MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 062017-005

Project Number: 2017-02-023
Installation Number: 021-0009

Parent Company: Johnson Controls Battery Group, Inc.

Parent Company Address: P.O. Box 591, Milwaukee, WI 53201

Installation Name: Johnson Controls Battery Group, Inc.

Installation Address: 4722 Pear Street, St. Joseph, MO 64503

Location Information: Buchanan County (S25, T57N, R35W)

Application for Authority to Construct was made for:
The increase in production of Absorbent Glass Mat (AGM) batteries. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

☐ Standard Conditions (on reverse) are applicable to this permit.

☑ Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

Prepared by
Ryan Schott
New Source Review Unit

Director or Designee
Department of Natural Resources

JUN 14 2017
Effective Date

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Enforcement and Compliance Section of the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Enforcement and Compliance Section of the Department's Air Pollution Control Program of the anticipated date of startup of this (these) air contaminant source(s). The information must be made available within 30 days of actual startup. Also, you must notify the Department's regional office responsible for the area within which you are located within 15 days after the actual startup of this (these) air contaminant source(s).

A copy of the permit application and this permit and permit review shall be kept at the installation address and shall be made available to Department's personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit using the contact information below.

Contact Information:
Missouri Department of Natural Resources
Air Pollution Control Program
P.O. Box 176
Jefferson City, MO 65102-0176
(573) 751-4817

The regional office information can be found at the following website:
http://dnr.mo.gov/regions/

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Johnson Controls Battery Group, Inc.
Buchanan County (S25, T57N, R35W)

1. Superseding Condition
   A. The conditions of this permit supersede the specified special conditions found in the following construction permits previously issued by the Air Pollution Control Program:
      1) 052011-010 Special Condition 1 (all)
      2) 032003-030A Special Condition 3.A (only the portion that applies to EP-425)
      3) 032003-030 Special Condition 1.B (only the portion that applies to EP-425 & EP-426)
      4) 032003-030 Special Condition 2.A (only the portion that applies to EP-426)

2. Control Device Requirement – Baghouse with Secondary HEPA Filter
   A. Johnson Controls Battery Group, Inc. shall control emissions from the equipment in the following table using baghouses with secondary HEPA filters, as specified in the permit application.

Table 1. Baghouses with Secondary HEPA Filters

Emission Point	Process Description	Control Device
EP-425	Pasting Line & Mixer 6 Pasting Line 7 with Mixer & 1.2 MMBtu/hr oven	Baghouse 10 (36,000 acfm)
EP-426	COS Line 11 COS Line 12 Stackers 32, 33, 34 & 35 Maintenance Shop	Baghouse 11 (42,500 acfm)
EP-452	COS Line 13 AGM Stacker 29, 30 & 31 Central Vacuum System 2	Baghouse 12 (44,000 acfm)
EP-460	Strip Casters 1 & 2 with Melt Pots Pellet Casters 1 & 2 with Melt Pots Dust Injection System Inspection Tables 1 & 2 Pellet Caster 3 with Melt Pot Sovema Mills 10 & 11 Cooling Exhaust	Baghouse 13 (46,000 acfm)
	Silos 1-8	Baghouse 16 (6,000 acfm)
EP-461	COS Line 10 AGM COS Line 14	Baghouse 14 (20,000 acfm)
EP-462	Screeners 1, 2 & 3 Truck Unload	Baghouse 15 (6,000 acfm)

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

EP-475	Sovema Ball Mill 10	NF13000 Baghouse (4,500 acfm)
EP-476	Sovema Ball Mill 11	NF13000 Baghouse (4,500 acfm)

B. The baghouses shall be operated and maintained in accordance with the manufacturer's specifications. The baghouses shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that Department of Natural Resources' employees may easily observe them.

C. Replacement filters shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).

D. Johnson Controls Battery Group, Inc. shall monitor and record the operating pressure drop across the baghouses at least once per week while the plant is operating. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.

