

ESCO Corporation – Portland
25-Year History of Major Environmental Air Quality Projects

Year	Project Description
1992-Mar	Plant 3 preliminary odor assessment of shell binder system and odor reduction alternatives
1992	Replaced two heat-treat ovens for the Main Plant. New ovens recycle heated air, there by using less gas and also have lower NOx emission burners.
1994-Nov	Main Plant and Plant 3, air emissions inventory report; including criteria pollutants, toxic and hazardous pollutants and volatile organic compounds (VOCs).
1995-Oct	Source testing of Plant 3, EAF baghouses (no. 3-301240 and 3-301120) for PM.
1996-Jul	Volatile organic compound RACT analysis. Identify reasonably available control technologies (RACT) that could be applied to VOC emission sources at the Main Plant.
1996-Dec	Odor testing and evaluation report by RMT of ESCO's Main Plant and Plant 3. Included odor modeling.
1997-Mar	ECOSORB odorant testing; Main Plant, Fuller dust collector.
1998-Jul	Main Plant, doghouse odor analysis and evaluation.
1999-Feb	Installation completed for Griffin baghouse (no. 301110) for Main Plant doghouse pouring and cooling areas. Notice of Construction sent to DEQ on Jul, 1998.
1999-Sep	Installed replacement baghouse for Plant 3 sand coating operation. New baghouse provides better capture of PM.
1999-Oct	Title V Permit, chose synthetic minor status which voluntarily limits ESCO's steel production to minimize air pollutant emissions
2000-Jan	ANOTEC odorant testing.
2000-Apr	Title V Permit, special conditions report. Evaluate options for reducing PM and odor-bearing emissions at the Main Plant and Plant 3. ESCO acted upon the odor modeling/study results (subsequent year 2000-2001 equipment changes/purchases are listed below). Also analyzed and identified various VOC emissions.
2000-Mar	Source testing of Main Plant, Griffin baghouse for PM.
2000-Oct	Source testing of Plant 3, sand coating operation for specific organic pollutants.
2001	Stack extension of Main Plant, Fuller baghouse (no. 301150). Fuller baghouse captures smoke and odors from doghouse area shakeout.
2001	Replaced heat-treat ovens (last of four ovens installed in 2001). New ovens recycle heated air, there by using less gas and also have lower NOx emission burners.

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2001	Replacement of Main Plant, doghouse horizontal roof fan over shakeout pan, with vertical fan and taller stack.
2001-Jul	Purchase and installation of new baghouses for Plant 3 pouring, cooling and shakeout (PCS). Baghouses numbered 3-301160 and 3-301170. New cooling room added to system. Improved capture of PM and dispersion of odors.
2001-Jul	Source testing of Main Plant, EAF baghouse for criteria air pollutants.
2001-Aug	Source testing of Main Plant, EAF baghouse for metals.
2001-Sep	Odor study – Guisborough, UK. Feasibility of odor abatement measures.
2001-Nov	Source testing of Plant 3, PCS baghouses for metals.
2001-Nov	Source testing of Plant 3, PCS baghouses for criteria air pollutants.
2001-Nov	Source testing of Plant 3, PCS baghouses for organic hazardous air pollutants (HAPs).
2002-Jan	Source testing of Plant 3, EAF baghouse for criteria air pollutants.
2002-Jan	Source testing of Plant 3, EAF baghouses (no. 3-301240 and 3-301120) for metals.
2002-Apr	Source testing of Main Plant, main floor shakeout baghouse (no. 301040) for PM.
2002-Apr	Source testing of Main Plant, Fuller baghouse (no. 301150) for criteria air pollutants.
2002-Apr	Source testing of Main Plant, AOD baghouse (no. 301250) for PM.
2003-Feb	Overhead door policy implemented. Reduces potential fugitive PM emissions.
2003-May	ESCO - Port Hope, Canada – Odor Report. Evaluate manufacturing odor sources and odor strengths, and potential abatement efforts in Port Hope and Portland. Port Hope's binder processes are similar to Portland.
2003-Aug	Main Plant binder change. Went from Ashland PepSet 1670/2670 to Ashland PepSet X1000/2000.
2003-Oct	Plant 3 Pouring Line reconfiguration and modification of Shakeout process. Included replacement rotary drum shakeout. Improved capture of fugitive dust and odors.
2003-Oct	Plant 3 odor trial of samples of potential low-odor coated sand for Plant 3.
2004-Jan	Odor trial of potential lower-odor sand binder systems for Main Plant.
2004-Apr	Odor sampling and evaluation of alternative binder systems at Mohawk College, Ontario, Canada.
2004-Jul	Odor sampling and analysis of Plant 3, PCS stack emissions.

