

## OPTION CHECKLIST NO. 7: FUELS & COMBUSTION

### FUEL CHECKLIST

#### Daily Check

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| <ul style="list-style-type: none"><li>• Oil temperature at the burner ii. Oil/steam leakages.</li></ul> |
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#### Weekly Task

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| <ul style="list-style-type: none"><li>• Cleaning of all filters ii. Draining of water from all tanks.</li></ul> |
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#### Yearly Jobs

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| <ul style="list-style-type: none"><li>• Cleaning of all tanks.</li></ul> |
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#### Troubleshooting Hints

##### Oil not pumpable

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| <ul style="list-style-type: none"><li>• Viscosity too high.</li></ul>        |
| <ul style="list-style-type: none"><li>• Blocked lines and filters.</li></ul> |
| <ul style="list-style-type: none"><li>• Sludge in oil.</li></ul>             |
| <ul style="list-style-type: none"><li>• Leak in oil suction.</li></ul>       |
| <ul style="list-style-type: none"><li>• Vent pipe choked.</li></ul>          |

##### Blocking of strainers

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| <ul style="list-style-type: none"><li>• Sludge or wax in oil.</li></ul>                          |
| <ul style="list-style-type: none"><li>• Heavy precipitated compounds in oil.</li></ul>           |
| <ul style="list-style-type: none"><li>• Rust or scale in tank.</li></ul>                         |
| <ul style="list-style-type: none"><li>• Carbonization of oil due to excessive heating.</li></ul> |

##### Excess water in oil

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| <ul style="list-style-type: none"><li>• Water delivered along with oil.</li></ul>     |
| <ul style="list-style-type: none"><li>• Leaking manhole.</li></ul>                    |
| <ul style="list-style-type: none"><li>• Seepage from underground tank.</li></ul>      |
| <ul style="list-style-type: none"><li>• Ingress of moisture from vent pipe.</li></ul> |
| <ul style="list-style-type: none"><li>• Leaking heater steam coils.</li></ul>         |

##### Pipeline plugged

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| <ul style="list-style-type: none"><li>• Sludge in oil.</li></ul>      |
| <ul style="list-style-type: none"><li>• High viscosity oil.</li></ul> |

<ul style="list-style-type: none"> <li>• Foreign materials such as rags, scale and wood splinters in line.</li> </ul>
<ul style="list-style-type: none"> <li>• Carbonization of oil.</li> </ul>

## COMBUSTION CHECKLIST & TROUBLESHOOTING

### Start up

<ul style="list-style-type: none"> <li>• Check for correct sized burner/nozzle.</li> </ul>
<ul style="list-style-type: none"> <li>• Establish air supply first (start blower). Ensure no vapour/gases are present before light up.</li> </ul>
<ul style="list-style-type: none"> <li>• Ensure a flame from a torch or other source is placed in front of the nozzle.</li> </ul>
<ul style="list-style-type: none"> <li>• Turn ON the (preheated) oil supply (before start-up, drain off cold oil).</li> </ul>

### Operations

<ul style="list-style-type: none"> <li>• Check for correct temperature of oil at the burner tip (consult viscosity vs. temperature chart).</li> </ul>
<ul style="list-style-type: none"> <li>• Check air pressure for LAP burners (63.5 cm to 76.2 cm w.c. air pressure is commonly adopted).</li> </ul>
<ul style="list-style-type: none"> <li>• Check for oil drips near burner.</li> </ul>
<ul style="list-style-type: none"> <li>• Check for flame fading/flame pulsation.</li> </ul>
<ul style="list-style-type: none"> <li>• Check positioning of burner (ensure no flame impingement on refractory walls or charge).</li> </ul>
<ul style="list-style-type: none"> <li>• Adjust flame length to suit the conditions (ensure flame does not extend beyond the furnace).</li> </ul>

### Load changes

<ul style="list-style-type: none"> <li>• Operate both air and oil valves simultaneously (For self-proportioned burner, operate the self-proportioning lever. Do not adjust valve only in oil line).</li> </ul>
<ul style="list-style-type: none"> <li>• Adjust burners and damper for a light brown (hazy) smoke from chimney and at least 12 per cent CO<sub>2</sub>.</li> </ul>

### Shut down

<ul style="list-style-type: none"> <li>• Close oil line first.</li> </ul>
<ul style="list-style-type: none"> <li>• Shut the blower after a few seconds (ensure gases are purged from combustion chamber).</li> </ul>
<ul style="list-style-type: none"> <li>• Do not expose the burner nozzle to the radiant heat of the furnace. (When oil is shut off, remove burner/nozzle or interpose a thin refractory between nozzle and furnace).</li> </ul>