E. Johnson Controls Battery Group, Inc. shall maintain an operating and maintenance log for the baghouses, which shall include the following:
   1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
   2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

3. Control Device Requirement – Oil Mist Filter

A. Johnson Controls Battery Group, Inc. shall control emissions from the Automated Post Builder (APB) 14 [EP-470] using an oil mist filter, as specified in the permit application.

B. The oil mist filter shall be operated and maintained in accordance with the manufacturer's specifications. The oil mist filter shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. This gauge or meter shall be located such that Department of Natural Resources' employees may easily observe it.

C. Replacement oil mist filters shall be kept on hand at all times. The filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).

D. Johnson Controls Battery Group, Inc. shall monitor and record the operating pressure drop across the oil mist filter at least once every 24

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

hours while the plant is operating. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.

E. Johnson Controls Battery Group, Inc. shall maintain an operating and maintenance log for the oil mist filter, which shall include the following:
1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

4. Uncontrolled Emission Points
Johnson Controls Battery Group, Inc. may operate the equipment in the following table without the use of control devices.

Table 2. Uncontrolled Emission Points

Emission Point	Process Description	Emission Point	Process Description
EP-465	Heat Seal 14	EP-485	Chemset 7 1.52 MMBtu/hr burner
EP-480	Chemset 7	EP-486	Chemset 8 1.52 MMBtu/hr burner
EP-481	Chemset 8	EP-487	Chemset 9 1.52 MMBtu/hr burner
EP-482	Chemset 9	EP-488	Chemset 10 1.52 MMBtu/hr burner
EP-483	Chemset 10	EP-489	Chemset 11 1.52 MMBtu/hr burner
EP-484	Chemset 11		

5. Record Keeping and Reporting Requirements
A. Johnson Controls Battery Group, Inc. shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include SDS for all materials used.

B. Johnson Controls Battery Group, Inc. shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.

6. Modification to Release Parameters Requirement
Johnson Controls Battery Group, Inc. shall notify the Air Pollution Control Program prior to making any modifications to the facility that impact the release parameters and/or emission rates listed in the memo: *Ambient Air*

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

Quality Impact Analysis (AAQIA) for Johnson Controls Battery Group, Inc. – Absorbent Glass Mat Battery Production Increase Request (April 12, 2017). In the event the Air Pollution Control Program determines the changes are significant, Johnson Controls Battery Group, Inc. shall submit an updated AAQIA indicating compliance with the lead RALs.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW
Project Number: 2017-02-023
Installation ID Number: 021-0009
Permit Number: 06 2017 - 005

Installation Address:
Johnson Controls Battery Group, Inc.
4722 Pear Street
St. Joseph, MO 64503
Buchanan County (S25, T57N, R35W)

Parent Company:
Johnson Controls Battery Group, Inc.
P.O. Box 591
Milwaukee, WI 53201

REVIEW SUMMARY

- Johnson Controls Battery Group, Inc. has applied for authority to increase the production of Absorbent Glass Mat (AGM) batteries.
- The application was deemed complete on February 23, 2017.
- HAP emissions expected from the proposed equipment include lead compounds.
- 40 CFR 60 Subpart KK – *Standards of Performance for Lead-Acid Battery Manufacturing Plants* applies to the installation and proposed equipment.
- 40 CFR 63 Subpart PPPPPP – *National Emission Standards for Hazardous Air Pollutants for Lead Acid Battery Manufacturing Area Sources* applies to the installation and proposed equipment.
- Baghouses with secondary HEPA filters and an oil mist filter are being used to control particulate matter and lead emissions from the equipment in this permit.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are below their respective de minimis levels.
- This installation is located in Buchanan County, an attainment area for all criteria pollutants.
- This installation is on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation is classified as item number 27, *Any other stationary source category which, as of August 7, 1980, is being regulated under section 111 or 112 of the Act*, because 40 CFR 60 Subpart KK applies to the equipment. The installation's major source level is 250 tons per year and fugitive emissions are counted toward major source applicability.

