

**Pollution Prevention and Control Act 1999  
Pollution Prevention and Control  
Regulations 2000**

**Nissan Motor Manufacturing (UK) Limited**

**Permit to Operate a Part A (2) Installation  
Prescribed by  
Schedule 1 to the Pollution Prevention and Control  
Regulations 2000**

**Ref. LA-IPPC/A2/NER1/2006**

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## **Introduction**

This permit has been issued under the Pollution Prevention and Control Regulations 2000 to enable the operation of a scheduled activity covered by Part 1 to Schedule 1 of the PPC Regulations known as the Local Authority – Integrated Pollution Prevention and Control (LA-IPPC) regime which covers installations known as A2 installations.

This permit will replace the current authorisation under Part B of section 2.2 of Schedule 1 of the Environmental Protection (Prescribed Processes and Substances) Regulations 1991 made under the Environmental Protection Act 1990.

Compliance with emission limits specified in the EPA 1990 authorisation must be met until the relevant date is reached within the requirements of the LA-IPPC permit.

The permit details the conditions that must be adhered to during the operation of the installation.

In accordance with regulation 12(10) of the PPC Regulations the operator shall in operation of the installation use the best available techniques for preventing, or where that is not practicable, reducing emissions from the installation.

Throughout the permit there is reference to conditions requiring the operator to use Best Available Techniques (BAT) in each of the aspects of the management of the installation to prevent and where that is not practicable to reduce emissions. In determining BAT the operator should pay particular attention to relevant sections of the IPPC Sector Guidance Note SG2, appropriate Horizontal Guidance and any other relevant guidance.

Within the permit there is the requirement of the Operator to submit information to the Regulator and in addition the Regulator may seek further information at any time under Regulation 28 of the PPC Regulations provided that the request is reasonable.

### Public Register

Local authorities are required to maintain public registers containing information on installations in their area. If required certain information may be withheld from the public register where it is commercially confidential or it is in the interest of national security to do so.

### Variations to Permits

Whenever the Operator proposes a change in the operation of the installation the Regulator must be informed. A change in operation is defined in Regulation 2(1) of the PPC Regulations as a change in the nature or functioning or an extension of the installation that may have consequences for the environment. Such instances should be discussed with the Regulator who will issue an application form if necessary.

### Transfer of Permits

Should there be a change in the operator of the installation an application for transfer of the permit must be made to the Regulator. An application form is available for such applications.

An application may be received for the whole or part of your permit. Both the operator and the proposed transferee must jointly apply to have the permit transferred. The transfer will not be approved if the Regulator does not consider the proposed Permit holder to have the appropriate management systems and the competence to run the installation in compliance with the conditions of the permit.

### Permit Reviews

The Regulator will review permit conditions periodically in the light of new information on environmental effects, best available techniques or other relevant issues. The sector guidance notes will be kept under review and it is envisaged that changes to these notes will be the key consideration when reviewing permits and deciding on the need to amend, add or delete any conditions.

### Surrender of Permits

Where the Operator of the installation intends to cease operation of the activity the Regulator must be informed. An application to surrender the permit must be made to the Regulator in which it must be demonstrated that there is no pollution risk and that no further steps are required to return the site to a satisfactory state.

## Declaration

The Director of Community & Cultural Services for and on behalf of the City of Sunderland Council in accordance with the Pollution Prevention and Control Act 1999 and Regulation 10 of the Pollution Prevention and Control Regulations 2000 has determined the application for a permit submitted on 13<sup>th</sup> June 2003 by

### Name and Address of Operator

Nissan Motor Manufacturing (UK) Ltd.  
Washington Road,  
Sunderland.  
Tyne and Wear.  
SR5 3NS

### Registered Office

Nissan Motor Manufacturing (UK) Ltd.  
Washington Road,  
Sunderland.  
Tyne and Wear.  
SR5 3NS

The Director hereby permits the operator to carry out the activities listed below:

<b>Activities in the Stationary Technical Unit</b>	<b>Schedule 1 of The Pollution Prevention and Control (England and Wales) Regulations 2000 (S.I. 1973)(as amended) references</b>
Production & Processing of Metals – Non Ferrous	Chapter 2 – section 2.2, part A(2), paragraph(a) Melting including making alloys, of non-ferrous metals, including recovered products where- (i) The plant had a melting capacity of more than 20 tonnes per day and (ii) No furnace, bath or other holding vessel used in the plant for the melting has a design holding capacity of 5 tonnes or more

Name and Address of Installation

Nissan Motor Manufacturing (UK) Ltd.  
Washington Road,  
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Tyne and Wear.  
SR5 3NS

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## Non-ferrous Foundry Process

### Pollution Prevention and Control Regulations Schedule 1

Part 1: Activities

Chapter 2 – Production and Processing of Metals

Section 2.2 – Non-ferrous metals

Part A(2)

- (a) Melting including making alloys, of non-ferrous metals, including recovered products where-
- (i) The plant has a melting capacity of more than 20 tonnes per day and
  - (ii) No furnace, bath or other holding vessel used in the plant for the melting has a design holding capacity of 5 tonnes or more

### Process description

#### Introduction

NMUK Casting plant was installed between 1990 and 1993 for the manufacture of cylinder heads and intake manifolds using Aluminium low pressure die casting techniques. In January 2003 production of intake manifolds ceased and currently the plant manufactures cylinder heads for use within NMUK production plant and other vehicle manufacturing plants in Europe.

The plant has a design melting capacity of one (1) tonne of Aluminium alloy per hour per furnace and a design holding capacity of four (4) tonnes per furnace. There are two furnaces, therefore the design capacities are:

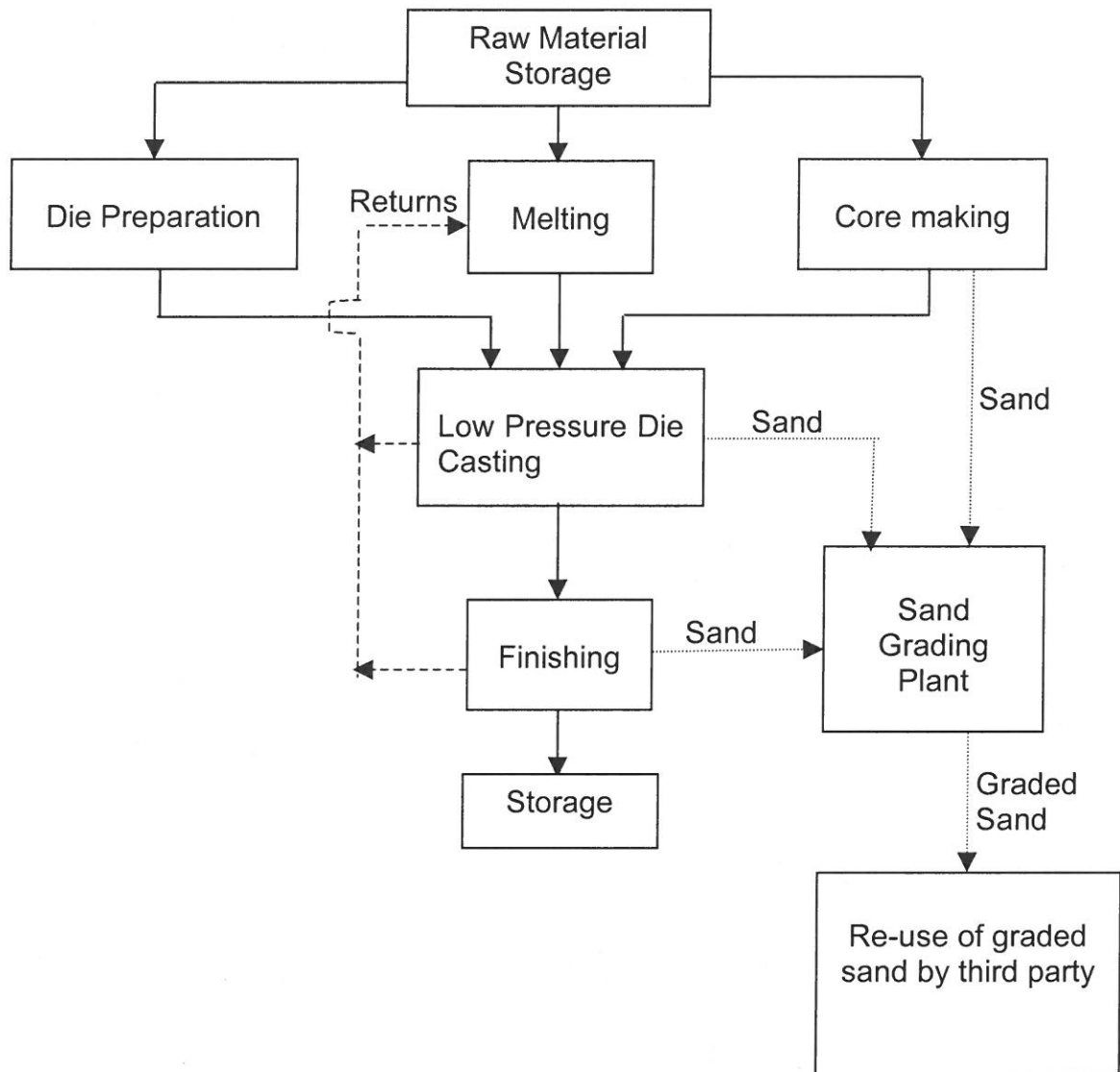
<b>Design capacity</b>	<b>Plant capacity</b>
Melting 1 tonne/hour/furnace	48 tonnes per day
Holding 4 tonnes/furnace	8 tonnes

The design capacity is not influenced by the product manufactured.

In August of 2003 a sand reclamation plant was installed. The facility transfers sand from the process into a hopper it is then collected by a third party for re-use off site.

The main process steps are outlined in figure1

Figure1 Low Pressure Die Casting at NMUK



**Raw Material Delivery and Storage**

The two main raw materials used in the process are aluminium alloy and sand. The aluminium alloy is delivered to site in ingot form, in bales, bound with straps. It is stored in designated locations. The sand is delivered to site in sealed containers, which are stored, in designated locations, inside the building until required by the process. Returnable, empty, sand containers are stored outside, undercover, awaiting collection.

**Environmental Impact**

Activity	Raw materials	Potential impact	Control Systems
Material delivery and storage	<ul style="list-style-type: none"> <li>- Sand</li> <li>- Aluminium</li> </ul>	<ul style="list-style-type: none"> <li>- Spillage of materials into drains and onto land</li> <li>- Fugitive emissions of dust</li> </ul>	<ul style="list-style-type: none"> <li>- Designated storage locations</li> <li>- Closed sand containers</li> </ul>

### Die Preparation

Two types of die are used:

Cast iron core making dies are cleaned within a sealed nut-blasting cabinet. The nut-blast booth is supplied with local exhaust ventilation which vents into the shop. Tool steel casting dies are cleaned in a sealed cast-iron-shot blasting cabinet. The shot-blast booth is also supplied with local exhaust ventilation which vents into the shop.

Casting dies are then pre-heated in one of two gas fired ovens to a temperature of around 250°C. The die pre-heat oven exhausts to atmosphere via a stack. Pre-heating facilitates adequate bonding of the die coat material to the surface of the die.

Following pre-heating die coat is sprayed onto the surface of the die to facilitate correct aluminium solidification, ease release of the product from the die and reduce die wear. Local exhaust ventilation is installed in the die coat area, exhausting to atmosphere via a stack. The air from the die coating operation is filtered prior to discharge to atmosphere. All sprayed die coatings are water based.

Some die repair is carried out in the die maintenance area. Repair activities may include welding and grinding. Portable local exhaust ventilation systems are provided to control operator exposure.

### Environmental Impact

Activity	Raw materials	Potential impact	Control Systems
Blast cleaning	<ul style="list-style-type: none"> <li>- Cast iron shot</li> <li>- nut kernels</li> <li>- CO<sub>2</sub> pellets</li> </ul>	<ul style="list-style-type: none"> <li>- Fugitive emission to atmosphere</li> <li>- No discharge to drain</li> <li>- No deposit on land</li> <li>- Waste</li> </ul>	<ul style="list-style-type: none"> <li>- Filtration</li> </ul>
Die Pre-heat	<ul style="list-style-type: none"> <li>- Natural gas</li> </ul>	<ul style="list-style-type: none"> <li>- Combustion gases to atmosphere</li> <li>- No discharge to drain</li> <li>- No deposit on land</li> </ul>	<ul style="list-style-type: none"> <li>- Burner optimisation</li> <li>- Temperature control</li> <li>- Stack height 13m</li> </ul>
Die coating	<ul style="list-style-type: none"> <li>- Compressed Air</li> <li>- Die coating materials</li> </ul>	<ul style="list-style-type: none"> <li>- Energy use (compressed air)</li> <li>- Die coating materials</li> <li>- Particulate matter emissions to atmosphere</li> <li>- Waste packaging</li> <li>- No discharge to drain</li> <li>- No deposit on land</li> </ul>	<ul style="list-style-type: none"> <li>- Particulate filtration on extraction system</li> <li>- Standard operations to minimise use of raw materials and compressed air</li> <li>- Packaging design</li> </ul>

### Core making

The cores are used during the casting process to create the internal profiles in the manufactured product. Cores are manufactured in-house using phenolic resin pre-coated sand. The sand is delivered to site in steel containers.

The 10 (ten) core making machines, all operate on the same principle. The delivery container is loaded onto a hopper which pressure feeds the core making machine. The core box is electrically heated to around 250°C. The sand is injected under pressure from a hopper to the core box. The resin melts and binds the sand to produce the required shape for cylinder head internal profiles.

Local exhaust ventilation is provided above each core making machine. The system exhausts via a stack to atmosphere.

Cores are air cooled and then potential 'hot spots' are coated with a water based core dressing material, prior to storage.

Spilled sand is removed either manually or with a vacuum system from the facility and surrounding surfaces.

