

February 16, 2016

Tracey Braun, M.Sc.  
Director  
Manitoba Conservation  
Government of Manitoba

Dear Tracey Braun,

Re: Notice of Alteration to Environmental License No. 3056 – Upgrade to Pollution Control Device.

This letter is intended to notify the Director about upgrading the filter media used in our pollution control devices located at SF-6, SF-10 and T13 processes. The upgraded filter media is called PROTECH BLUE 1” and it has a higher arrestance rate than the PS100D media that we had been using. (See Appendix A).

We consulted with the Community Liaison Committee about testing upgraded filter media and sent a notice to our Environmental Officer, Julie Froese, that we going to conduct tests to see if the improved filter media would work and not compromise the health and safety of our operators. (See Appendix B)

Based on the results of the testing PROTECH BLUE 1” will allow us to remove more particulate from the exhaust air stream, has no impact to air quality or to operator ventilation requirements.

If you have any questions or for more information, please contact me

Regards,

Roger Dack  
EHS & CI Coordinator  
Custom Castings  
2015 Dugald Road, Winnipeg MB R2J 0H3  
204-663-9142 x:245

C.c.  
Eshetu Beshada, Ph.D., P.Eng.  
Julie Froese, B.Env.Sc.

**[CONSIDER IT DONE]**

## Appendix A:



B.G.E. SERVICE & SUPPLY LTD.

# Polyester Pads & Bulk Rolls

### Application

Polyester filter medias from The Filter Shop at B.G.E. are used for many applications including commercial and institutional HVAC systems, unit ventilators, fan coil units, packaged terminal air conditioners, electrical cabinets and motors for protection from accumulations of dust and dirt.

### Product Description

Our Polyester medias are made from 100% synthetic fibers bonded with a fire retardant resin. The high loft synthetic fibers allow the media to be compressed for packaging but regain its full thickness when installed. High compression strength allows the media to maintain its full thickness in the airstream as resistance to airflow increases. Our polyester medias are easy to handle, non-toxic, non-allergenic, and are not affected by moisture. Medias are available in thicknesses ranging from ¼" to 2" depth.



### Adhesives

Polyester filter medias are available from The Filter Shop at B.G.E. in dry, dry tack treatment and wet tack. All adhesives are non-migrating ensuring that dirt that has been trapped in the media is retained as resistance to airflow increases.

Media	Adhesive Type	Color	Thickness	Roll Length	Arrestance	Initial Resistance @ 300FPM (1.52m/s)		Maximum Final Resistance	
						In. W.G.	Pa	In. W.G.	Pa
FM25	None	White	¼"	270'	65-70%	0.13	32.5	0.50	125
PS100D	None	White	1"	90'	75-80%	0.18	45.0	0.50	125
PROTECH BLUE	Dry Tack	Blue	1"	90'	80-85%	0.18	45.0	0.50	125
PS100T	Wet Tack	Yellow	1"	90'	80-90%	0.19	47.5	0.50	125
PS200D	None	Yellow	2"	60'	85-90%	0.20	50.0	1.0	250
PROTECH BLUE	Dry Tack	Blue	2"	60'	85-90%	0.20	50.0	1.0	250
PS200T	Wet Tack	Yellow	2"	60'	85-90%	0.20	50.0	1.0	250

Polyester-2014APRIL



CLEAN AIR EVERYWHERE 

www.thefiltershop.com

### [CONSIDER IT DONE]

#### Custom Castings Ltd.

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customcastings.com

## Appendix B



September 21, 2015

Julie Froese  
Environmental Officer  
Manitoba Conservation and Water Stewardship

PS100D/12/16  
FAXED

Dear Julie

We are notifying you that we plan to test filter media with a higher arrestance rating in our ventilation equipment located at T13, SF6 and SF10 machines.

The filter media we currently use is PS100D, it has an arrestance rating of 75 – 80%. The test filter media is called PROTECH BLUE (PB) it has an arrestance rating of 80-85%. PB is coated with a dry tack adhesive to ensure that particulate trapped in the media is retained as resistance to airflow increases. The testing is to determine whether the higher arrestance rating of PB will remove more particulate from the exhaust airstream while maintaining adequate ventilation for the machine operators.