- Ambient air quality modeling was performed to determine the impact of lead.
- Emissions testing is not required for the equipment as part of this permit. Testing may be required as part of other state, federal, or applicable rules.
- Submittal of an amendment to your Basic Operating Permit is required within 30 days of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Johnson Controls Battery Group, Inc. operates a battery manufacturing facility in St. Joseph, Missouri. The installation is a minor source for PM_{10} and a de minimis source for lead compounds. Johnson Controls Battery Group, Inc. currently has a Basic Operating Permit under project 2015-10-002, which expires March 31, 2021. The following New Source Review permits listed in Table 3 have previously been issued to Johnson Controls Battery Group, Inc. from the Air Pollution Control Program.

Table 3: Permit History

Permit Number	Description
0381-004	Replacement of four plate stackers on COS lines 2 through 5
0281-003	Installation of a central vacuum cleaner
1182-002	Installation of two OSI tunnel type drying ovens for lead paste
0185-004	Increase production by installing an additional lead-acid battery line
0485-011	Installation of a second COS line
0788-006	Installation of a scrap lead plate salvage tumbler
0290-013	Installation of a chemset/steam chamber
1090-004	New paste mixer and strip caster to produce lead strip for casting
0492-012	Replacement of battery plate stackers on COS lines 2, 3 & 7 and upgrade COS operations plus heat sealers on COS lines 2 & 3
1192-015	Replacement of the existing RADCO vacuum system and a Mark V COS line
0793-026	Increase production by modifying existing equipment
0194-009	Installation of three new JCI pasters and a JCI-II vacuum stacker
1294-010	Installation of a chemset chamber, two lead oxide storage tanks, two trim dry ovens, an expanded metal plate making system 2, a lead cylinder caster, and two lead oxide mills
0895-035	Installation of COS Line 9
0196-015	Installation of a lead cylinder caster, two Sovema lead oxide mills and a storage tank system
0796-014	Installation of a new pasting line, four new Sovema Mills, one cylinder caster lead pot & caster units, and the modification of chemset chambers 1, 2 & 3
1199-007	Installation of a lead pot to support existing five cylinder casters
032003-030	Increase in production at the plant
062006-008	Modification of existing chemsets and addition of a new chemset
112006-002	Installation of two additional lead oxide ball mills and a cylinder casting lead
102009-010	Installation of alternate COS line
062010-010	Installation of a curing set
052011-010	Installation of absorbent glass mat (AGM) battery manufacturing equipment

Johnson Controls Battery Group, Inc. currently produces batteries using the following process. At the facility, lead ingots are melted and cast by a strip caster to make grid stock. Lead oxide powder is made by charging lead ingots into pellet casters that feed ball mills which pulverize the lead pellets and combine the lead with air. Alternatively, lead oxide may be purchased and delivered by trucks and stored onsite.

Lead oxide powder from the silos is combined with water, sulfuric acid, an expander, and other additives to create a paste. The paste is forced into the interstices of negative grids to create negative plates. A paste of lead oxide, water, and sulfuric acid is also forced into the interstices of positive grids to create positive plates. The paste is mixed above the pasting lines, gravity fed to a hopper, and applied to the plates.

The pasted plates are flash dried in a pasting oven, cut, stacked, and placed on plate bucks (metal pallets). The plate bucks are placed in one of the chemset chambers where the plates are cured in a controlled environment at a constant temperature and humidity. Cured plates are then taken to the assembly machine (stacker) and stacked into groups of plates called books, where the positive and negative plates are arranged in the appropriate manner. The absorbent glass mat media are inserted between the plates, and electrical insulators are inserted. The books are loaded into one of the cast-on-strap (COS) machines where molten lead is poured around the plate lugs to form a strap. These books of plates are joined by a strap to form an element. The elements are assembled into battery cases, the straps are welded to each other to connect the elements, and a cover is heat-sealed to the battery case. Finally, the automated post builder (APB) melts lead to form finished posts.