### Environmental Impact

Activity	Raw materials	Potential impact	Control Systems
Core making	<ul style="list-style-type: none"> <li>– Electricity</li> <li>– Compressed air</li> <li>– Resin coated sand</li> </ul>	<ul style="list-style-type: none"> <li>– Phenol formaldehyde emissions to atmosphere</li> <li>– Particulate matter emissions to atmosphere</li> <li>– Odour</li> <li>– Waste sand and scrap cores</li> <li>– Sand hoppers returned to supplier</li> <li>– No discharge to drain</li> <li>– No deposit on land</li> </ul>	<ul style="list-style-type: none"> <li>– Temperature control</li> <li>– Resin type and content</li> <li>– Stack height 16m</li> <li>– Efflux velocity</li> <li>– D line particulate filter</li> <li>– Standard operations to minimise use of sand</li> <li>– Standard operations to reduce scrap rate</li> <li>– Returnable packaging for sand.</li> <li>– Enclosed sand delivery system</li> </ul>
Core coating	<ul style="list-style-type: none"> <li>– Core coating materials</li> </ul>	<ul style="list-style-type: none"> <li>– Core coating materials</li> <li>– Waste packaging</li> <li>– No discharge to drain</li> <li>– No deposit on land</li> </ul>	<ul style="list-style-type: none"> <li>– Standard operations to minimise use of coating material</li> <li>– Spray and brush applied</li> </ul>

### Melting

NMUK operate 2 (two) gas fired shaft fed melting and holding furnaces. Aluminium ingots, as delivered, are fed into the melting chamber of the furnace (charging). Once molten the aluminium transfers to the holding chamber of the furnace. The furnace is maintained at a holding temperature of around 750°C. Clean returns from the casting process are also fed into the furnaces to reduce waste.

Flux is added to the molten aluminium. Following addition of flux impurities in the molten metal float to the surface and are skimmed off manually (this process is known as drossing). To facilitate the drossing operation a dross door is opened, dross is skimmed off the surface of the molten aluminium into a hopper. The dross is transferred to a skip stored in a covered storage area. The dross access door has an automatic local exhaust ventilation system, which discharges via a stack to atmosphere.

When the molten aluminium is required for casting it is poured into pre-heated ladles and transferred to the de-gassing facility and further flux is added. The ladles are filled to a capacity of around 650 Kilograms. Argon gas is used to displace hydrogen from the molten metal. Aluminium / strontium alloy and occasionally magnesium alloy is also added. Gases are discharged to atmosphere via a local exhaust ventilation system and a dedicated stack. Dross is manually skimmed off the surface of the molten metal in the ladle and sent off site for recycling.

Each furnace has an exhaust stack venting to atmosphere and particulate matter abatement.

### Extraction systems

Activity	Operational Exhaust
Charging	Particulate abatement plant
Fluxing	Particulate abatement plant
Holding	Furnace stack
Drossing	Dross door extraction system and particulate abatement plant

### Environmental Impact

Activity	Raw materials	Potential impact	Control Systems
Melting	<ul style="list-style-type: none"> <li>- Natural gas</li> <li>- Aluminium alloy (as delivered and returns)</li> <li>- Flux</li> </ul>	<ul style="list-style-type: none"> <li>- Combustion gases to atmosphere</li> <li>- Particulate matter emissions to atmosphere</li> <li>- Waste</li> <li>- Metal fume emissions to atmosphere</li> <li>- No discharge to drain</li> <li>- No deposit on land</li> </ul>	<ul style="list-style-type: none"> <li>- Temperature control</li> <li>- Particulate abatement</li> <li>- Cross duct continuous monitoring</li> <li>- Stack height 16m</li> <li>- Efflux velocity</li> <li>- Clean returns</li> <li>- Quality control of Aluminium alloy composition</li> </ul>

Activity	Raw materials	Potential impact	Control Systems
De-gassing	<ul style="list-style-type: none"> <li>- Argon</li> <li>- Flux</li> <li>- Sr, Mg</li> </ul>	<ul style="list-style-type: none"> <li>- Argon and hydrogen to atmosphere</li> <li>- Waste dross</li> <li>- No discharge to drain</li> <li>- No deposit on land</li> </ul>	<ul style="list-style-type: none"> <li>- Stack height 16m</li> <li>- Efflux velocity</li> </ul>

### Low Pressure Die Casting

De-gassed molten aluminium is transferred into an electric holding furnace under each of the 10 (ten) casting machines. The sand cores are positioned within the die and the die is sealed. The molten aluminium is then injected into the mould cavity of the die via a sealed system. The manufactured part is then allowed to cool and automatically transferred to a table transfer system for further cooling in air. Three (3) casting machines have been installed with water cooling of dies. The cooling water is currently discharged to the foul drain.

Local Exhaust ventilation is provided above each casting machine. The system exhausts via a stack to atmosphere.

### Environmental Impact

Activity	Raw materials	Potential impact	Control Systems
Casting	<ul style="list-style-type: none"> <li>- Electricity</li> <li>- Molten Aluminium</li> <li>- Core</li> </ul>	<ul style="list-style-type: none"> <li>- Core resin thermal degradation products to atmosphere</li> <li>- Odour</li> <li>- Waste dross</li> <li>- Cooling water discharge to drain</li> <li>- No deposit on land</li> </ul>	<ul style="list-style-type: none"> <li>- Temperature control</li> <li>- Stack height 16m</li> <li>- Efflux velocity</li> <li>- Extraction rate</li> </ul>

### Finishing Operations

Finishing operations include:

- core burn out oven
  - knock out
  - fettling, pressing, shot blasting
  - Heat treatment
  - Crack detection.
  - Impregnation
- } Removal of sand cores from inside the casting

### Core burn out

Occasionally, to ensure the cleanliness of castings, intended for return to the melting furnace, residual binding resin in sand cores is thermally degraded to facilitate removal of sand prior to re-melting. Castings are loaded into the oven and heat applied. The sand resin bond thermally degrades and the sand drains out of the casting onto a conveyor. The oven is extracted to the same particulate abatement plant which serves the furnaces.

### Knock out

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**Knock out**

Castings are loaded onto a conveyor and processed through a facility which vibrates the casting, mechanically breaking down the resin sand cores. The loose sand drains out onto a conveyor. The two (2) knock out machines are pneumatically controlled. A local exhaust ventilation system is installed which vents to a dedicated particulate filtration system and then exhausts to atmosphere.

During the casting process a gate is produced. The gates are cut from the casting in the Ryder cut-off facility. Gates are returned to the furnace for re-melting.

**Pressing, Fettling and shot blasting**

Excess material (flash) is removed from the casting either by a hydraulic pressing operation, by fettling with pneumatic tools local to the casting machines or by shot blasting with steel shot.

**Heat Treatment**

To improve the mechanical properties of cylinder heads they are heat treated in a solution furnace at a temperature of around 500°C and then either air cooled or in quench water, in a closed system, at a temperature of around 80°C. Finally the cylinder heads are placed in an ageing furnace at a temperature of around 215°C.

**Crack detection**

A sample of cylinder heads produced are checked for cracks as part of the process quality control system. Water based dye penetrant is applied to the cylinder head, excess is washed off with water. Cracks can be seen by the application of UV light but in some cases it is necessary to dry the casting and apply a talc based developer. The water used for washing off excess penetrant is filtered through activated carbon before being discharged to drain under Northumbria Water Limited discharge consent conditions.

**Impregnation**

Some cylinder heads destined for NMUK production line are processed through the impregnation facility. The cylinder heads are placed in a basket and then into an autoclave, a vacuum is applied. When the vacuum is released impregnant is pulled into any porosity in the castings. The impregnant seals the porosity within the casting making it gas tight.

**Stabilisation**

Some cylinder heads undergo a further heat treatment process. This takes place in the Core burn out facility. In this process the heads are treated at around 240°C then allowed to cool in air.

