×0.8) .

The ovens cannot operate at 100% capture efficiency because there has to be openings for the wire and also enclosing the ovens will cause problems with the felt applicators due to increased heat buildup. If Rea Magnet Wire Company could provide a total enclosure for the ovens it is estimated that the cost of construction would be approximately \$240,000.00 (\$30,000.00 per oven). There would be additional cost associated with fuel cost costs and lost revenues.

Review of Rea Magnet Wire Company Wire Products Division

The Rea Magnet Wire Company Wire Products Division was established in 1981. The facility produces a precision drawn and insulated copper wire product (magnet wire) used in the manufacture of electric motors, electrical generating equipment, electrical distribution transformers, and electro-mechanical coils. The process includes two steps: 1) wire drawing; and 2) enamel coating of the wire. The source is a major stationary source with the potential to emit (PTE) VOC exceeding 250 tons per year.

Emission units at the source include approximately 34 magnet wire coating ovens and two (2) natural gas fired boilers.

The source has submitted a Part 70 (T 003-6959-00014) application on October 21, 1996.

Recommendation

Rea Magnet Wire Company proposes an alternative emission limit of 4.7 pounds of VOC per gallon of coating and to operate the capture system in such a manner as to maintain an overall control efficiency of approximately 88%.

IDEM proposes the following site-specific RACT limit for each of the eight (8) H-9 oven:

- (a) VOC emissions shall not exceed 4.7 pounds of VOC per gallon of coating and
- (b) the capture system shall be operated in such a manner as to maintain an overall control efficiency of 90%.

This proposal is based on the following:

- (a) A petition in accordance with the requirements of 326 IAC 8-1-5 (Petition for site-specific reasonably available control technology (RACT) plan) requesting an alternate emission limit was received by IDEM on January 8, 1998 with supplemental information received on June 23, 1998.
- (b) Due to the number of coatings required of some of the specialized products produced by the H-9 ovens, no replacement oven is available.
- (c) No suitable substitute coating is available which will provide the same product quality.
- (d) Initial errors by IDEM in the permitting of oven units 250, 251, 252, 253, and 254 resulted in the understating of the required overall control efficiency used for compliance determination.
- (e) Total enclosure of the H-9 ovens is not practical due to the nature of the applicators used to apply the coatings.
- (f) Each H-9 oven currently emits approximately 0.8 tons per year of VOC. If capable of being operated at an overall control efficiency meeting the requirements of 326 IAC 8-2-8 VOC emissions per oven would be approximately 0.3 tons per year. This represents a total of 4.0 tons per year above the 326 IAC 8-2-8 emissions.
- (g) Allen County is attainment for all criteria pollutants.
- (h) Rea Magnet Wire Company has agreed to voluntarily "over-control" two (2) other magnet wire ovens (oven units 260 and 270) to offset any increased emissions from the H-9 ovens. These ovens combined emit approximately 196 tons per year of VOC without control. Rea Magnet Wire Company proposes to make federally enforceable a reduction in emissions from these ovens of 85%. **This 85% reduction will be an operation condition included in the RACT approval.** Any remaining reduction will not be banked for future use.

Oven unit 260 is permitted under Operation Permit 02-07-86-0605 issued on August 10, 1982. This permit requires this oven to be operated using a direct flame thermal oxidizer at a control efficiency of 85%. There were no 326 IAC 8 (then 325 IAC 8) limits applicable to this unit. This reduction will become federally enforceable upon issuance of the RACT approval.

Oven unit 270 is permitted under Operation Permit 02-07-86-0604 issued on August 10, 1982. This permit requires this oven to be operated using a direct flame thermal oxidizer at a control efficiency of 85%. There were no 326 IAC 8 (then 325 IAC 8) limits applicable to this unit. This reduction will become federally enforceable upon issuance of the RACT approval.

Oven Units 260 & 270, 85% Reduction in VOC Potential to Emit				
Oven Unit	Coating	VOC Input (lb/hr)	VOC Input (T/Y)	85% reduction
260	1268 Formvar	22.22	97.32	14.60
270	1268 Formvar	22.57	98.86	14.83
Totals			196.18	29.43

Total reduction in VOC emissions due to 85% overall control of oven units 260 and 270 is 166.75 tons per year.

- (i) A stack test will be required of the following:
 - 1) one of the H-9 ovens to show compliance with the alternative RACT limit using a similar protocol to the March 1995 test and
 - 2) either Oven Unit 260 or 270 utilizing representative worst-case enamels to show compliance with the 85% reduction in overall VOC control efficiency.

- (j) Per "Control of Volatile Organic Emissions from existing Stationary Sources Volume IV: Surface Coating for Insulation of Magnet Wire" (EPA-450/2-77-033) a 90% control efficiency for catalytic is a reasonable value.

Indiana Department of Environmental Management Office of Air Management

Addendum to the Technical Support Document for Reasonably Available Control Technology (RACT) Petition

Source Name: Rea Magnet Wire Company
Source Location: 3600 East Pontiac Street, Fort Wayne
County: Allen
RACT Petition No.: 003-9913-00014
SIC Code: 3357
Reviewer: M. E. Sims

On August 24, 1998, the Office of Air Management (OAM) had a notice published in the Fort Wayne Gazette, Fort Wayne, Indiana, stating that Rea Magnet Wire Company had applied for a Reasonably Available Control Technology (RACT) Alternate Emission Limit for eight (8) H-9 magnet wire coating ovens to comply with State Rule 326 IAC 8-2-8. The notice also stated that OAM proposed to issue a permit for this installation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed and that a public hearing concerning the air pollution impact of this proposed source would be held on Thursday, September 24, 1998, at 7:00 PM, in the City County Building, Commissioners Court Room, Room 200, One East Main Street, Fort Wayne, IN.

No comments were received during the thirty (30) day public comment period or during the public hearing regarding the proposed alternative emission limits. Upon further review, OAM has made the following changes (changes are bolded for emphasis).

Operation Condition 14 is revised for better clarification;

14. Record Keeping Requirements

That a log of information necessary to document compliance with Operation Conditions 12 and 13 shall be maintained. These records shall be kept for at least the past 36 month period and made available upon request to the Office of Air Management (OAM). These records shall include **a log of the VOC content of coatings, log of VOC emissions**, the date, time of the catalyst replacement **for the H-9 ovens** and the date, time, and temperature of the thermal oxidizer **for oven units 260 and 270 recorded once per shift**. All corrective actions taken as a result of an exceedance of a limit, an excursion from the parametric values, or a malfunction that may have caused excess emissions must be included in such log.