For the formation of absorbent glass mat (AGM) batteries, a glass mat media is placed between the plates, which absorbs a dilute sulfuric acid solution. In contrast, flooded batteries are filled with sulfuric acid solution during formation. Both AGM and Starting, Lighting, Ignition (SLI) batteries are filled and charged at the distribution center. Once charged, the batteries are complete and ready for shipment.

PROJECT DESCRIPTION

Johnson Controls Battery Group, Inc. is proposing to modify their existing pellet casting, oxide manufacturing, lead oxide storage, transfer, pasting, and assembly operations at the facility in order to increase production of AGM batteries. The project will include the construction of new equipment and the rearrangement of existing equipment at the installation. A summary of the proposed changes being made at the facility is listed in Table 4.

Table 4. Summary of Proposed Changes

Existing Layout		Proposed Layout	
EP-425 Baghouse with secondary HEPA [Baghouse 10] (36,000 acfm)	Pasting Line & Mixer 6 Stacker 35 COS Line 10	EP-425 Baghouse with secondary HEPA [Baghouse 10] (36,000 acfm)	Pasting Line & Mixer 6 Pasting Line 7 with Mixer & 1.2 MMBtu/hr oven (**new**)
EP-426 Baghouse with secondary HEPA [Baghouse 11] (42,500 acfm)	COS Line 11 COS Line 12 Stacker 32 Stacker 33 Stacker 34 Maintenance Shop	EP-426 Baghouse with secondary HEPA [Baghouse 11] (42,500 acfm)	COS Line 11 COS Line 12 Stacker 32 Stacker 33 Stacker 34 Maintenance Shop Stacker 35 (**rerouted**)
EP-452 Baghouse with secondary HEPA [Baghouse 12] (44,000 acfm)	COS Line 13 AGM Stacker 31 AGM	EP-452 Baghouse with Secondary HEPA [Baghouse 12] (44,000 acfm)	COS Line 13 AGM Stacker 31 AGM Stacker 29 AGM (**new**) Stacker 30 AGM (**new**) Central Vacuum System 2 (**new**)
EP-454 Baghouse with secondary HEPA [Baghouse 13] (36,000 acfm)	Strip Caster 1 & Melt Pot Strip Caster 2 & Melt Pot Pellet Caster 1 & Melt Pot Pellet Caster 2 & Melt Pot Dust Injection System Inspection Table Screener 1 Screener 2	EP-460 Baghouse with secondary HEPA [Baghouse 13] (46,000 acfm) Baghouse with secondary HEPA [Baghouse 16] (6,000 acfm)	Strip Caster 1 & Melt Pot Strip Caster 2 & Melt Pot Pellet Caster 1 & Melt Pot Pellet Caster 2 & Melt Pot Dust Injection System Inspection Table Pellet Caster 3 (**new**) 2.00 MMBtu/hr Pellet Caster Melt Pot 3 (**new**) Sovema Mill 10 Cooling Exhaust (**new**) Sovema Mill 11 Cooling Exhaust (**new**) Inspection Table (**new**) Silos 1-6 Silos 7-8 (**new**)
N/A	N/A	EP-461 Baghouse with secondary HEPA [Baghouse 14] (20,000 acfm)	COS Line 10 (**rerouted**) COS Line 14 AGM (**new**)
N/A	N/A	EP-462 Baghouse with secondary HEPA [Baghouse 15] (6,000 acfm)	Screener 1 (**rerouted**) Screener 2 (**rerouted**) Screener 3 (**new**) Truck Unload (**rerouted**)
N/A	N/A	EP-465 Uncontrolled	Heat Seal 14 (**new**)
N/A	N/A	EP-470 Oil Mist Filter (100 acfm)	APB 14 (**new**)
N/A	N/A	EP-475 NF13000 Baghouse with secondary HEPA (4,500 acfm)	Sovema Ball Mill 10 (**new**)