<b>Environmental Impact</b>			
<b>Activity</b>	<b>Raw materials</b>	<b>Potential impact</b>	<b>Control Systems</b>
Core burn out	<ul style="list-style-type: none"> <li>- Natural gas</li> <li>- Castings with encased cores</li> </ul>	<ul style="list-style-type: none"> <li>- Combustion gases to atmosphere</li> <li>- Particulate matter emissions to atmosphere</li> <li>- Waste sand and filters</li> <li>- Odour</li> <li>- No discharge to drain</li> <li>- No deposit on land</li> </ul>	<ul style="list-style-type: none"> <li>- Temperature control</li> <li>- Continuous cross duct monitoring</li> <li>- Stack height 16m</li> <li>- Efflux velocity</li> <li>- Particulate abatement plant</li> </ul>
Knock out	<ul style="list-style-type: none"> <li>- Castings with encased cores</li> </ul>	<ul style="list-style-type: none"> <li>- Particulate matter emissions to atmosphere</li> <li>- Waste sand</li> <li>- No discharge to drain</li> <li>- No deposit on land</li> </ul>	<ul style="list-style-type: none"> <li>- Particulate filtering system</li> <li>- Efflux velocity</li> <li>- Continuous cross duct monitoring</li> </ul>
Pressing	<ul style="list-style-type: none"> <li>- Casting</li> </ul>	<ul style="list-style-type: none"> <li>- Waste aluminium off-cuts</li> <li>- No discharge to drain</li> <li>- No deposit on land</li> </ul>	
Fettling	<ul style="list-style-type: none"> <li>- Casting</li> <li>- Compressed air</li> </ul>	<ul style="list-style-type: none"> <li>- Waste aluminium off cuts</li> <li>- No discharge to drain</li> <li>- No deposit on land</li> </ul>	
Heat treatment	<ul style="list-style-type: none"> <li>- Casting</li> <li>- Natural gas</li> <li>- Air</li> </ul>	<ul style="list-style-type: none"> <li>- Waste particulate matter (sand)</li> <li>- Waste water</li> <li>- Combustion gases to atmosphere</li> <li>- No discharge to drain</li> <li>- No deposit on land</li> </ul>	<ul style="list-style-type: none"> <li>- Temperature control</li> <li>- Knockout performance</li> </ul>
Crack detection	<ul style="list-style-type: none"> <li>- Casting</li> <li>- Penetrant</li> <li>- Cleaner</li> <li>- Developer</li> </ul>	<ul style="list-style-type: none"> <li>- Discharge to drain</li> <li>- No deposit on land</li> </ul>	<ul style="list-style-type: none"> <li>- Compliance with discharge Consent conditions</li> </ul>
Impregnation	<ul style="list-style-type: none"> <li>- Casting</li> <li>- Impregnant</li> <li>- Additives</li> <li>- Electricity</li> <li>- Water</li> </ul>	<ul style="list-style-type: none"> <li>- Waste containers</li> <li>- Waste Aluminium and resin</li> <li>- Waste water</li> <li>- No discharge to drain</li> <li>- No deposit on land</li> </ul>	<ul style="list-style-type: none"> <li>- Temperature control</li> <li>- Impregnant reclamation system</li> <li>- Resin recycle unit</li> </ul>
Stabilisation	<ul style="list-style-type: none"> <li>- Natural gas</li> <li>- Casting</li> </ul>	<ul style="list-style-type: none"> <li>- Combustion gases to atmosphere</li> <li>- No discharge to drain</li> <li>- No deposit on land</li> </ul>	<ul style="list-style-type: none"> <li>- Temperature control</li> <li>- Exhaust stack</li> </ul>

Activity	Raw materials	Potential impact	Control Systems
Shot blasting	– Steel shot Casting	– Particulate emission to atmosphere – No discharge to drain – No deposit on land Waste Aluminium, sand and shot	Exhaust filtration

### Product storage

All castings and intermediate products (eg cores) are stored inside the building.

### Waste storage

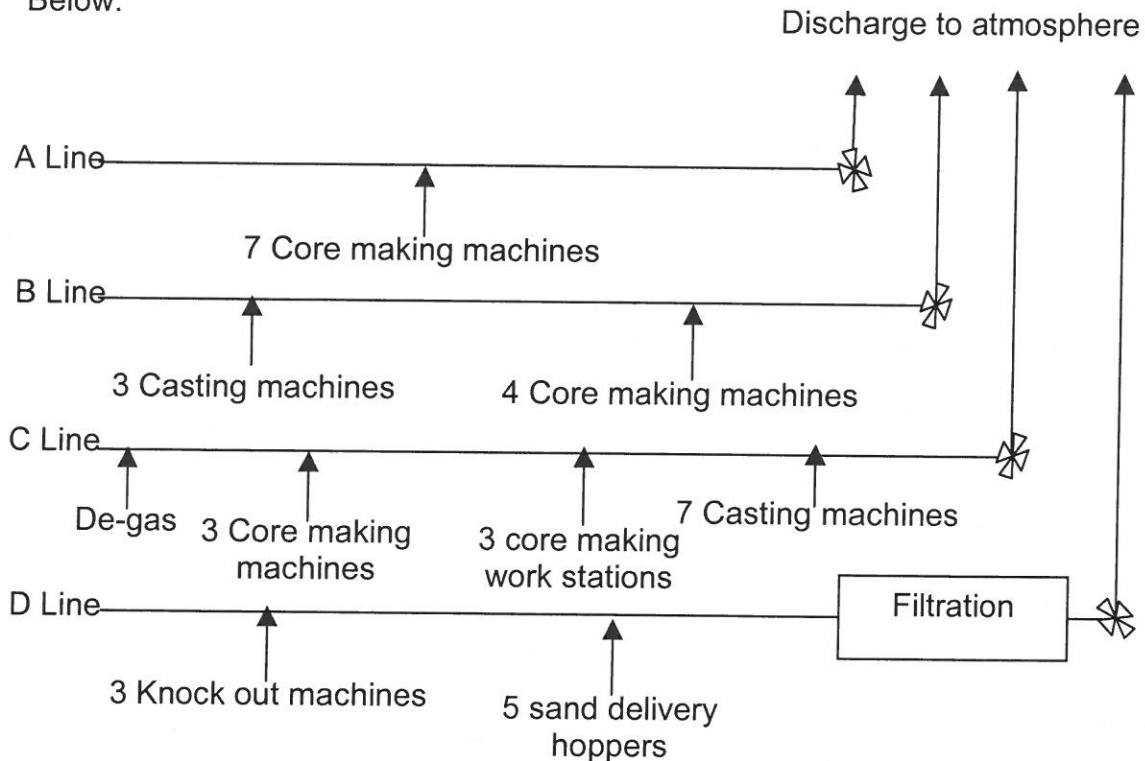
- Waste is segregated at source in line with the requirements of NMUK's Environmental Management System.
- Mixed general waste is collected and transferred into the site skips
- Mixed special waste which does not require further segregation is collected and stored in site skips
- Dross is transferred to a skip which is stored under cover to prevent wetting by rain and thereby prevent the potential evolution of arsine or stibene from the dross if it were to come into contact with water.
- Waste sand is transferred to a skip by fork lift truck or floor cleaning machine and stored external to the building, under cover.
- Sand and dust from the particulate abatement plant is stored in purpose built containers designed to prevent wind blown entrainment

### Environmental Impact

Activity	Raw materials	Potential impact	Control Systems
Product storage	Castings	No significant impact	
Waste storage	– Sand – Dross – Swarf	– Wind entrainment of dusty materials – Emission of arsine or stibene when dross is wet	– Sealed sand storage containers – Designated storage areas – Roofed storage area for dross, swarf and sand skips – High level of housekeeping

### Extraction Systems

There are four main local exhaust ventilation systems serving the casting machines, core making machines and finishing lines. These are represented in the schematic Below:



Local exhaust ventilation is provided for manned workstations near three casting machines. These systems discharge to atmosphere via three individual exhaust stacks.