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2004-Sep	SECOR odor modeling report for Plant 3; recommendations for PCS stack height changes.
2004-Nov	Implemented internal scrap metal plan which specifies feed materials for melting furnaces. Plan helps further reduce any potential melting of unwanted materials.
2004-Dec	Reformulated ESCO dip-paint to further reduce hazardous air pollutant (HAP) content.
2004	Main Plant, EAF Baghouse cleaning system converted to on-demand cleaning system.
2004	Stopped using paint burn-off oven in Main Plant, paint and packaging building. Burn-off oven was a source of criteria pollutants and odor emissions.
2005-Feb	Started continuous baghouse monitoring program. Continuously monitors baghouse differential pressures and provides historical data.
2005-Mar	Modified Plant 3 tray dump area to improve capture of fugitives and odors.
2005-Jun	Source testing of Main Plant, EAF baghouse for metals.
2005-Jun	Source testing of Main Plant, Griffin baghouse for PM.
2005-Jun	Source testing of Main Plant, EAF baghouse for criteria air pollutants.
2005-Jun	Source testing of Plant 3, PCS baghouses for criteria air pollutants.
2005-Jun	Source testing of Plant 3, EAF baghouses (no. 3-301240 and 3-301120) for criteria air pollutants.
2005-Jun	Source testing of Plant 3, EAF baghouses (no. 3-301240 and 3-301120) for metals.
2005-Aug	Title V Permit, special conditions report. Evaluate options for reducing odor-bearing emissions at the Main Plant and Plant 3.
2005-Nov	Source testing of Main Plant, Fuller baghouse (no. 301150) for organic HAPs.
2005-Nov	Source testing of Main Plant, Griffin baghouse for organic HAPs.
2005-Nov	Source testing of Plant 3, sand coating operation for specific organic pollutants.
2005-Nov	Source testing of Plant 3, PCS baghouses for organic HAPs.
2005-Nov	Source testing of Main Plant, Fuller baghouse (no. 301150) for PM.
2005-Nov	Source testing of Main Plant, AOD baghouse (no. 301250) for PM.

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2006-Feb	Initiated development of new baghouse continuous monitoring software. Software will automatically log monitoring data and automatically alarm if required information is missing or out of specification. System has a planned completion date of early 2007.
2006-Jun	Increased stack height for Plant 3, PCS baghouse stack. Based on odor modeling analysis this will help reduce potential odor impacts.
2006-Jun	Source testing of Plant 3, PCS baghouses for organic HAPs.
2006-Jun	Source testing of Plant 3, sand coating operation for specific organic pollutants.
2006-Jun	Source testing of Main Plant, Griffin baghouse for organic HAPs.
2006-Jun	Source testing of Main Plant, Fuller baghouse (no. 301150) for organic HAPs.
2006-Jul	Source testing of Main Plant, main floor shakeout baghouse (no. 301040) for PM.
2006-Aug	Odor sampling and modeling report of Main Plant, doghouse and V-Bay stacks.
2006-Aug	Report on effects of binder reduction efforts within Plant 3 sand coating operation. Plant 3 binder usage per ton of coated sand has been reduced, which in turn reduces the odor source.
2006-Sep	New Plant 3 pneumatic sand transport system to reduce fines and binder usage. Fewer fines during the sand coating process allows for less binder usage, which reduces odor generation.
2006-Oct	Main Plant Furnace ventilation; cancelled 8-fan option (potential electric energy savings) for furnace collector. Determined that reduced fan option did not prove as beneficial as initially intended; all 12-fans are needed to provide sufficient capture ventilation. Reverted back to 12-fan operation.
2006-Oct	Main Plant oil sand replacement report. Report looks at odor and smoke reductions attributed to binder changes within the Main Plant.
2006-Oct	Main Plant binder change. Went from Ashland Isocure Ironman 304/604c to Ashland Isocure Focus 100/200.
2006-Nov	Main Plant EAF canopy hood modification study / modification trial to reduce fugitive emissions *.
2006-Nov	Started Plant 3 spray painting research and development (R&D) project, testing viability of high volume low pressure spray painting of Plant 3 parts. R&D phase would include up to 2000 gallons of spray paint usage and extend through Nov, 2007.
2006-Dec	Modified Plant 3 sand bin ventilation system to reduce fines and fugitive emissions emanating from the 4-bin penthouse. These changes are part of the new pneumatic sand transport project.

