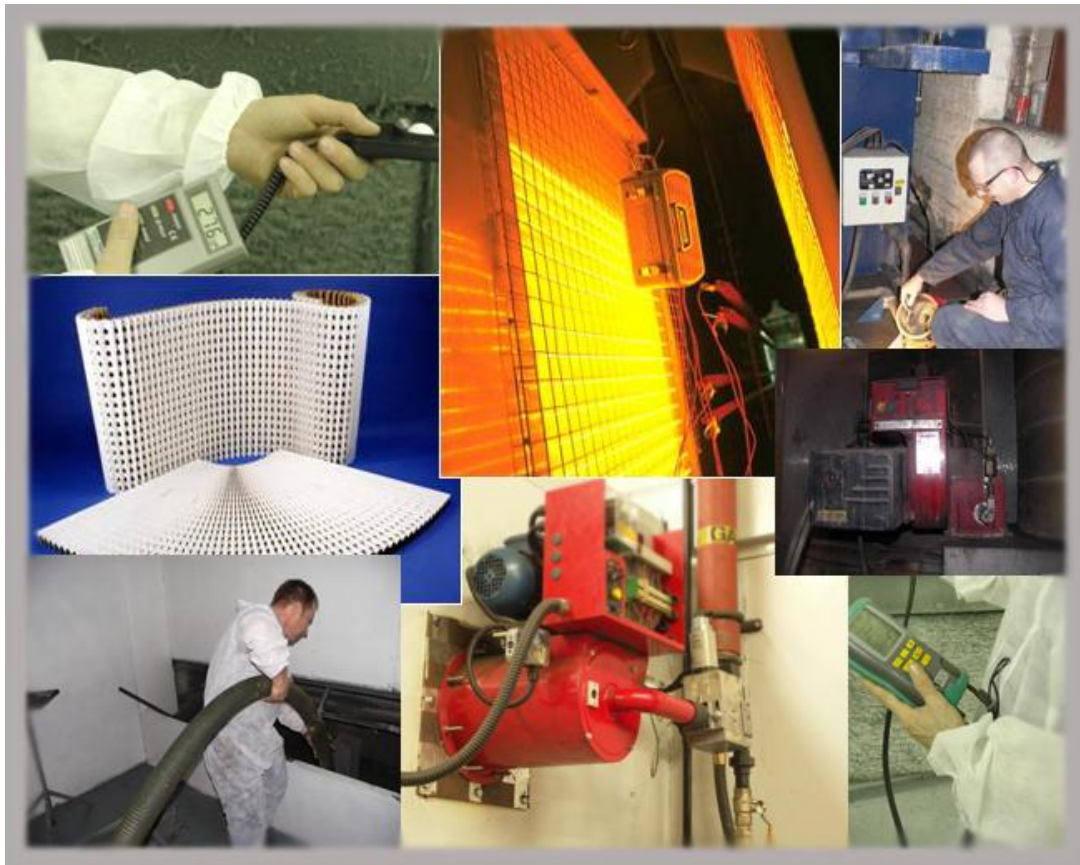


Premiere Servicing

Servicing The Paint Finishing Industry

The following details should be read in conjunction with your service report
It provides an explanation why the various tests and checks are carried during the course of your plant service.

Should you require any additional information please contact the offices of Premiere Servicing Ltd
on 01706 347070



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Airflow Tests

Airflow testing is one of the most important checks carried out during the course of any plant service.

Spray booths

Spray booth extraction rates should be designed to meet various standards dependent upon the booths configuration and the type of material being sprayed.

For example, on simple open fronted type spray booths, for solvent based materials, the extraction rate should be on average 0.7m/sec across the front open face of the booth.

This requirement is not necessarily for the operative who should be wearing PPE, but for the protection of other personnel working in the local vicinity outside of the booth.

Water based materials are not always what they seem, small amounts of solvents may still be present, together with other constituents which may possibly require elevated extraction levels.

Consultation with the material supplier may be necessary to determine the recommended extraction rates. Pure water based, non toxic materials would normally require an extraction rate in the region of 0.4 m/sec across the operator in order that the overspray is not ingested. It may not be toxic , however it could become an irritant.

