Die Casting

Introduction:

The Oil smoke produced from Die Cast machines is very dry, sticky and normally not suitable for the Absolent technology.

Absolent oil-mist and oil-smoke filters are designed around a unique saturation technology and advanced scientific principles.

The units are designed for filtration of wet particles like oil mist and oil smoke.

But, by adding fluid with help of the special Absolent spray system Absolent will get a relative long filter life time out of this normally difficult application.

This presentation will give you further information about Absolent filtration of smoke from Die Cast Applications.

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Consult Absolent

Die Casting is the yet toughest application that Absolent has handled.

We may have over 100 installations in this field, but each and every one has been handled with special care.

Therefore we ask you to consult us before you quote the customer.

we would like you to find out the information to the following questions:

1) Important Information to Absolent

1.1) Type of die cast machines

- Size
- Manufacturer
- Model and year
- Vertical or Horizontal

6.2) Release Media

- Type
- Concentration (Normally 2-4% wax/oil rest water)
- How much release media per cycle

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6.3) Piston lubricant

- Type (Old machines could be a problem)

6.4) Way the release media is added

- Manually
- By robot

6.5) Cycle time per cast

- Complete cycle
- Smoke cycle

6.6) Size of cast

- Weight
- Dimension

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Absolent filter warranties

Absolent strive to give the customers max 1 year filter warranty on most applications.

When it comes to Die Casting the filter warranties are shorter than one year and the length of the given warranty from Absolent depends very much on the size of Die Cast machines, type of lubricants and inlet loads.

Today Absolent gives approximately 6 months filter warranty after careful evaluation.

It is therefore important to consult Absolent with the above given parameters before any of YOU quote the customer.

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Capacity

The capacity of the Die cast machines where Absolent has installed the great ODR series (Note: Minimum ODR 3000) varies from 400-3600 metric tons capacity.

The capacity counted in tons is the power of which the machine can press and hold the cast forms throughout the cast process.

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3) Experienced Filter Life times

Absolent has experienced the following filter life times for different sizes of Die Cast machines:

Up to 600 Metric Tons based on ODR 3000 our experience on the filter life time has been the following.
- Stage 1: 10-15 months
- Stage 2: 20-25 months
- Stage 3: 20-25 months

600 to 1200 Metric Tons based on ODR 3000 our experience on the filter life time has been the following:
- Stage 1: 6-9 Months
- Stage 2: 12-15 Months
- Stage 3: 12-15 Months

1200- 2600 Metric Tons based on ODR 6000 our experience on the filter life time has been the following:
- Stage 1: 6-9 Months
- Stage 2: 12-15 Months
- Stage 3: 12-15 Months

2600- 3600 Metric Tons based on ODR 9000 our experience on the filter life time has been the following:
- Stage 1: 6-9 Months
- Stage 2: 12-15 Months
- Stage 3: 12-15 Months

Case story

Åges Metal Die Casting, Sweden:

- Another success with Absolent

Absolent

APPLICATION

Die Casting:

ÅGES Metallgjuteri AB in Unnaryd, Sweden, has long been active in the aluminium die casting. For 10 years, the company has tried out different solutions for trapping and filtering the build-up of smoke caused in piston lubrication with graphite oil, and the wax smoke formed when applying release agent. The problem has been finding a solution that demands a minimum of maintenance, while still ensuring a high degree of separation, and effective smoke collection. Conventional techniques such as electrostatic filters, bag-type filters and horizontal filters were unable to satisfy the company's requirements, which led to high maintenance costs, unsatisfactory filter function and a poor working environment.

SOLUTION

ODR 3000:

Absolent has solved the problem with its type ODR 3000 oil-smoke filter, which guarantees a high degree of separation and long service intervals. In order to collect the smoke effectively, Absolent has developed specially designed extractor covers, which have also reduced the amount of air required by around 40%."

RESULT

High performance:

We are very pleased with the Absolent filter, which has now been running for a year without service, which is excellent considering the type of smoke we're dealing with," says Per Larsson, maintenance manager at ÅGES Metallgjuteri AB.

Facts	
Filter type:	ODR 3000
Installed:	August 1999
Machine type:	Press casting machine for aluminium
Piston lubrication:	Graphite oil
Release agent:	Wax emulsion
Service interval Filter 1:	approx. 1 year, replaceable
Service interval Filter 2:	approx. 2 years, replaceable
Hepa / absolute filter 3:	approx. 2 years, replaceable
Load:	10-40 mg/m³
Separation efficiency:	99,97%

Case story

Hellmer Die Casting, Sweden
- cleans the Air with filter units from Absolent

Absolent

APPLICATION

Die Casting:
The demand before starting up the new Die casting department was to be way ahead on the environmental side. Their problem was how to capture and filtrate the smoke that arises when greasing the piston with graphite oil as well as capture and filter the Wax smoke that arises when adding the release media. The difficulty was to find an energy saving solution with low maintenance cost, high separation degree and still capture the smoke efficiently.

