CDPF Solution Considerations

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Outline

- CDPF Functions and Challenges
- CDPF Backpressure
- Soot Consumption Rate
- Duty Cycle Analysis
- CDPF Selection and Sizing
- Real Time Monitoring and Feedback
- Summary

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CDPF Functions and Challenges

- Key Functions
  - Capture and oxidation of DPM
  - Oxidation of CO and HC
  - Control of emissions (oxides of nitrogen)
- Challenges
  - Maintain exhaust backpressure below limit set by engine manufacturer.
  - Reliable operation with minimal and predictable maintenance and cleaning.

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CDPF Backpressure

- Backpressure is due to soot (and ash) accumulation.
- Soot accumulation occurs when soot production is greater than soot consumption.
- Soot Production Factors
  - Engine make and model
  - RPM
  - Load
- Soot Consumption Factors
  - Filter size
  - Catalyst formulation
  - Exhaust temperature – duty cycle

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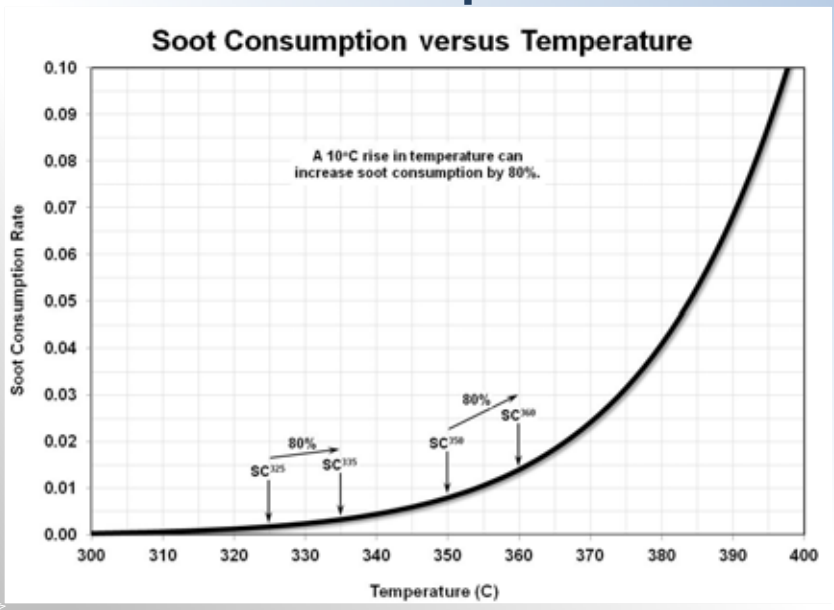
Soot Consumption Rate



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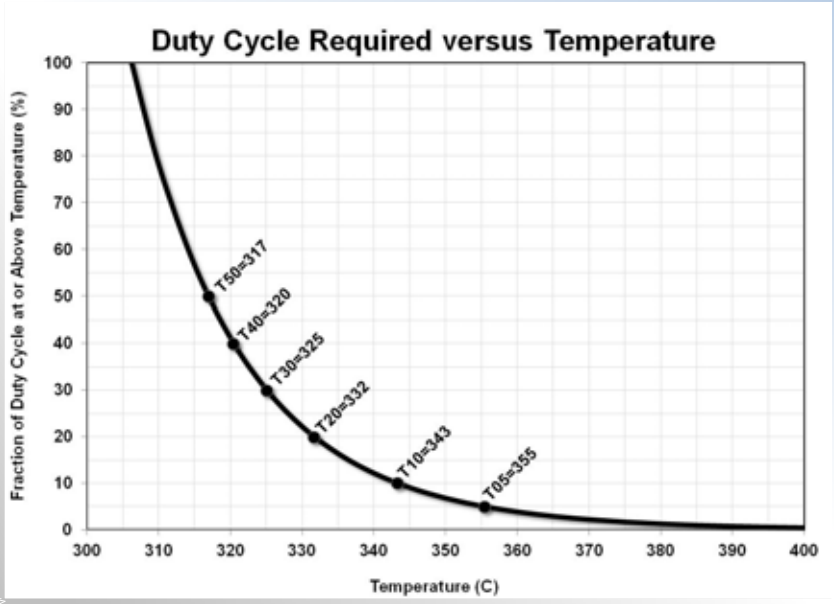
Balance Point Curve