N/A	N/A	EP-476 NF13000 Baghouse with secondary HEPA (4,500 acfm)	Sovema Ball Mill 11 (**new**)
N/A	N/A	EP-480 Uncontrolled	Chemset 7 (**new**)
N/A	N/A	EP-481 Uncontrolled	Chemset 8 (**new**)
N/A	N/A	EP-482 Uncontrolled	Chemset 9 (**new**)
N/A	N/A	EP-483 Uncontrolled	Chemset 10 (**new**)
N/A	N/A	EP-484 Uncontrolled	Chemset 11 (**new**)
N/A	N/A	EP-485 Uncontrolled	Chemset 7 1.52 MMBtu/hr burner (**new**)
N/A	N/A	EP-486 Uncontrolled	Chemset 8 1.52 MMBtu/hr burner (**new**)
N/A	N/A	EP-487 Uncontrolled	Chemset 9 1.52 MMBtu/hr burner (**new**)
N/A	N/A	EP-488 Uncontrolled	Chemset 10 1.52 MMBtu/hr burner (**new**)
N/A	N/A	EP-489 Uncontrolled	Chemset 11 1.52 MMBtu/hr burner (**new**)

EMISSIONS/CONTROLS EVALUATION

The emission factors used in this analysis for all equipment handling lead compounds were obtained from NSPS emission limitations, Johnson Controls Battery Group, Inc. engineering knowledge, and the results of prior performance testing at the installation. The emission rates obtained from previous performance tests are equivalent to the rates listed in the emission rate table submitted with the installation's previous construction permit (052011-010). Emission rates used for project emission points with new or rerouted equipment were calculated by adding together the previously tested emission rates of the constituent emission units. Where applicable, such as in the case of Baghouse 13, the project emission rate was compared to the emission rate limit of a similar baghouse at another Johnson Controls Battery Group, Inc. facility (Geneva, IL). For any emission points with only a single emission unit, the emission rate used is equivalent to the emission rate determined for a similar unit in the most recent stack test. For example, the Chemset 7-11 emission rates are all based on the Chemset 6 stack test performed August 25, 2010. Table 5 provides a summary of the design rates and emission factors used to calculate potential PM_{10}, $PM_{2.5}$, and lead emissions from the equipment in this project.

Table 5. Project Design Rates and Emission Factors

Emission Point	Maximum Design Rate		PM_{10} Emission Factor (gr/scf)	$PM_{2.5}$ Emission Factor (gr/scf)	Lead Emission Factor (gr/scf)
EP-425	8,470	lb pasted plates/hr	$1.25x10^{-3}$	$6.00x10^{-4}$	$3.25x10^{-5}$
EP-426	17,640	plates/hr	$1.25x10^{-3}$	$1.21x10^{-3}$	$9.00x10^{-6}$
EP-452	17,640	plates/hr	$1.25x10^{-3}$	$1.21x10^{-3}$	$1.00x10^{-5}$
EP-460	4,000	lb pellets/hr	$1.25x10^{-3}$	$1.10x10^{-3}$	$2.98x10^{-5}$
EP-461	112	batteries/hr	$1.25x10^{-3}$	$1.21x10^{-3}$	$1.00x10^{-5}$
EP-462	27,000	lb lead oxide/hr	$1.25x10^{-3}$	$6.00x10^{-4}$	$1.00x10^{-5}$
EP-465	112	batteries/hr	$1.25x10^{-3}$	$1.21x10^{-3}$	N/A
EP-470	112	batteries/hr	$1.25x10^{-3}$	$1.21x10^{-3}$	$4.50x10^{-5}$
EP-475	2,750	lb lead oxide/hr	$1.25x10^{-3}$	$4.88x10^{-4}$	$2.10x10^{-5}$
EP-476	2,750	lb lead oxide/hr	$1.25x10^{-3}$	$4.88x10^{-4}$	$2.10x10^{-5}$
EP-480	1,498	lb plates/hr	$1.25x10^{-3}$	$1.25x10^{-3}$	$9.00x10^{-6}$
EP-481	1,498	lb plates/hr	$1.25x10^{-3}$	$1.25x10^{-3}$	$9.00x10^{-6}$
EP-482	1,498	lb plates/hr	$1.25x10^{-3}$	$1.25x10^{-3}$	$9.00x10^{-6}$
EP-483	1,498	lb plates/hr	$1.25x10^{-3}$	$1.25x10^{-3}$	$9.00x10^{-6}$
EP-484	1,498	lb plates/hr	$1.25x10^{-3}$	$1.25x10^{-3}$	$9.00x10^{-6}$

