



INDUSTRY BRIEFING NOTE

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Appliance Combustion Issues

Introduction

Over many years our customers and industry have encountered periodic, isolated and/or regional manifestations of combustion problems with domestic appliances burning Kerosene. The causes of combustion problems and the symptoms found at appliances can differ. Most common problems show commonality to appliance and burner types.

In 2003, OFTEC and FPS representatives first drafted a questionnaire (T61q) for technicians as a means of capturing reported combustion problems in the field. Administered by OFTEC since publication, the information received and collated now shows common trends and indicators, which could directly affect the quality of combustion and operation of oil fired appliances. As a result of this the following guidance is issued.

If combustion problems are encountered:

Do:

- Check the tank for condensation / water
- Check the filters in the oil supply system inc. filters integral to fuel pumps & oil control valves
- Check that the oil tank provides sufficient minimum head of supply for the appliance(s)
- Check that oil supply lines are sufficiently sized for the appliance(s)
- Check that there is sufficient combustion, ventilation and make up air supplies for the appliance(s)
- Check that flue and chimney systems are correct and function as required by the appliance(s)
- Check for room extract fan interference
- Check that all burner settings are correct
- Check with the supplier that the correct grade of fuel for the appliance(s) has been delivered
- Check with the supplier that fuel is not contaminated with other grades such as gas oil or paraffin

The above points and combinations of same can give rise to combustion problems on site. Where these have been ruled out then please complete a T61q questionnaire (available at www.oftec.org) and submit completed forms to OFTEC Technical Department for review and further advice.

Don't:

- Presume that existing installations are ok, even when problems have not previously been encountered
- Presume that changing or altering the fuel type will resolve combustion problems
- Presume that fuel additives can resolve combustion problems
- Presume that the fuel is incorrect
- Presume anything!

Combustion symptoms:

Premature Carboning

Most commonly associated with continually burning vaporising appliances.

Key factors:

- Condensation / water in the tank & partially blocked filters in the oil supply system inc. filters integral to oil control valves
- Insufficient minimum head of oil supply especially when multiple appliances share a common supply line system resulting in fuel starvation
- Insufficiently sized oil supply lines especially when multiple appliances share a common supply line system.
- Insufficient combustion, ventilation and make up air supplies.
- Insufficient flue and chimney systems/operation
- Room extract fan interference.
- Incorrect burner settings
- Incorrect grades of fuel such as gas oil or paraffin.
- Contaminated kerosene with other fuel grades such as gas oil, derv or paraffin or use of unapproved fuel additives.

Appliance over firing & appliance sooting

All types of appliance burner.

Key factors:

- Insufficient combustion, ventilation and make up air supplies.
- Insufficient flue and chimney systems/operation.
- Extract fan interference.
- Incorrect burner settings
- Incorrect grades of fuel such as gas oil or paraffin.
- Contaminated kerosene with other fuel grades such as gas oil, derv or paraffin or use of unapproved fuel additives.

Component failures

Most commonly associated with premature failure of pressure jet burner fuel pumps.

Key factors:

- Condensation / water in the tank & partially blocked filters in the oil supply system inc. filters integral to oil pumps
- Insufficient minimum head of oil supply especially when multiple appliances share a common supply line system.
- Incorrectly sized oil supply lines (gravity and suction).
- Incorrect grades of fuel for burner type e.g. kerosene in a gas oil fuel pump or paraffin in a kerosene fuel pump.
- Contaminated fuel such as gas oil contaminated with kerosene, kerosene contaminated with paraffin.

Intermittent burner lock outs

Most commonly associated with pressure jet burners.

Key factors:

- Condensation / water in the tank & partially blocked filters in the oil supply system inc. filters integral to oil pumps
- Insufficient minimum head of oil supply especially when multiple appliances share a common supply line system resulting in intermittent fuel starvation
- Insufficiently sized oil supply lines especially when multiple appliances share a common supply line system resulting in intermittent fuel starvation
- Incorrectly sized oil supply lines (gravity and suction).
- Insufficient combustion, ventilation and make up air supplies.
- Insufficient flue and chimney systems/operation
- Room extract fan interference.
- Incorrect burner settings
- Incorrect grades of fuel for kerosene burners & settings such as gas oil or paraffin.
- Kerosene contaminated with other fuel grades such as gas oil, derv or paraffin or use of unapproved fuel additives.