We will run the test for two months beginning on September 28, 2015 and ending November 30, 2015. We will share the results of the testing with you and the Community Liaison Committee.

Thank you,  
  
Roger Dack  
EHS & CI Coordinator  
Custom Castings Ltd.  
204-663-9142 :245

### [CONSIDER IT DONE]

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February 18, 2016

Eshetu Beshada, Ph.D., P.Eng.  
Environmental Engineer  
Manitoba Conservation  
Government of Manitoba

Dear Dr. Beshada;

This letter is intended to notify you that we have improved the method of how we track our plant upgrades (Table 5-1R1 now Table 5-1R2) and as per project 18 we have decommissioned and removed gas fired furnace #8 today. We estimate the next gas fired furnace to be decommissioned in Q3 of 2017.

If you have any questions or for more information, please contact me.

Regards,

Roger Dack  
EHS & CI Coordinator  
Custom Castings  
2015 Dugald Road, Winnipeg MB R2J 0H3  
204-663-9142 x:245

C.c.  
Julie Froese, B.Env.Sc.

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Project No.	Esitimated Completion Date	Project Description	Current Status	Comment	Completion Date
10	31-Aug-12	<ul style="list-style-type: none"> <li>•Improve frequency of filter replacement in fume hoods.</li> <li>•Linked to Project No. 13 below.</li> </ul>	<b>Complete</b>	Pre-licensing (2012) frequency of flat-filter replacement dictated by when they clogged sufficiently to increase opacity in air accumulated within the hood ** Post-licensing filter-change frequency (Photo 1) now monthly; mass of particulate filtered out of atmospheric emissions is tracked (Table 1).	Jun-14
11	31-Oct-12	<ul style="list-style-type: none"> <li>•Improve emissions capture at source from sand-core stations; install new fume hoods.</li> </ul>	<b>Complete</b>	High operating temperatures (1350°F) at furnaces causes highest rate of resin volatilization. Creating new fume hoods will increase capture from each casting station. **After investigation, it was decided to capture the fumes at source as localized collection is more effective than general collection. Fume-collection shrouds now installed on individual tooling (Fig. 5-2R1).	May-13
12	30-Nov-12	<ul style="list-style-type: none"> <li>•Reduce number of open windows (and their room-air extraction fans).</li> </ul>	<b>Complete</b>	Improved air supply to worker stations near heat sources (e.g., furnaces) has reduced need for these windows.	Oct-14
13	30-Nov-12	<ul style="list-style-type: none"> <li>•Improve performance of station-specific air filters in fume hoods</li> </ul>	<b>Complete</b>	1st trial proved ineffective. 2nd trial based on installation of filter boxes with replaceable filter media (Fig. 5-2R1). Mass of particulate filtered out of atmospheric emissions is tracked monthly (Table 1). •2 Mar 2015; filter change and tracking frequency increased to weekly (Table 1).	May-14
14	30-Nov-12	<ul style="list-style-type: none"> <li>•Increase exit velocity of applicable stack emissions.</li> </ul>	<b>Complete</b>	Have inserted on-line axial-flow booster fans at the base of applicable stacks. This improvement will increase atmospheric mixing and dispersion.	Sep-12