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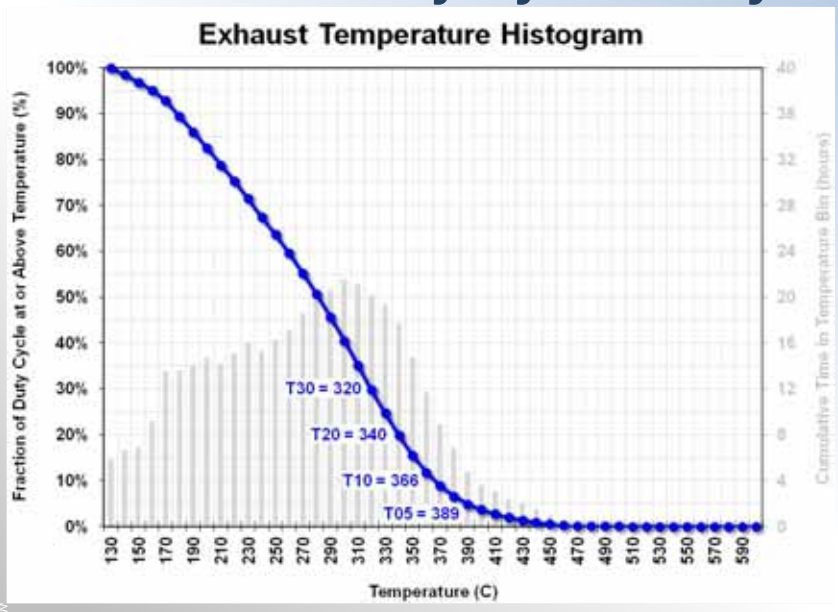
Conventional Duty Cycle Analysis



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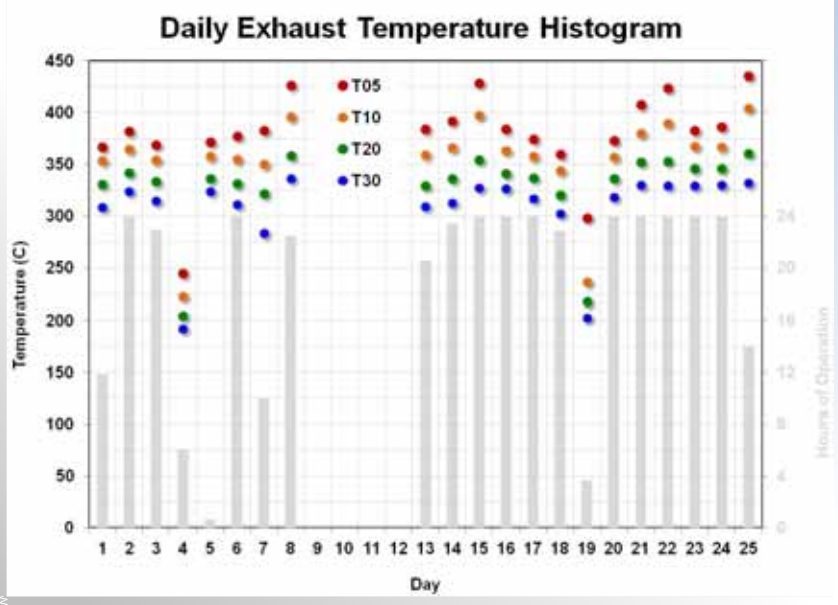
Daily Duty Cycle Analysis



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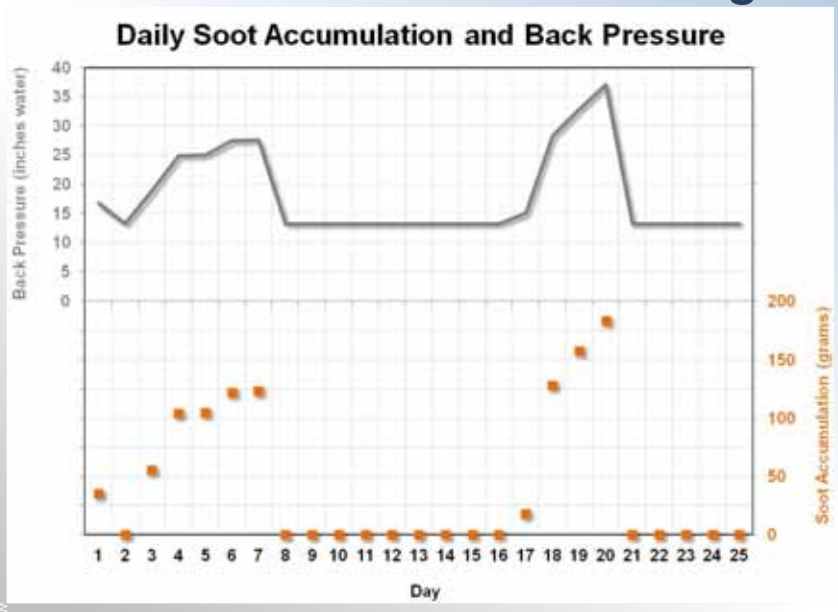
CDPF Selection and Sizing



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Real Time Monitoring and Feedback

- Data logger capable of continuously measuring two temperatures and two pressures (along with 8 additional signals).
- Data pulled off logger by inserting USB thumb drive into remote port.
- Display added to logger to provide real time information to the operator.
  - Actual exhaust temperature
  - Target exhaust temperature
  - Actual back pressure
  - Filter capacity remaining

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Summary

- AirFlow Catalyst Systems has developed CDPFs that are effective at passively oxidizing diesel particulate matter, carbon monoxide and hydrocarbons while controlling emissions.
- AirFlow combines its CDPF selection and sizing approach with real time feedback of filter operation to provide the best solution for its customers.
- Real time monitoring and feedback help the operator understand when soot is accumulating on the filter and when maintenance or cleaning may be required.

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