### Particulate Filtration

Particulate filtration is provided with two systems:

- D line bag filter unit
- Ceramic filter unit serving furnaces and core burn out (abatement plant)

### D Line filtration

Dust generated by the core making and finishing processes is extracted via fan assisted ductwork to a filter unit. The filter unit comprises of enclosed polyester filter bags. The filters have an efficiency of 99.995% at 6 microns. The filter bags are periodically pulsed with air, causing the collected dust to drop into a covered bin for removal from site as waste.

### Abatement plant

Dust generated by the furnaces during charging and fluxing operations and by the core burn out oven is extracted via fan assisted ductwork to a ceramic filtration unit. The filter unit comprises of three independent filter banks, each serving one furnace or the core burn out oven as a dedicated facility. Each filter bank comprises of 432 Cerafil XS ceramic filter elements. Each element is one meter in length and has a diameter of 60 mm. Each bank of filters is divided into four zones. It is possible to

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divert airflow away from one zone into the remaining three in the event of a filter failure. The ceramic filters have an efficiency in excess of 99.9%. Each bank of filters is periodically cleaned with a jet of compressed air, causing the collected dust to drop into a bag for removal from site as waste.

**Sand Attrition**

Spent process sand is transferred by an enclosed conveyor system to a vibrating grading machine which breaks down the sand into small pieces (less than 5mm). Sand is then blown through an enclosed pneumatic conveyor system into a storage hopper, with a capacity of 80 tonnes, for collection, for re-use, by a local construction company. Potential emissions to atmosphere during sand collection are abated via the same system as the core burn out facility.

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**Permit Conditions****1.0 Emission Limits and other provisions****1.1 Emissions to air****1.1.1 Limits**

1) The following emission limits shall apply:

a) Total particulate matter from charging, fluxing, melting, pouring operations ie:

- Melt furnace,
  - furnace abatement and
  - furnace dross door extraction stacks
- shall not exceed 20mg/m<sup>3</sup>

b) Total particulate matter from storage and transport of sand (including reclaimed sand), knock out, sand recovery, shot blasting, fettling and other finishing operations ie:

- Line C extraction
  - Line D extraction
  - Core burn out abatement and
  - Shot blast machine
- shall not exceed 20 mg/m<sup>3</sup>

c) Total particulate matter from:

- Line A extraction
- Line B extraction

shall not exceed 20 mg/m<sup>3</sup>

d) Chloride (as HCl) from fluxing operations shall not exceed 5mg/m<sup>3</sup>

e) Fluoride (as HF) from fluxing operations shall not exceed 5mg/m<sup>3</sup>

f) Lead emissions shall not exceed 2 mg/m<sup>3</sup>

g) Copper emissions shall not exceed 20 mg/m<sup>3</sup>

h) Nickel emissions shall not exceed 5 mg/m<sup>3</sup>

i) Tin emissions shall not exceed 5 mg/m<sup>3</sup>

j) Cobalt, Chromium, Cadmium combined emissions shall not exceed 1 mg/m<sup>3</sup>

All emission concentration limits are expressed at reference conditions 272K, 101.3 kPa, without correction for water vapour.

2) The enforcing authority shall be informed prior to any change in the process or materials which may result in emissions of lead, copper, nickel, tin, cobalt, chromium, cadmium or dioxins.

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- 3) Emissions from combustion processes shall, in normal operation, be free from visible smoke and in any case shall not exceed Ringlemann shade 1 or equivalent.
  - 4) All emissions to air, other than steam and condensed water, shall be colourless, free from persistent mist, persistent fume and droplet fallout.

#### 1.1.2 Monitoring

- 1) Total particulate matter from the following process exhausts shall be monitored annually (at intervals not exceeding 14 months) using an approved extractive monitoring method:
  - Melt Furnaces
  - Dross doors
  - Abatement plant (furnaces and core burn out)
  - Lines A, B, C, D
  - Heat treatment and
  - Within eighteen (18) months of the date of issue of this permit ,shot blast
- 2) Total particulate matter from the following exhausts shall be continuously monitored and recorded using a PCME cross duct monitoring device approved by the Regulator:
  - Abatement plant (furnaces and core burn out)
  - Line D
- 3) Within eighteen (18) months of the date of issue of this permit Total particulate matter from shot blast shall be continuously indicatively monitored using an approved cross duct monitoring device, which shall alarm to indicate arrestment plant failure.
- 4) Total Chloride (as HCl) from the following exhausts during fluxing operations shall be monitored annually (at intervals not exceeding 14 months) using an approved extractive monitoring method:
  - Furnace abatement
  - Dross door extraction
  - Line C
- 5) Total Fluoride (as HF) from the following exhausts during fluxing shall be monitored annually (at intervals not exceeding 14 months) using an approved extractive monitoring method:
  - Furnace abatement
  - Dross door extraction
  - Line C
- 6) Total lead from the following exhausts shall be monitored annually (at intervals not exceeding 14 months) using an approved extractive monitoring method.
  - Melt Furnaces
  - Furnace abatement

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- 7) Total copper from the following exhausts shall be monitored annually (at intervals not exceeding 14 months) using an approved extractive monitoring method:
    - Melt Furnaces
    - Furnace abatement
  - 8) Total nickel from the following exhausts shall be monitored annually (at intervals not exceeding 14 months) using an approved extractive monitoring method:
    - Melt Furnaces
    - Furnace abatement
  - 9) Total tin from the following exhausts shall be monitored annually (at intervals not exceeding 14 months) using an approved extractive monitoring method:
    - Melt Furnaces
    - Furnace abatement
  - 10) Total cobalt, chromium and cadmium combined from the following exhausts shall be monitored annually (at intervals not exceeding 14 months) using an approved extractive monitoring method:
    - Melt Furnaces
    - Furnace abatement
  - 11) All continuous monitoring devices shall be approved by the Regulator and calibrated in line with manufacturers' recommendations.

## **1.2 Discharges to drain**

### **1.2.1 Relationship with Discharge Consent**

- 1) NMUK hold a discharge consent issued by Northumbrian Water Ltd (the sewerage receiver) (ref: W0818). Conditions in that consent shall be considered to be an integral part of this permit. Any variation to condition in the consent shall be considered to be variations to this permit.
- 2) When conditions, requirements and consent levels differ from corresponding clauses in this permit the conditions detailed in the discharge consent (ref W0818) shall take precedence over those in this permit.
- 3) Within four (4) weeks of the date of receipt of any varied Northumbrian Water Ltd consent documentation an updated copy shall be issued to the Regulator.

### **1.2.2 Limits**

- 1) The discharge concentration limits quoted in the discharge consent referred to in clause 1.2.1 (1) shall apply.