Project No.	Esitimated Completion Date	Project Description	Current Status	Comment	Completion Date
15	28-Feb-13	<ul style="list-style-type: none"> <li>Route "Smoke Eater" box flue at Furnace 10 into stack above gas-fired Furnace 9 to encourage oxidation of volatiles inside stack during ascent; decommission existing Smoke Eater stack.</li> </ul>	<b>Complete</b>	Smoke Eater Box emissions at Furnace 10 that exited building in 2012 from smallest diameter and shortest stack, between two buildings (encouraging fumigation of northern neighbours) has been decommissioned and stack has been removed....	Feb-13
16	30-Nov-15	<ul style="list-style-type: none"> <li>Ensure emissions capture at source of new (Harrison) sand-core casting machine.</li> </ul>	<b>Cancelled</b>	<p>Low operating temperatures (400°F) at core making stations causes low rate of resin volatilization. Fume hoods at two existing stations capture emissions from each furnace. Decommission old SF-6 machine use the existing hood for the Harrison.</p> <p>**Old SF6 machine will be retained due to capacity requirements. Getting quotes on building and installing fume hood for the Harrison machine.</p> <p>~~Project cancelled. Improved emissions capture will be rolled into and a component of Project #27</p>	
17	31-Dec-16	<ul style="list-style-type: none"> <li>Increase the height of applicable roof-line stacks.</li> </ul>	<b>Active</b>	<p>Goal is to raise stack height by ~5 m. Will increase atmospheric mixing and dispersion.</p> <p>** Moved forward from Phase 2 into Phase 1.</p> <p>**Increased the height of 3 stacks at the shell core process on May 30, 2013 (Fig. 5-2R1).</p> <p>**Furnaces 7 through 10 will not have stacks raised. (See Phase 4 Proj. No. 29)</p> <p>**General ventilation exhaust ports will not be raised. (See Phase 4 Proj. No. 30).</p> <p>**2 stacks, at M4 &amp; M5, Will see their heights increased by Q4 2016.</p>	

Project No.	Esitimated Completion Date	Project Description	Current Status	Comment	Completion Date
18	31-May-19	<ul style="list-style-type: none"> <li>• Replace last four gas-fired furnaces with new electric furnaces, and in so doing, reduce the number of point sources at the roof.</li> </ul>	<b>Active</b>	<p>Will occur as part of the continuing replacement of gas-fired ceramic-crucible furnaces, at a rate of approximately 1 per year. Gas-fired furnaces lose 1.3 M BTU/hr each, cause 11% evaporative loss of molten aluminum, have larger footprint and make more noise.</p> <p>** Furnace #6 decommissioned June 30 2014. Electric replacement furnace is awaiting installation.</p> <p><b>•Feb 18, 2016; Gas furnace #8 decommissioned. Three gas fired furnaces remain, next replacement scheduled for Q3 2017</b></p>	
19		<ul style="list-style-type: none"> <li>•Add stack-top venturi (Bernoulli) collars to all raised stacks, to increase emissions exit velocities.</li> </ul>	<b>Complete</b>	<p>Increased exit velocities increases atmospheric mixing and dispersion.</p> <p>**Moved forward from Phase 2 into Phase 1.</p> <p>**Three raised stacks have had stack-top venturis installed.</p>	May-13
20	31-May-15	<ul style="list-style-type: none"> <li>•Install two Filtermist "S" series oil mist filter on Mazak CNC lathes. One located in the pulley cell and one in CNC department.</li> </ul>	<b>Complete</b>	To reduce oil mist emissions from applicable CNC equipment.	Jun-14
21	TBD	<ul style="list-style-type: none"> <li>•Recycle all/most spent sand now being disposed of by BFI.</li> </ul>	<b>On Hold</b>	<p>Seeking opportunities for recycling into asphalt, roadbed materials, landfill daily soil cover, etc.</p> <p>** Seeking/evaluating opportunity with municipal landfill operator.</p>	

