



SNS COLLEGE OF TECHNOLOGY

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COIMBATORE-35.



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DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE NAME : 19AUB304 – VEHICLE MAINTENANCE AND RECONDITIONING

III YEAR /VI SEMESTER

Unit 2- Engine Maintenance – Repair and Overhauling

Topic : Engine Cleaning Methods



ENGINE CLEANING



- Automobile engines attract and accumulate particles during its operation and these deposits could come in these forms: - water soluble deposits, organic soil, rust or scale.
- Effectively cleaning these deposits require the use of the most appropriate cleaning method.
- The three widely applied cleaning methods are
 - ❖ Wet cleaning
 - ❖ Abrasive blast cleaning
 - ❖ Thermal cleaning
- In most small automotive workshops, the wet cleaning method is mostly used.



WET CLEANING



- Wet cleaning method involves the application of water only, water and chemicals (acid or base) or chemicals (acid or base) only.
- The choice of wet cleaning method is dependent on the dirt in or on the engine.
- In automobile engines, to clean soil, a chemical must wet the material and suspend the dirt so that it can be washed off.
- On the other hand, organic soils which includes petroleum by-products, carbon, gasket sealers and paint and other products of combustion, cannot be effectively washed off with water, as a result of this introduction of a chemical is required.
- The introduced chemical makes the dirt soluble before they are washed off



CHEMICAL CLEANING OF OUTER PART OF ENGINE



- Cleaning with Alkaline materials are good cleaning materials for greasy surfaces.
- Cleaning with Acid materials are good for only cleaning rusts and scales
- Cleaning with solvents employed in engine cleaning come in three different types
 - ❖ Water Based
 - ❖ Mineral Spirits
 - ❖ Chlorinated Hydrocarbon



CHEMICAL CLEANING



- Solvent cleaning
- Alkaline cleaning
 - ❖ Cleaning aluminium
 - ❖ Hot Soak Tanks
- Spray Washer: the use of hot spray jet



ABRASIVE CLEANING



- **Abrasive Cleaning or Blast Cleaning** is the process of eliminating all visible dirt, rust, corrosion, carbon build-up, oxides, paint, functional coating, mill scale, dust, and other stubborn residues from the surface of an object by propelling abrasive media against it by any controlled means.
- The method involves the use of high-velocity abrasive particles from a jet stream of compressed air or centrifugal impellers to 'blast' clean the steel surface.



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BLASTERS



- **Glass Bead Blasters:** This is a very effective method of removing carbon from an engine part and this machine is found in most automotive shops.
- **Soda Blaster:** This is a blast-cleaning method that involves the use of a baking powder as a cleaning medium. The soda material can only be used once
- **Airless Blaster:** This is a centrifugal blasting machine that uses an impeller to scatter steel shots in a sealed cabinet on the engine part.



THERMAL CLEANING



- This type of cleaning is employed in automotive workshops.
- It is a cleaning procedure in which a pyrolytic (high-temperature) oven heats oil and greasy, turning them into ash.
- Hard and dry deposits are left on the surface of the engine part and are removed by jet washing or shot blasting.
- Two types of thermal ovens exist
 - ❖ Convection oven
 - ❖ Open flame oven



OTHER CLEANING METHODS



- **Vibratory parts cleaner:** This machine cleans the engine part by causing the beads covering the engine to vibrate thereby knocking off the deposits.



MANUAL CLEANING METHODS



- Hand-held brushes are employed in cleaning engine parts like the top cylinder head, crankshaft, valve guides, oil galleries in engine blocks, etc.
- Sandpaper can also be employed in cleaning engine parts manually or with the aid of power tools.
- Small wire brush can be used to remove dirt and deposits from some engine parts surfaces by fixing/fitting them to electric or air drills.



VISUAL AND DIMENSIONAL INSPECTION OF ENGINE



- After dismantling all the parts are inspect them carefully and replace the defective parts.
- All parts should be clean with kerosene and dry them with the compressed air.
- They cylinder walls may be inspected for scoring. The cylinder may require reboring or re honing if scores are present
- To inspect piston for scores, remove the ring without braking them.
- Inspect the piston ring for damage or wear. If these are defective replace them.
- Inspect the conncting rod small end bearings. If these are scored or pitted. Service with rebitting.
- Check the valve face and seat. If any part is defective service the valve face with the help of valve seat for correct seating of valves.



THANK YOU