In order to comply with COSHH, (The control of substances hazardous to health), local exhaust ventilation checks should be carried out on all ventilation equipment at least once every 14 months. These tests should be carried out by competent personnel, using the correct type of calibrated test equipment.

Premiere have various type of equipment including rotating vanes and hot wire anemometers. All of which are calibrated every 12 months to ensure accurate and consistent measurements.

Vane and hot wire anemometers are generally adequate for setting up most simple plant and provide reasonably accurate figures. However, where accuracy is more important, for instance on the larger more complex plant (motor industry for example) more detailed checks are often required. In this instance we would use a more accurate static pitot tube which can measure velocity across the cross sectional area of the duct. Several measurements are taken across the duct, the mean value being used to determine the actual volume.

Airflow readings can tell us if the plant meets health and safety requirements, if filters need replacing, or if volume control dampers are incorrectly set or damaged. In most cases however our results confirm that the plant is working to original design parameters.

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Premiere *S e r v i c i n g*

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Ovens

When curing solvent based products the extraction rate of an oven would be calculated to keep the solvent level inside of the oven to below its LEL (Lower Explosive Limit). Poor extraction can create dangerously high solvent levels and increase the potential for explosion.

Too great an extraction rate can result in excessive heat loss and an inefficient oven. At Premiere oven extraction rates are checked every time we carry out a full oven service.



Calibration Certificates

All test equipment used by Premiere is calibrated every 12 months, to ensure consistent and accurate readings.

Copies are provided with the service reports or available upon request

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Motor Running Currents

Running currents, measured in amps per phase, should be measured, in order to determine the electrical load being drawn by a motor.

If a motor draws too much current its life expectancy can be severely reduced, especially if the thermal overload is not set correctly. A thermal overload is a protective device which checks the current load by the heat generated from the current passing through it. In simple terms, the more current passing through it, the more heat is generated.

Each thermal overload normally has a operating range set above and below the normal running current of the motor. All motor manufactures work to the same standards and all motors of the same rating (KW), will have a similar current loading. It is important that the overload is set at the manufactures running current load. This can be found on the motor name plate.

If the overload is set too high the correct protection may not be given.

Running current tests are carried out using a hand held 'clip on' meter which fits over the wire being measured and it gives a digital display of the current passing though the wire.

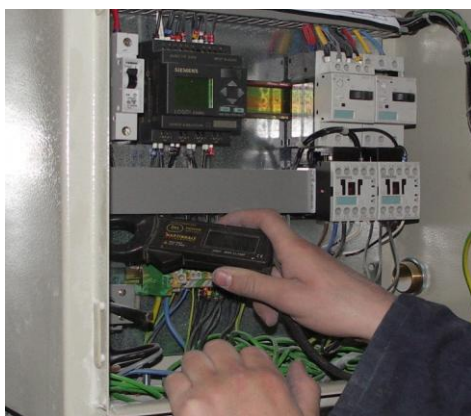
Fan manufactures specify fans with a motor/impeller arrangement, to provide a given airflow against a specific resistance. The plant designer/manufacture does not always know accurately the system resistance and in many circumstances, have to make educated guesses.

Volume control dampers are provided in the plant not only to balance airflow but to reduce it, if the fan is performing better than expected or if the system resistance is lower than that estimated.

Motors will draw more or less current depending upon the fans impeller design.

Forward curved centrifugal fans for example, draw less current when dampers are closed and the system resistance increases.

Checking motor running currents will often provide warning of future or imminent motor failure caused by poor fan selection, broken dampers or faulty motors





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Noise At Work

Noise is measured in decibels (db). An 'A weighting' sometimes written as db(A), is used to measure average noise levels, and a 'C weighting' or db(C) is used to measure peak, impact or explosive noise.

You might just notice a 3db change in noise level because of the way our ears work. Yet every 3 db doubles the noise, so what might seem like a small difference in the numbers can be quite significant.