### **1.2.3 Monitoring**

- 1) Monitoring shall be carried out in compliance with the requirements of the discharge consent issued by Northumbrian Water Ltd (the sewerage receiver) (ref: W0818).

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## 2.0 Techniques for Pollution control

### 2.1 Delivery, storage and handling of in-put raw materials

- 1) Deliveries shall be carried out in such a way so as to avoid noise, spillage, leaks and dusty emissions, in particular, those arising from accidents during materials transfer.
  - 2) Material sampling and assay systems shall be used to identify raw material quality.
  - 3) Storage areas shall be under cover and protected from the elements, where appropriate, to avoid or minimise environmental impact.
  - 4) Within eighteen (18) months of the date of issue of this permit solid interceptors shall be used, if necessary, for the drainage of open storage areas.
  - 5) Storage areas shall be hard surfaced, unless damage to the surface is likely to occur during delivery.
  - 6) Within eighteen (18) months of the date of issue of this permit storage areas shall be bunded where liquids are being stored or where there is potential for run off.
  - 7) Within eighteen (18) months of the date of issue of this permit bunded areas, sealed floors and oil interceptors shall be used to prevent emissions to water where contamination of secondary materials (eg oils acids, organic matter) could be washed into drainage systems.
  - 8) Stocks of dusty, or potentially dusty, materials (including waste sand) shall be stored in such a manner as to minimise wind whipping.
  - 9) Within eighteen (18) months of the date of issue of this permit all dusty, or potentially dusty, raw materials, including new or reclaimed dry sand, shall be stored in:
    - purpose built silos,
    - confined storage areas within buildings or
    - fully enclosed containers / packaging.
- Where storage is open within a building, suitable precautions shall be taken to prevent wind whipping.
- 10) Within eighteen (18) months of the date of issue of this permit external above ground conveyors for dusty materials shall be fitted with protection against wind whipping. Transfer points shall be enclosed and ducted to suitable arrestment equipment where necessary to meet the provisions of section 1 of this permit.
  - 11) Transport of dusty materials shall be carried out so as to prevent or minimise airborne particulate emissions.

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- 12) Double handling of dusty materials shall be avoided.
- 13) All spillages shall be cleared as soon as possible, solids by vacuum cleaning, wet methods, or other appropriate techniques. Dry sweeping of dusty spillages is not permitted in circumstances where it may result in the generation of airborne dust outside any building. Liquid spillages shall be cleaned by addition of absorbent.
- 14) A high standard of housekeeping shall be maintained.

## **2.2 Furnace Operations**

- 1) To allow process control, the following parameters shall be measured and alarms shall be provided for critical parameters
  - On line monitoring of the temperature of the holding bath and exhaust gas temperature
  - Monitoring of gas usage and volume
  - Routine monitoring of gas use and melt rate efficiency
- 2) Feed shall be weighed and recorded to the extent necessary to ensure compliance with emission limits.
- 3) From the date of issue of this permit new or rebuilt furnaces with charge doors shall be fitted with sealed charging systems where secondary scrap or flux is being used, as they prevent fugitive emissions during charging

## **2.3 Manufacture of cores and moulds**

- 1) Waste moulds and cores shall be segregated from other waste to facilitate reclamation.

## **2.4 Casting and Cooling**

- 1) The working area shall be managed to control through draughts.

## **2.5 Knockout**

- 1) To maximise burn out of organics, improve reclamation rates and reduce emissions of organics to air sand intended for mechanical reclamation shall be allowed to cool as long as possible prior to knockout.

## **2.6 Sand Reclamation**

- 1) Sand shall normally be handled in a fully enclosed system following knockout, or stored under cover prior to reclamation.
- 2) All parts of the reclamation system and associated pipe work shall be regularly inspected and maintained to prevent leaks.

## **2.7 Fettling, dressing and finishing of castings**

- 1) Emissions shall be contained and extracted.
- 2) Within eighteen (18) months of the date of issue of this permit an effective means of detection of abatement plant failure shall be installed.

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### **3.0 Emission Control**

#### **3.1 All releases to atmosphere**

- 1) All operations which generate emissions to air shall be contained and adequately extracted to suitable abatement plant, where this is necessary to meet emission limits specified in section 1.0 of this permit.
- 2) Hot emissions shall only take place from a minimum practicable number of stacks. From the date of issue of this permit when new stacks are being designed or when changes are made to the existing process a multi-flue stack shall be installed whenever practicable.
- 3) Within eighteen (18) months of the date of issue of this permit the minimum height of stacks serving the following facilities:
  - Shot blast
  - Solution furnace
  - Cooling chamber of heat treatment
  - Aging oven
  - Quench tank
  - F9Q LEV systems
  - Melt furnace dross doors

shall be at least 3 metres above roof ridge height of any building within a distance of 5 times the uncorrected stack height and in no circumstances shall it be less than 8 metres above ground level.

- 4) All other stacks not listed in clause 3.1 (3) of this permit shall be maintained at their current height. If the process undergoes substantial change the stack heights for that part of the process shall be reviewed in line with Technical Guidance Note D1 or equivalent.
- 5) The cause of any persistent visible emissions shall be investigated and a report provided to the regulator on request.
- 6) As part of a routine maintenance programme flues and ducts shall be cleaned to prevent the accumulation of materials.
- 7) Within eighteen (18) months of the date of issue of this permit, with the exception of a cone necessary to increase the exit velocity of the emission, stacks shall not be fitted with any restriction at the final opening.

#### **3.2 Point source emission to surface water and sewer**

- 1) Within eighteen (18) months of the date of issue of this permit where necessary to minimise discharge of pollutants, suitable run-off protection shall be provided for surface water drains in raw material storage areas, (e.g. an interceptor)

#### **3.3 Point source emissions to groundwater**

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- 1) No substances within List I or List II of the Groundwater Regulations 1999 shall be discharge to ground water.

### **3.4 Control of fugitive emissions to air**

- 1) Within eighteen (18) months of the date of issue of this permit control techniques shall be developed to prevent or minimise fugitive emissions to atmosphere. In particular, the emissions from the following sources shall be controlled:
  - Handling of molten metals
  - Handling of dusty materials
  - Refining, metal treatment and casting fumes
  - Finishing (particulate matter)
  - Bag filter particulates
  - Storage silos
- 2) To control fugitive emissions of particulate matter to atmosphere, where appropriate, the following techniques shall be used:
  - Covering skips and vessels
  - Avoidance of outdoor or uncovered stockpiles (where possible)
  - Where unavoidable, use of sprays, binders, stockpile management techniques, windbreaks etc
  - Wheel and road cleaning to avoid transfer of pollution to water and wind blow
  - Closed conveyors, pneumatic conveying, minimising conveyor drops
  - Regular housekeeping
- 3) External surfaces of the process building, ancillary plant, open yards and storage areas shall be inspected at least annually and cleaned if necessary to prevent the accumulation of dusty materials in circumstances where dust may become entrained. Particular attention shall be paid to roofs, guttering, roadways, external storage areas and yards. Cleaning operations shall be carried out using methods which minimise emissions of particulate matter to atmosphere.
- 4) Good housekeeping measures shall be used to minimise fugitive emissions of VOC to atmosphere.
- 5) Solvent containers shall be covered when not in use.