SOLUTION

ODR 3000:
Absolent had the solution to their problem – The Oil smoke filter ODR 3000 with an airflow of 2350cfm. Absolent could guarantee Hellmer Die Casting a high separation degree and long service intervals. In order to capture the smoke efficiently, special designed hoods were used over each die casting machine. Due to dry smoke a water spray system is used in order for the dry particles to drain properly.

RESULT

High performance:

After more than half year since the start up, we are very pleased with the Absolent filter units, says Joachim Svensson, Production Manager at Hellmer Die Casting Group. Looking around the production facilities the walls and ceiling are still shiny and bright. We keep a very high standard regarding the environment.

Today this is very important when demands not only from different institutions, but also from well educated production personnel gets higher and higher, says a very pleased Joakim Svensson.

Facts

Filter type:	ODR 3000
Installed:	27 April 2002
Machine type:	Die Casting
Cooling agent::	Oil,
Lubricant:	Wax, Graphite
Load:	10-60 mg/m^3
Service interval, filter 1:	min 1 years, replaceable (changed after 1.5 years operation)
Service interval filter 2:	min 2 years, replaceable (Changed after 2.5 years operation)
Hepa / absolute filter 3:	min 2 years, replaceable (Changed after 2.5 years operation)
Separation efficiency:	99.97%

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Since 1997 Absolent has installed about 200 ODR 3000 on Die cast Applications in Sweden alone.

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Inlet Load

The load is sometimes difficult to determine.

In the particle size range from 0.1-10 microns (Dust Trak Range) the load is often 10-60 mg/m3.

However, at a die cast operation a large amount of bigger particles are generated.

For these particles we do not have a measuring method.

But, these are the particles that will clog the filter and are the reason for the spray system.

It will build up a cake on the surface of the filter

It is important to make sure that the hood on top of the Die cast machine covers the different positions from where the smoke arises.

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Mixed Contamination

There are 2 different contamination sources:

One is Release Media and the other is Piston Lubricant

- Release Media will dissolve with water

- Piston Lubricant: will not dissolve with water

We mentioned earlier that the release media is a wax mixed with water about 4%.

If the major contamination is Release media the longer the filters will last

Please check both sources very carefully!!

Die Casting

2) Spraysystem

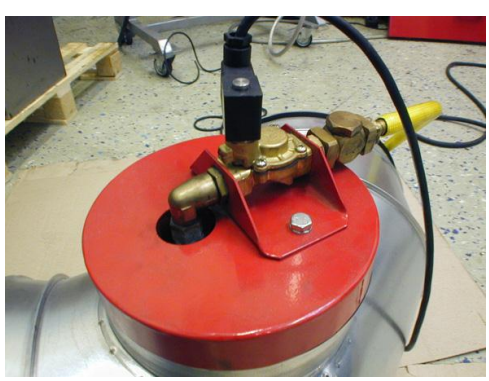
Die Casting is a difficult application because the smoke is dry and sticky.

As mentioned in the introduction Absolent oil-mist and oil-smoke filters are designed around a unique saturation technology.

Therefore we have to add water to the air stream in order to keep the filters wet and allow for our unique self draining/cleaning of filters. All the installations have spray systems.

It is placed on the ducting just before the inlet of the ODR 3000. The electrical control for the spray system is already a part of the control box for the ODR 3000 standard and the frequency drive version. This means it can not be used with ODR 3000 basic.

The spray nozzle is mounted on a lid (color red). The lid is mounted to a short tube(see picture below) in order to keep the spray nozzle from the air stream. The hole in the lid, where the nozzle sits also lets clean air through to keep the nozzle clean.