Noise at work regulations 2005

The noise at work regulations – effect on the paint shop

A summary of the law at it stands is as follows:

- A) First action level; a daily personal exposure of 80 dba
- B) Second action level; this means a daily personal exposure of 85 dba
- C) There is a daily limit of 87 dba, however this does take into account the reduction obtained after wearing ear protection

Every employer shall ensure, so far as practicable, that when any of his employees are likely to be exposed to the first action level or above in circumstances, where daily personal noise exposure is likely to be less than 85 db(A) that employees are provided, at their request, with suitable and efficient personal ear protectors.

Every employer shall ensure, so far as practical, that when any of his employees are likely to be exposed to the second action level or above or to the peak action level or above, that employees are provided with suitable personal ear protectors which, when properly worn, can reasonably be expected to keep the risk of damage to that employees hearing to below that arising from exposure to the second action level or, as the case may be to the peak action level.

Basically, if noise levels are above 80 db(A) but below 85 db(A), warning signs must be provided, together with ear defenders if requested. If above 90 dba efficient ear protection must be provided.

H&S guidelines state that the sound level meter used for carrying out a noise at work survey should be an integrating meter and at least a type 2 or class 2.

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Premiere can carry out a noise survey both inside and outside of the paint plant and provide a report of the findings. To bring plant in line with current legislation it may require the installation of fan silencers or other measures to reduce working noise levels.

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Burner Combustion Testing

Most paint plant manufactures incorporate direct gas fired burners into their plant, due to their higher working efficiencies, (they do not fire them into a combustion chamber).

Combustion tests, including CO/CO₂ ratios to determine how cleanly the burner is firing, are therefore not possible to carry out in the conventional way.

On direct fired applications it is just as important to ensure that the burner is set up correctly because of all the products of combustion enter the working area.

A gas burner combustion process will not be complete if it does not convert all of the fuel's carbon and hydrogen into carbon dioxide and water. A by product of incomplete combustion is carbon monoxide.

Excessive levels of carbon monoxide can induce sore throats, headaches, nausea and in extreme cases can cause death!

When Premiere service or commission a gas burner we always check carbon monoxide levels to ensure the safety of the personnel operating the plant. The results are normally printed off and attached to the service report.

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Oven Data Logging

Your oven performance can slowly deteriorate over a period of time, going on unnoticed. Quality drops, colours can vary, efficiency decreases and running costs increase.

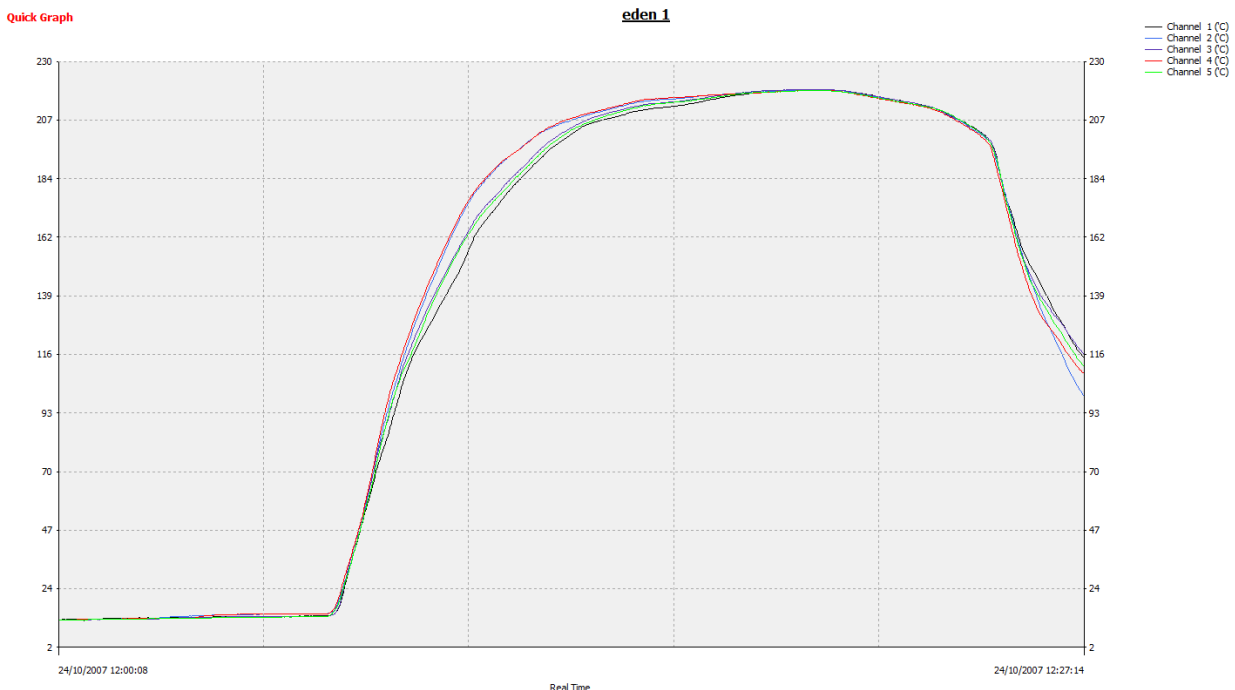
Temperature profiling should be a vital part of your routine oven maintenance programme.