### **3.5 Fugitive emissions to surface water, sewer and groundwater**

- 1) The routing of all installation drains and subsurface pipework shall be established and recorded.
- 2) Within eighteen (18) months of the date of issue of this permit all sub-surface sumps and storage vessels shall be identified.
- 3) Any future sub surface pipes shall have systems in place to minimise leakage from subsurface pipes and ensure swift detection.

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- 4) Within eighteen (18) months of the date of issue of this permit an appropriate method and frequency of inspection for all sub-surface pipes, sumps and storage vessels shall be proposed. Sub-surface structures shall be inspected for their integrity at least on a five (5) yearly basis.
  - 5) All operational areas shall have:
    - impervious surfaces
    - spill containment Kerbs
    - sealed construction joints
    - connection to protected drainage systems.
  - 6) Records of the designed and condition of surfacing of operational areas shall be kept
  - 7) Within eighteen (18) months of the date of issue of this permit an inspection and maintenance programme of impervious surfaces and containment kerbs shall be established.
  - 8) Within eighteen (18) months of the date of issue of this permit a justification shall be provided for any operational area which does not comply with clause 2.3.5 (7).
  - 9) All tanks containing liquids whose spillage could be harmful to the environment shall be provided with appropriate spillage containment.
  - 10) Within eighteen (18) months of the date of issue of this permit all bunds shall:
    - be impermeable and resistant to the stored materials
    - be constructed to ensure surface water drainage is protected from contamination
    - have pipe work routed within bunded areas with no penetration of bund walls
    - be designed to catch leaks from tanks and fittings contained therein
    - have a volume at least 110% of the largest tank volume
    - be visually inspected weekly for contamination and any contents pumped out or otherwise removed under manual control
    - be fitted with a high-level probe and an alarm, where not frequently inspected
    - have an annual maintenance inspection (at intervals not exceeding 14 months)
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  - 11) Storage areas and containers shall be designed and operated in such a way as to minimise the risk of fugitive releases to surface water, sewer and groundwater.
  - 12) Storage areas shall be located away from watercourses and protected against vandalism.
  - 13) Within eighteen (18) months of the date of issue of this permit the maximum storage capacity of the storage areas shall be stated and not exceeded.
  - 14) Within eighteen (18) months of the date of issue of this permit the maximum storage period for the contents of the containers shall be specified.

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- 15) Within eighteen (18) months of the date of issue of this permit the storage areas and silos shall be inspected at least once per week to check for signs of leakage or potential leakage.

### **3.6 Management**

- 1) Effective operational and maintenance systems shall be employed on all aspects of the installation whose failure could impact on the environment, in particular there shall be documented:
  - operational control procedures
  - preventative maintenance schedule
  - procedures for monitoring emissions.
- 2) Within eighteen (18) months of the date of the permit provide the regulator with a list of key process equipment and abatement equipment.
- 3) Within eighteen (18) months of the date of the permit key abatement equipment shall be provided with alarms or other warning systems which indicate equipment malfunction or breakdown. Warning systems shall be maintained and checked to ensure correct operation, in accordance with manufacturers recommendations.
- 4) Within eighteen (18) months of the date of the permit essential spares and consumables shall be held on site or be available at short notice from suppliers, so that plant breakdown can be rectified rapidly.
- 5) Records of breakdowns shall be kept and analysed to eliminate common failure modes.
- 6) A competent person shall be appointed to liaise with the regulator and the public with regard to complaints.

### **3.7 Competence and training**

- 1) Within twelve (12) months of the date of issue of this permit training systems, covering the following items, shall be in place and implemented for all relevant staff:
  - Awareness of regulatory implications of the permit
  - Awareness of potential environmental impacts under normal and abnormal operating circumstances
  - Awareness of procedures for dealing with breach of the permit conditions
  - Prevention of accidental emissions and actions taken should they occur
  - Awareness of all operating procedures
- 2) Within twelve (12) months of the date of issue of this permit the skills and competencies necessary for key posts shall be documented and records of training needs and training received for these post maintained.

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- 3) The potential environmental risks posed by the work of contractors shall be assessed and instructions provided to contractors about protecting the environment whilst working on site.

### **3.8 Raw Materials**

- 1) The inventory issued with the application for this permit, covering the principal types of raw material used, shall be maintained and updated as necessary.

### **3.9 Water use**

- 1) The volume of mains water utilised shall be measured at least once per day

### **3.10 Waste Handling**

- 1) The quantity, nature, origin and where relevant, the destination, frequency of collection, mode of transport and treatment method of any waste which is disposed of or recovered shall be recorded.
- 2) Waste storage areas shall be clearly marked and signed.
- 3) Waste storage containers shall be clearly labelled as to their contents.
- 4) Suitable storage facilities shall be provided for materials which are flammable and/or sensitive to heat, light or water.
- 5) Incompatible waste materials shall be kept separate.
- 6) Procedures shall be in place to deal with damaged or leaking containers.
- 7) Waste shall be segregated wherever practicable.
- 8) The disposal route shall be identified for all waste, which shall be as close to the point of production as possible.

### **3.11 Energy**

- 1) Within eighteen (18) months of the date of issue of this permit where practicable, to optimise combustion, carbon monoxide and oxygen shall be monitored annually in waste gases from combustion processes.
- 2) The Casting shop shall be operated and maintained in a manner which optimises the use and minimises the loss of energy.
- 3) All appropriate containment measures shall be employed and maintained to minimise energy loss.

**3.12 Accidents**

- 1) Within twelve (12) months of the date of the permit a written procedure shall be implemented for investigating environmental incidents and near misses. The procedures shall include identifying suitable corrective actions and follow up.
- 2) Within eighteen (18) months of the date of issue of this permit an accident management plan shall be implemented and maintained. The plan shall:
  - identify hazards
  - assess risk
  - identify measures to reduce the risk
  - provide details of actions taken to minimise potential occurrences
  - provide for the recording of actions taken to deal with such occurrences.
- 3) In the case of abnormal emissions an immediate investigation shall be carried out and remedial actions taken as soon as practicable. A record shall be kept of events and actions taken. The regulator shall be made aware as soon as practicable.

**3.13 Noise and Vibration**

- 1) A boundary noise survey shall be carried out every two years (at intervals not exceeding 26 months) during the survey key plant and equipment with the potential to give rise to noise nuisance shall be identified. The impact of the identified plant and equipment shall be assessed.
- 2) Within twelve (12) months of the date of issue of this permit a documented maintenance system shall be developed for the identified key plant and equipment.
- 3) Where noise problems do occur as a result of activities within the installation boundary action shall be taken to reduce the impact to an acceptable level. The improvement activity and timing of the actions shall be agreed with the Regulator.

**3.14 Monitoring****3.14.1 Monitoring and reporting**

- 1) Monitoring, testing and inspection shall be carried out as part of proper supervision of the Casting shop process.
- 2) The regulator shall be informed of monitoring carried out and the results. Results shall include process conditions at the time of the monitoring.
- 3) The regulator shall be notified at least seven (7) days before any periodic monitoring exercise. Notification shall include provisional time and date of monitoring, pollutants to be tested and the methods used.
- 4) Results of non-continuous testing shall be forwarded to the regulator within eight (8) weeks of completion of the sampling or measurement.