Project No.	Esitimated Completion Date	Project Description	Current Status	Comment	Completion Date
22	31-May-17	<ul style="list-style-type: none"> <li>Use localized inert-gas blanket as constraint on air access to the molten aluminum.</li> </ul>	<b>Cancelled</b>	<p>Very expensive, and incremental improvement over current constraints of air access (needed for product quality) would be minimal. Easier and more logical to capture emissions at source than to deny air access to molten metal bath.</p> <p>** Moved forward from Phase 4</p> <p>**May be possible on Schaefer furnace</p> <p><b>~~Upon further review the project is impractical and is cancelled.</b></p>	
23		<ul style="list-style-type: none"> <li>Use emissions-dispersion model to benchmark current airshed quality and predict extent of improvement from potential mitigation measures.</li> </ul>	<b>Cancelled</b>	<p>Could be used to quantify extent of benefit from increased stack heights, but such quantification is less important than increasing the heights.</p> <p>** Moved to Phase 4.</p> <p><b>~~Cancelled</b></p>	
24		<ul style="list-style-type: none"> <li>Install wet scrubbers to capture waste heat, TSP and soluble aromatics.</li> </ul>	<b>Cancelled</b>	<p>Adds complexity to address extreme thermodynamics of the heat-recovery loop, and is very expensive. Creates additional challenges for storage and disposal of captured solids/sludge. Adds to noise dissemination.</p> <p>** Moved to Phase 4.</p> <p><b>~~Cancelled</b></p>	
25		<ul style="list-style-type: none"> <li>Treat all/most emissions (after heat exchange) in BioFilter.</li> </ul>	<b>Cancelled</b>	<p>Successful year-round (low-temperature) system operating at nearby Palliser Furniture, but heat-removal requirements to allow this type of emissions treatment would be complex and expensive.</p> <p>** Moved to Phase 4.</p> <p><b>~~Cancelled</b></p>	



Project No.	Esitimated Completion Date	Project Description	Current Status	Comment	Completion Date
26		<ul style="list-style-type: none"> <li>• Install Thermal Oxidizers to oxidize aromatic hydrocarbons in emissions.</li> </ul>	<b>Cancelled</b>	<p>Very expensive, but could fit with plan to install new furnace, fired by adjacent furnace emissions (T=1700°F) to briquet and melt aluminum shavings (now sold to recyclers; Chisick) for recovery in ingot. ** Plan to remove gas-fired furnaces eliminates this action as a possibility. Moved to Phase 4.  <b>~~Cancelled</b></p>	
27	TBD	<ul style="list-style-type: none"> <li>• Reconfigure shop floor to facilitate improved manifolding of all point sources of malodorous emissions.</li> </ul>	<b>Active</b>	<p>Expensive, very disruptive to already stressed production, and less likely to be effective than other measures now committed to. ** Moved to Phase 4.  <b>~~Upon review this project may have a significant positive effect on our neighbours concerns. Currently determining cost and time line to implement.</b></p>	
28		<ul style="list-style-type: none"> <li>• Install dosimeters upstream and downstream of site to supplement indoor air monitoring.</li> </ul>	<b>Cancelled</b>	<p>Certainty of access, vulnerability to vandalism and multiple other sources makes this problematic. ** Moved to Phase 4.  <b>~~Cancelled</b></p>	
29		<ul style="list-style-type: none"> <li>• Improve sealing of entire building.</li> </ul>	<b>Cancelled</b>	<p>Expensive, and less likely to be effective than other measures now committed to, and largely irrelevant as the essential exothermy of the plant means it is under negative pressure most of the year.  <b>~~Cancelled</b></p>	
30		<ul style="list-style-type: none"> <li>• Raise stacks at furnaces 7 through 10</li> </ul>	<b>Cancelled</b>	<p>Expensive and conflicts with the plan to eliminate all gas-fired furnaces. **Moved to Phase 4.  <b>~~Cancelled</b></p>	
31		<ul style="list-style-type: none"> <li>• Raise general ventilation ports ~5 m</li> </ul>	<b>Cancelled</b>	<p>Very expensive. Easier and more logical to capture emissions at the source. **Moved to Phase 4.  <b>~~Cancelled</b></p>	

Project No.	Esitimated Completion Date	Project Description	Current Status	Comment	Completion Date
32	11-Feb-16	•Improve particulate capture by using improved filter media.	<b>Complete</b>	<p>New Project (25 Aug 2015)            Previous filter material is PS100D with a Arrestance of 75-80%            Proposed filter media is PROTEK BLUE with a Arrestance is 80%-85%            •21 Sep 2015; Conservation MB was notified of testing improved filter media.            •17 Nov 2015; Testing complete.            •11 Feb 2016; NoA sent to MB Conservation.</p>	11-Feb-16