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2006-Dec	Plant 3 investigation of ventilation for melting process; looking for potential fugitive dust reductions. Report lists replacement of existing EAF bag houses, better containment of pelletizing process and installation of new ladle repair area baghouse.
2007-Jan	High canopy hooding over Main Plant electric arc furnaces (EAF) modified to better capture particulate.
2007-Feb	Investigation of Main Plant chain floor binder reduction efforts. Replacement of OMCO mixer with a Palmer mixer has helped reduce excess sand and binder, because smaller batches can be made, and also helped reduce the amount of binder needed within the core mold making process for the chain floor area. Reduced binder ratios also reduces odor generation.
2007-Feb	Main Plant investigation of solid waste collection and processing. Documentation for inspection process has been modified to better define potential fugitive emission sources. Methods of containerizing baghouse dust being reviewed for potential improvements.
2007-Apr	Source testing of Main Plant, EAF dust collector (no. 301010) for metals.
2007-Apr	Source testing of Main Plant, EAF dust collector (no. 301010) for PM.
2007-May	Source testing of Main Plant, AOD dust collector (no. 301250) for PM.
2007-Jun	Plant 3 installation of new ladle repair area dust collector. Collector No. 3-301391.
2007-Jun	Source testing of Plant 3, PCS dust collectors (no. 3-301160 and 3-301170) for organic HAPs.
2007-Jun	Source testing of Plant 3, sand coating operation for specific organic pollutants.
2007-Jun	Source testing of Main Plant, Griffin dust collector (no. 301110) for organic HAPs.
2007-Jun	Source testing of Main Plant, Fuller dust collector (no. 301150) for organic HAPs.
2007-Jul	Plant 3 installation of new replacement EAF dust collectors (no. 3-30112S and 3-30124N) and better containment of pelletizing process.
2007-Aug	Source testing of Plant 3, EAF dust collectors (no. 3-30112S and 3-30124N) for Metals.
2007-Aug	Source testing of Plant 3, EAF dust collectors (no. 3-30112S and 3-30124N) for PM.
2007-Nov	Notified DEQ of Plant 3 spray painting R&D project going to full production. Received DEQ approval for type-1 Permit change. Plant 3 spray painting project resulted in a 5.42 ton VOC reduction for 2007.
2007-Dec	ESCO - Port Hope, Canada – Odor sampling and noise evaluation.

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2008-Jun	Plant 3 odor sampling of TechniSand, Signature Series coated sand. Odor testing report does not indicate any improvement.
2008-July	Plant 3 odor sampling of PLENCO coated sand. Material did not smell any better than existing Georgia-Pacific resin coated sand.
2008-July	Completed installation of Main Plant, Chain Floor Sand System Dust Collector. The replacement dust collector does a better job of ventilating the chain floor sand delivery system, ventilating the molding production equipment, and minimizing sand dust fugitives. Collector No. 301210.
2009-Mar	Completed development and installation of new dust collector continuous monitoring software. Software automatically logs monitoring data and automatically alarms if required information is missing or out of specification.
2009-Apr	Source testing of Main Plant, EAF dust collector (no. 301010) for metals and particulate matter (PM).
2009-Apr	Source testing of Main Plant, AOD dust collector (no. 301250) for metals, PM and Cr 6+.
2009-Apr	Source testing of Plant 3, EAF dust collectors (no. 3-30112S and 3-30124N) for metals and PM.
2009-Jun	Main Plant; Furnace Dust Collection Improvements A3. Improved particulate dust capture from No.1 and No.2 furnaces by optimizing existing pollution control equipment operations and documenting changes.
2009-Jun	Main Plant; Doghouse A3 - Reduced Fugitive Emissions, Smoke and Odor. Improved air quality within the Doghouse pouring and cooling areas through reduced shakeout times and standardized work. Documented improvements.
2009-Oct	Plant 3 binder change. Went from Georgia-Pacific GP2211 Resi-Flake binder and GP 2001 Hexamine Catalyst to HAI Plastiflake 1127 LP and HAI NS-40A Hexamine Catalyst.
2009-Nov	Plant 3; Air Toxic Use Reduction. Changed to an alkyd aerosol paint containing less Xylene, resulting in an approximate 120 lb. annual VOC and HAP reduction.
2010-Apr	Initiated air emissions assessment (environmental control alternatives analysis) with ERM. Included MP and P3. Also included review of current control and capture efficiencies, and emissions inventory. Members of public participated in meetings and tours.
2010-Jun	<i>GNA Project 4.</i> Plant 3; Increased cooling room, pouring and shakeout area integrity inspection frequency from annual to semi-annual. Cooling room enclosure is inspected monthly.