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- 5) Adverse results from monitoring shall be notified to the regulator. The cause shall be investigated immediately and remedial action taken as soon as possible. Re-testing to demonstrate compliance shall be carried out as soon as possible.
  - 6) The regulator shall be notified as soon as possible of any event which has an adverse effect on emissions to air.
  - 7) Malfunction or breakdown leading to abnormal emissions to air shall be investigated immediately and remedial action taken as soon as possible. The process shall be adjusted to minimise emissions and the events and actions shall be recorded. If there is an immediate danger to human health, operation of the process must stop immediately.
  - 8) The regulator shall be informed as soon as possible if there is an emission to air that is likely to have an effect on the local community.
  - 9) Sampling points on all plant installed after the date of issue of this permit shall be designed to comply with British or equivalent standards.
  - 10) Adequate sampling facilities shall be provided on stacks or ducts.
  - 11) Where monitoring is not carried out in compliance with the relevant standard deviations shall be reported and an estimate made of the error invoked.
  - 12) Where continuous monitoring is required by this permit:
    - a) All continuous monitoring results shall be on display to appropriately trained operating staff
    - b) Instruments shall be fitted with audible and visual alarms, situated appropriately, to warn of arrestment plant failure or malfunction
    - c) Alarms shall activate automatically
    - d) All continuous monitors shall be operated, maintained and calibrated in accordance with manufacturers instructions, records shall be available for inspection by the regulator on request.
    - e) Records shall be kept of all maintenance and calibration
    - f) All continuous monitoring devices installed after the date of issue of this permit shall be designed for less than 5% downtime over any three month period.

### **3.14.2 Monitoring and reporting emissions to air**

- 1) Exhaust flow rates shall be consistent with the efficient capture of emissions, good operating practice and meeting the requirements of the legislation relating to the workplace environment.
- 2) The introduction of dilution air to achieve emission concentration limits is not permitted.

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- 3) Dilution air may be added for waste gas cooling or improved dispersion where justified. The dilution air must not be considered when determining the mass or concentration of the pollutant in the waste gases.
  - 4) No result shall exceed the emission concentration limits specified in clause 1.1.1 (1) of this permit, except where either:
    - a) Data is obtained over at least five (5) sampling hours in increments of fifteen (15) minutes or less; or
    - b) At least twenty (20) results are obtained where sampling time increments of more than fifteen (15) minutes are involved and in the case of (a) and (b)
    - c) No daily mean of all fifteen (15) minute mean emission concentrations shall exceed the specified emission concentration limits during normal operation (excluding start-up and shut-down); and
    - d) No fifteen (15) minute mean emission concentration shall exceed twice the specified emission concentration limits during normal operation (excluding start-up and shutdown).
  - 5) Within eighteen (18) months of the date of issue of this permit where continuous quantitative monitoring is carried out compliance with (c) and (d) of clause 3.14.2 (4) shall be demonstrated on a daily basis.
  - 6) Where arrestment plant is necessary to meet emission limits detailed in section 1.0 of this permit monitoring shall be carried out at least annually.
  - 7) If three or more periodic monitoring exercises, carried out over a period of at least two (2) years, indicate consistent compliance with particulate emission limits the regulator shall consider allowing an increased interval between monitoring.
  - 8) All monitoring shall be carried out in accordance with the agreed manual of measurement and sampling methods for use on the NMUK site.

### **3.14.3 Monitoring and reporting emissions to water and sewer**

- 1) All monitoring of emissions to water and sewer shall be carried out in compliance with the discharge consent referenced in section 1.2 of this permit.

### **3.14.4 Monitoring and reporting of waste**

- 1) The following shall be monitored and recorded:
  - The physical and chemical composition of the waste
  - The hazard characteristics
  - Handling precautions and substances which cannot be mixed.

### **3.15 Land**

- 1) No emissions from the permitted installation shall be made to land.

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- 2) Any pollution incidents or spillage which results or has the potential to result in pollution of the land shall be reported to the Regulator as soon as possible.
  - 3) Within eighteen (18) months of the date of issue of this permit the site condition report (ref:Appendix 13 Application for Part A2 Permit Phrase 1A Site Condition Report) submitted with the application for this permit shall be reviewed in light of the essential requirements of Environment Agency Technical Guidance Note H7 'Guidance on the Protection of Land under the IPPC regime' and compliance shall be confirmed. Where additional actions are required to ensure compliance with the guidance note an addendum to the site condition report shall be issued.
  - 4) At the time of site decommissioning the condition of the land within the boundary of the process covered by this permit shall be returned to the standard detailed in the site condition report referred to in clause 2.13 (3) and any later addendum.

### **3.16 Audits and feasibility studies**

- 1) All audit results of:

- energy use
- water use
- raw material use
- waste production

shall be referenced to annual production.

- 2) Audit reports shall refer to a time period based on one or more whole calendar years. Reports shall be submitted to the Regulator in March of the year following the end of the period to which the report refers.
- 3) Specific improvements identified by the audits shall be carried out within a timescale agreed by the regulator.

#### **3.16.1 Energy**

- 1) Within twelve (12) months of the date of the issue of this permit an energy audit shall be carried out and shall investigate the technical feasibility and practicality of using heat recovery systems.
- 2) An annual report on the energy consumption of the casting shop shall be produced and the energy use data shall be referenced to production volume.
- 3) Energy flows shall be monitored and target areas for reduction identified. This shall be updated annually (at intervals not exceeding 14 months).

#### **3.16.2 Water use**

- 1) Before 1st April 2006 a review of water use (water efficiency audit) shall be carried out.
- 2) A water efficiency audit shall be carried out at least every five (5) years thereafter and the water use data presented shall be referenced to production volume.

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**3.16.3 Raw material use**

- 1) An annual review (at intervals not exceeding 14 months) shall be carried out of the principal types of raw material used with regard to their environmental impact.
- 2) Within eighteen (18) months of the date of issue of this permit carry out a study into less polluting raw material options and make any material substitutions identified as feasible, review the study on an annual basis.

**3.16.4 Waste**

- 1) Within eighteen (18) months of the date of issue of this permit a waste minimisation audit shall be carried out.
- 2) A waste minimisation audit shall be carried out at least every five (5) years. The methodology used and an action plan for optimisation the use of raw materials shall be submitted to the regulator within two months of completion of the audit. Waste data presented shall be referenced to production volume.
- 3) An annual review (at intervals not exceeding 14 months) shall be carried out to ensure that the best practicable environmental options are being used for dealing with waste from the casting shop.

**3.17 Records**

- 1) From the date of issue of this permit all records required to demonstrate compliance with the conditions in this permit shall be kept for a minimum of two years.
- 2) Current records shall be kept on site. Records more than six (6) months old may be kept off site with the prior agreement of the Regulator.
- 3) Records shall be made available to the Regulator on request.

**3.18 Best Available Techniques**

- 1) Prior to substantial changes to the non-ferrous foundry process, options available shall be reviewed to determine the Best Available Techniques (BAT). If considered necessary by the Regulator, the assessment of BAT submitted with the application for this permit (Ref: NMUK H1 Assessment – Non Ferrous Foundry ref: ED31030 R2) shall be updated.
- 2) Using market and process knowledge new techniques shall be reviewed to assess their suitability and applicability for the non-ferrous foundry process. Following assessment, if new techniques are considered to be BAT they shall be introduced on a timescale agreed with the regulator.

Signed ..... *Peter 41 E MD* .....

Date ..... *1 April 2006* .....

Head of Environmental Services