We can carry out a temperature profile check and provide you with an accurate print off of the results. We can analyse the detail and determine if you have cold spots and uneven temperatures. We can find out where they are, and by adjusting the oven volume control dampers try, to eliminate them.

Calibration Certificates

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The following graph was produced by Premiere on behalf of Delta Process Systems for one of their plants that we commissioned for them in the Czech Republic. The internal temperature distribution was almost perfect.



Information produced with the permission of Delta Process Systems

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Burner Servicing

The gas burner is the heart of any oven or heated air replacement system. Many paint shops can be a harsh working environment with lots of dust, powder and paint deposits.

It's extremely important to keep a burner regularly serviced to keep in line with current health and safety recommendations, and to ensure that combustion levels are efficient, providing low running costs, minimal carbon monoxide levels and above all a safe working appliance !



The combustion fan impeller should always be removed and cleaned.

The photo shows what is fairly typical of the amount of debris which can collect on the impeller blades.

A clean impeller is important in providing the correct amount of air to pass over the flame.



The head of the burner should be removed and cleaned to ensure even air distribution across the flame.

It is also good practice to change the ignition and flame proving electrodes at regular intervals.

The small holes can easily become blocked leading to an unstable flame, high levels of carbon monoxide and nuisance lockouts



It is important to maintain a constant gas/air ratio throughout the operating range of the burner.

A low gas pressure switch ensures that the burner is switched off if the inlet gas pressure falls below a specific set point.

A reduction in gas pressure will give unstable combustion and increased levels of carbon monoxide.

This is an important safety device which should always be checked

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A combustion fan pressure switch checks the pressure developed by the burner combustion fan.

It is another very important safety device which must be checked during every service.

Should the fan motor fail the pressure switch will shut the burner down to a “lock out” condition.

The burner will then have to be manually reset.



During the course of the service all gas and air pressure settings should be measured, logged and compared to the manufacturer's recommendations.

Figures will be entered into our report, and used as a benchmark for future services.

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Lighting

Good lighting levels can play a major part in reducing reject rates.

It is very difficult to work in booths with low lighting levels as shadows and "dark" areas prevent the sprayer from seeing and maintaining a 'wet edge'. Dry over spray and runs are also typical if the sprayer cannot see clearly.

Correctly illuminated spray booths provide improved conditions for the operator and can significantly improve the quality of the finished product.

Our testing equipment measures lighting levels in Lux, which is the accepted standard.

Poor lighting levels are generally within the region on 300-400 Lux.

The minimum acceptable standard to produce reasonable working conditions should be no less than 500 - 600 Lux. Ideal spraying conditions are provided when lighting levels are in the region of 1000 Lux.

Top of the range spray booths may incorporate working lighting levels of 1200 lux.

Lighting levels above 1500 lux may be too bright and produce too much glare.

Fluorescent tube illumination levels drop over a period of time, therefore Premiere recommend re-tubing fittings once every 12 month. Premiere can carry out this work during the course of a service or even upgrade to provide improved lighting levels if required.



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