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2010-Jul	ERM completed air emissions assessment report for ESCO Portland (included MP and P3). Also included review of current control and capture efficiencies, and emissions inventory.
2010-Sep	Plant 3 Summer improvements. A) New vibratory sand screen for sand handling system; helped reduce fugitives. B) Tray-dump station and cooling room improvements; replaced curtains and improved room closure; helped reduce fugitives. C) Modified induction furnace ventilation and pouring loop collection hoods; also helped reduce fugitives.
2010-Nov	<i>GNA Project 10.</i> Plant 3, installed cyclone prior to dust collector (3-301510) for thermal sand re-claimer. Cyclone captures sand from waste air stream that would have normally gone to dust collector. Reduces abrasion to equipment and inlet grain loading to dust collector.
2011-Mar	<i>GNA Project 2.</i> Main Plant; rerouted LFA, Bay-1 air arc station into Bay-2 Powder Burn dust collector (301260). Was uncontrolled, but now controlled.
2011-May	Source testing of Plant 3 Induction Furnace, inlet duct to PCS dust collector for PM.
2011-Aug	<i>GNA Project 2.</i> Main Plant; purchased and installed new dust collector (301120) for LFA, Bay-2 air arc station. Emissions were uncontrolled, but now are controlled.
2012-Feb	Plant 3; Installation of Didion rotary drum separation unit to reclaim metal from slag, and a baghouse for control of dust emissions from the rotary drum separator.
2012-Mar	<i>GNA Project 8.</i> New overhead door plan approved and monthly inspection forms revised.
2012-May	<i>GNA Project 3.</i> Main Plant; Completed repair of fume extraction unit for chain table. Reported dust generation to NAC in November 2013.
2012-May	EthicsPoint, also known as Environmental Hotline was implemented in order to be responsive and provide meaningful data to ESCO and the NAC for formal emission complaints.
2012-Jun	<i>GNA Project 4.</i> Plant 3; Leaks and openings sealed in Pouring Cooling Shakeout in order to reduce PM, Metallic HAP's and odor emissions.
2012-Jul	<i>GNA Projects 11&12.</i> Main Plant and Plant 3; Approved Consultant conducted qualitative visual observations of dump back process before and after operating changes. Procedures were modified to reduce use of process. Consultant observed and issued report of findings.
2012-Oct	Upgraded Fuller baghouse associated with Doghouse in order to improve airflow and life cycle of bags.
2012-Dec	<i>GNA Project 9.</i> EAF operating procedures were reviewed and updated to optimize capture of particulate matter.

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2013-May	Main Plant; AOD lime silo vent connected to AOD dust collector to reduce fugitive emissions during silo filling.
2013-Jul	<i>GNA Project 10.</i> Replaced sand re-claimer's coarse fraction separator (cyclone) and designed and installed a solution that extends the life of the equipment.
2013-Jun	Main Plant; additional dust collector put into service to capture fabrication support weld emissions, previously uncontrolled.
2013-Jul	<i>GNA Project 5.</i> Plant 3; Conversion to a lower phenol binder system which reduced calculated emissions by 70.5%.
2013-Aug	<i>GNA Project 5.</i> Plant 3; Source testing of PCS, Pug Mill/ Sand Coater, and Mold & Core Making for Phenol Emissions.
2013-Dec	<i>GNA Project 1.</i> Main Plant; two new dust collectors added to the Doghouse pouring, cooling and shakeout processes.
2013-Dec	<i>GNA Project 7.</i> Installed bag leak detection probes in the Main Plant EAF dust collector, AOD dust collector, Plant 3 EAF dust collectors and Plant 3 Pouring-Cooling-Shakeout. Alarm settings and response procedures added to the Air Emission Control Device Operating Plan.
2014-Jan	<i>GNA Project 1.</i> Source testing of Main Plant Doghouse Shakeout-Unload dust collector and Pouring floor dust collector for PM, HAPs, Organic HAPs, and Odor.
2014-Mar	Main Plant; Dust Collector changes in the Upper Finishing department to accommodate robotic grinding cell installation.
2014-May	<i>GNA Project 6.</i> Main Plant; chain room binder change to reduce odor and organic HAPs
2014-Sep	<i>GNA Project 16.</i> Developed and implemented an Incident (Atypical) Investigation Plan. Employees trained to identify and report incidents that result in emissions above normal operations.
2014-Oct	<i>GNA Project 14.</i> Main Plant; AOD dust collector capture hood improvement to reduce fugitive emissions from Slinger Bay.
2014-Nov	<i>GNA Project 13.</i> Plant 3; Flow rate and temperature testing for Thermal Sand Reclamation system was performed to confirm operational parameters.
2015-Jun	<i>GNA Project 13.</i> Plant 3; Source testing of Thermal Sand Reclamation system was performed for VOCs to determine proper operating temperature. Based on results, minimum operating exhaust temperature was selected.

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2015-Jun	<i>GNA Project 14.</i> Main Plant; neighbors inspected the AOD procedures and equipment, further improvements to procedures were implemented.
2015-Jul	Main Plant; Addition of two smog hog dust collection units to the existing Rattler Dust Collector in the Upper Finishing Area.
2016-Feb	Plant 3; Robotic Spray Paint Booth installed at Plant 3, expected to result in more efficient painting and improvement in worker safety.