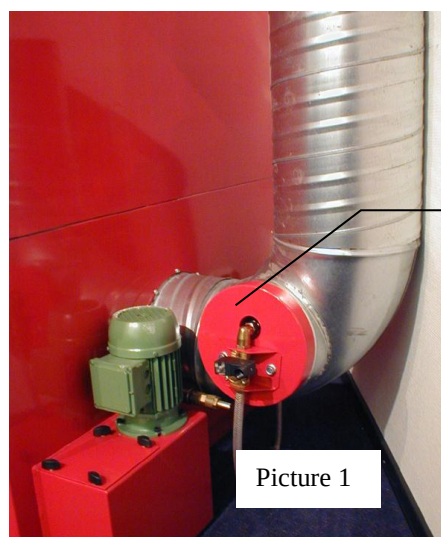
Description Absolent ODR 3000 with spray system

Background

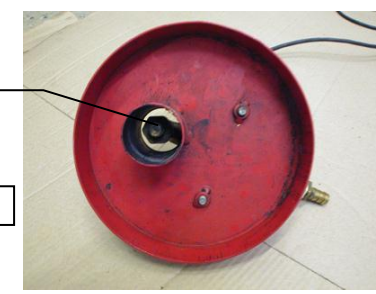
Absolent ODR 3000 is a particle filter for airborne wet particles, oil mist and oil smoke. The lifetime of the filter cassettes depends on a filter technique there the pollution contains liquid. When the pollution is to dry or sticky the self cleaning function of the filter will decrease or stop which will give a shorter lifetime of filter cassette.
To get the pollution more wet You can add liquid too the air with a spray system. It is important to use a liquid that solvent the pollution (for emulsion water will do).

Function of spray system

The spray nozzle is fitted to inlet duct (picture 1). The spray system have a valve (24VDC) that will be activated from the control box of the ODR 3000. Standard adjustment for nozzle is 10 seconds spray time and 2 minutes off time.



Picture 1


Picture 2

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Installation

– The spray system (Ø200 = 7,87 inch) can be fitted either to a bend or a straight tube on the inlet of the filter unit. The system can be placed directly on the unit (see pict. 1) or on the ducting up to 3 m from filter unit.
– The clean liquid (water) should be connected to the inlet connection (Ø10 mm = 3/8 inch) at the spray system with a hose and a hose clamp. Standard water pressure from the water system will work good. If the water isn't clean and contain particles you have to put a filter at the liquid (water) inlet.
– The spray system has a 24 VDC electric valve that control when it spray.

Maintenance

The first check of spray system should be done about one month after the start. If the spray looks ok then a check every six months will do.
When you check the system take of the spray system from the ducting and look at the spray. It should be a fine water mister. If there are big drops or the spray looks strange the nozzle has to be cleaned.

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3) Special enclosure

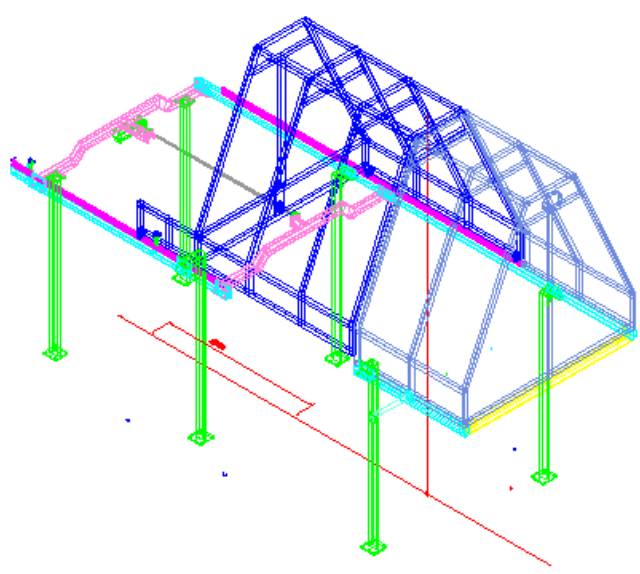
In order to offer the customer a competitive solution Absolent strives to use as little air flow as possible.

Absolent has developed a special high volume hood.
In order to make a successful installation with an ODR 3000 only using 2400 cfm the hood has to be able to hold the boosts of smoke, so there is time for the limited amount of airflow to extract the smoke before the next boost of smoke is due.
This allows Absolent to quote the customer a filter unit with usually half the airflow than the competitor.

The hood is made of two pieces. For tool changes, services, etc. one part of the hood slides side ways in order to make vertical access possible from above and down into the Die Cast Machine.

The hood sits on a stand that is built around the machine. Absolent can help providing distributors with a principal drawing. Please send electronic machine drawing per e-mail to Absolent. Please allow 2-3 weeks for drawing time!!

Drawing of general 2-piece hood



Special enclosure

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Summary

- Die Cast is a very difficult application, but is solvable with ODR.
- Sizing parameters must be carefully evaluated, Consult Absolent
- Always use Spray system
- Remember that a high volume collection hood is key to a successful Absolent installation