Subject: Air Conditioning system and its maintenance to prevent fire.

We have noted that Air conditioners have become part of our life. If used and maintained properly they are a boon, while misuse leads to un controllable fire. This note provides an insight on the proper use of an air conditioner.

Air conditioners, by its functions, are divided into two types such as electric power and electric heating, one can only refrigerate air, the other can cool and heat air. An air conditioner consists of three parts: first, a refrigeration system (with a motor-driven compressors); second, a ventilation circulation system (including the fan motor, centrifugal fan and pump flow fan, etc.); third, the electrical control system. Air conditioner fires are mainly caused by:

A. Installation does not meet the requirements:

1. Poor or loose connection of the power cord with the motor connector, overheating & igniting the combustible plastic shell of air conditioner on fire;
2. The cross-sectional area of selected conductor is too small this leads to overload fire;
3. The selected plug with low-voltage can only withstand small capacity, resulting in breakdown and short circuit fire;
4. The fuse does not match with the air conditioner capacity, when the fuse does not blow when the ac is defective.
5. Wrong plug and socket causes fire.
6. Improper installation location. The air conditioner is installed on combustible members, too close to curtains, wood structure and other objects, or installed at humid location without moisture treatment or enough covered area. In summer, air-conditioning condenser are in sunlight for too long, when at noon, its temperature goes up to above 40 ℃, the non-stop operation of air conditioner leads to overheating of compressor and frequent operation of overload protection device, resulting in compressor burn down or circuit fire.

B. The fan of electric-heating type air conditioner stops.

Fan stops rotating for two reasons:
First, a failure occurs to the air-conditioner itself, for example, the fan blades eccentrically rotate due to bearing wearing, the blades jam up the casing, causing the stoppage of fan;
Second, the fan and heater are controlled by different switches, when the air conditioning unit is turned off, and if the fan stops immediately, this results in heat accumulation, the temperature rises, which is likely to ignite combustibles within the unit.

C. High temperature spark generated when oil capacitor is broken down ignites inside liner and dividers of casing.

The causes of capacitor breakdown are:
First, the supply voltage is too high;
Second, moisture leakage, poor capacitors, insulating properties compromised with moisture, increased leakage current, leading to breakdown.

D. Improper use

1. The user does not operate the air conditioner according to the operating instructions. When the user stops the heating, there is no ventilation position for the cooling of electric part. If power supply is cut off, & if no fan operates to cool, then for a long period of time the electric part remain at higher temperature, heating the surrounding combustibles, leading to combustible decomposition, carbonization and fire.
2. Air conditioner is started immediately after the recession. Shortly after the air conditioner stops, the pressure difference between inlet and outlet side of compressor is large, the proper stop is not to start the air conditioner until the high and low pressure sides reach balance by means of capillary, otherwise, it is likely to increase compressor load and current, leading to motor burn down.

E. Excessively low power supply voltage:

If supply voltage of the air conditioners is too low to keep cooling fan motor speed sufficient enough to dissipate heat, as a result, gasket, or short-circuit of overheated motor are ignited by high temperature.

Fire prevention measures for air conditioner

1. Choose quality air conditioner of good brands. Do not buy reconditioned AC.
2. Have professional air conditioner installer to install air conditioners, select wires, plugs and fuses matching the air conditioner
3. The air conditioner should not be installed too close to curtains, or curtains should be of fire-retardant fabrics.
4. User of air conditioner of electric heating type, when heating is stopped, first cool the electric part with ventilation position, then wait for 5 minutes before shutdown.
5. Never have a joint in power supply cable or use an extension board to supply power to AC.
6. It is preferable to have an Industrial type plug and socket for AC, to have proper contact.

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