Elemental lead is not considered a HAP; however, the lead portion of a lead compound (in addition to elemental lead) is considered a criteria pollutant. The entire mass of the lead compound is used to determine HAP emissions towards modeling applicability. The lead in AGM batteries is typically a high purity. To be conservative, all lead emissions were counted towards criteria and HAP emissions.

Potential emissions from all combustion units (Pasting Line 7 Oven, Pellet Caster Melt Pot 3 & Chemset Burners 7-11) were calculated using emission factors obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources,* Fifth Edition, Section 1.4 *Natural Gas Combustion* (July 1998).

Table 6 provides an emissions summary for this project. Existing potential emissions were taken from the installation's previous construction permit (052011-010). Existing actual emissions were taken from the installation's 2016 EIQ. Potential emissions of the project represent the potential of the new and affected existing equipment, assuming continuous operation (8,760 hours per year).

Table 6: Emissions Summary (tons per year)

Pollutant	Regulatory *De Minimis* Levels	Existing Potential Emissions	Existing Actual Emissions (2016 EIQ)	Potential Emissions of the Project	New Installation Conditioned Potential
PM_{10}	15.0	24.40	9.04	11.24	35.64
$PM_{2.5}$	10.0	N/D	8.61	9.70	N/A
SO_x	40.0	N/D	0.04	0.03	N/A
NO_x	40.0	N/D	7.29	4.64	N/A
VOC	40.0	N/D	0.47	0.25	N/A
CO	100.0	N/D	6.12	3.90	N/A
Lead	0.6	4.18	0.14	0.15	4.33
Lead Compounds	0.01[1]	N/D	N/D	0.15	N/A
Total HAPs	25.0	N/D	N/D	0.24	N/A

N/A = Not Applicable; N/D = Not Determined
[1]Screening Model Action Level (SMAL)

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are below their respective de minimis levels.

APPLICABLE REQUIREMENTS

Johnson Controls Battery Group, Inc. shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Start-Up, Shutdown, and Malfunction Conditions,* 10 CSR 10-6.050
- *Operating Permits*, 10 CSR 10-6.065
- *Submission of Emission Data, Emission Fees and Process Information,* 10 CSR 10-6.110
    - Per 10 CSR 10-6.110(4)(B)2.B(II) and (4)(B)2.C(II) a full EIQ is required for the first full calendar year the equipment (or modifications) approved by this permit are in operation.

- *Restriction of Emission of Odors*, 10 CSR 10-6.165
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220

SPECIFIC REQUIREMENTS

- *New Source Performance Regulations*, 10 CSR 10-6.070
  - *Standards of Performance for Lead-Acid Battery Manufacturing Plants*, 40 CFR 60 Subpart KK
- *MACT Regulations*, 10 CSR 10-6.075
  - *National Emission Standards for Hazardous Air Pollutants for Lead Acid Battery Manufacturing Area Sources*, 40 CFR 63 Subpart PPPPPP

AMBIENT AIR QUALITY IMPACT ANALYSIS

Ambient air quality modeling was performed to determine the ambient impact of lead. Potential lead emissions from the project exceed the screening model action level (SMAL) of 0.01 tons per year; therefore, the installation was modeled for compliance with the risk assessment levels (RALs). A National Ambient Air Quality Standards evaluation was not necessary because the potential lead emissions from the project did not exceed the de minimis level of 0.6 tons per year. The modeling results, shown in Table 7, indicate compliance with the RALs; therefore, no further action is required. For more information, see the document entitled, *Ambient Air Quality Impact Analysis (AAQIA) for Johnson Controls Battery Group, Inc. – Absorbent Glass Mat Battery Production Increase Request* (April 12, 2017).

Table 7. Modeling Summary

Pollutant	Modeled Impact ($\mu g/m^3$)	RAL ($\mu g/m^3$)	Time Period
Lead	0.6538	2	8-hour
Lead	0.3533	0.357	24-hour
Lead	0.0779	0.7	Annual

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, it is recommended that this permit be granted with special conditions.

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated February 9, 2017, received February 14, 2017, designating Johnson Controls Battery Group, Inc. as the owner and operator of the installation.

- The Air Pollution Control Program memorandum, *Ambient Air Quality Impact Analysis (AAQIA) for Johnson Controls Battery Group, Inc. – Absorbent Glass Mat Battery Production Increase Request* (April 12, 2017).

APPENDIX A

Abbreviations and Acronyms

%.....percent
°F.....degrees Fahrenheit
acfm.....actual cubic feet per minute
BACT.....Best Available Control Technology
BMPs.....Best Management Practices
Btu.....British thermal unit
CAM.....Compliance Assurance Monitoring
CAS.....Chemical Abstracts Service
CEMS.....Continuous Emission Monitor System
CFR.....Code of Federal Regulations
CO.....carbon monoxide
CO_2.....carbon dioxide
CO_2e.....carbon dioxide equivalent
COMS.....Continuous Opacity Monitoring System
CSR.....Code of State Regulations
dscf.....dry standard cubic feet
EIQ.....Emission Inventory Questionnaire
EP.....Emission Point
EPA.....Environmental Protection Agency
EU.....Emission Unit
fps.....feet per second
ft.....feet
GACT.....Generally Available Control Technology
GHG.....Greenhouse Gas
gpm.....gallons per minute
gr.....grains
GWP.....Global Warming Potential
HAP.....Hazardous Air Pollutant
hr.....hour
hp.....horsepower
lb.....pound
lbs/hr.....pounds per hour
MACT.....Maximum Achievable Control Technology
$\mu g/m^3$.....micrograms per cubic meter
m/s.....meters per second
Mgal.....1,000 gallons
MW.....megawatt
MHDR.....maximum hourly design rate
MMBtu....Million British thermal units
MMCF.....million cubic feet
MSDS.....Material Safety Data Sheet
NAAQS....National Ambient Air Quality Standards
NESHAPs National Emissions Standards for Hazardous Air Pollutants
NO_x.....nitrogen oxides
NSPS.....New Source Performance Standards
NSR.....New Source Review
PM.....particulate matter
$PM_{2.5}$.....particulate matter less than 2.5 microns in aerodynamic diameter
PM_{10}.....particulate matter less than 10 microns in aerodynamic diameter
ppm.....parts per million
PSD.....Prevention of Significant Deterioration
PTE.....potential to emit
RACT.....Reasonable Available Control Technology
RAL.....Risk Assessment Level
SCC.....Source Classification Code
scfm.....standard cubic feet per minute
SDS.....Safety Data Sheet
SIC.....Standard Industrial Classification
SIP.....State Implementation Plan
SMAL.....Screening Model Action Levels
SO_x.....sulfur oxides
SO_2.....sulfur dioxide
tph.....tons per hour
tpy.....tons per year
VMT.....vehicle miles traveled
VOC.....Volatile Organic Compound

Missouri Department of dnr.mo.gov
NATURAL RESOURCES
Eric R. Greitens, Governor Carol S. Comer, Director

JUN 14 2017

Mr. John Murray
Environmental Manager
Johnson Controls Battery Group, Inc.
4722 Pear Street
St. Joseph, MO 64503

RE: New Source Review Permit - Project Number: 2017-02-023

Dear Mr. Murray:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application and with your amended operating permit is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

This permit may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at the following website: http://dnr.mo.gov/regions/. The online CAV request can be found at http://dnr.mo.gov/cav/compliance.htm.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: www.oa.mo.gov/ahc.

If you have any questions regarding this permit, please do not hesitate to contact Ryan Schott, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:rsj

Enclosures

c: Kansas City Regional Office
PAMS File: 2017-02-023

Permit Number: 062017-005