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October 13 - 15, 2009

Conference Dates:
CLOTHING MECHANISMS INVOLVED IN THE AGING OF CLEANABLE FILTER MEDIA

1. Introduction

The aging of cleanable filter media is an important aspect of the performance of these materials. Different mechanisms may contribute to the aging process, which can affect the filtration efficiency and durability of the media. This study aims to investigate the role of specific aging mechanisms in the degradation of cleanable filter media.

KEYWORDS
- Behavior
- Cleaning
- Degradation
- Filters
- Media

Abstract

Cleaning of filter media is a crucial aspect of maintaining its performance. Different mechanisms can contribute to the degradation of the media, affecting its efficiency and longevity. This study investigates the role of specific aging mechanisms in the decline of cleanable filter media performance.

1. Introduction

The cleaning of filter media is a necessary process to maintain its efficiency and prolong its lifespan. Different mechanisms contribute to the degradation of the media, affecting its performance. This study investigates the role of specific aging mechanisms in the decline of cleanable filter media performance.

1.1 Cleaning and Degradation

Cleaning is an essential process to prevent the accumulation of contaminants on the media surface, which can affect its efficiency and longevity. Different cleaning methods can be employed to maintain the performance of the media, and understanding the mechanisms involved is crucial.

1.2 Mechanisms of Aging

The aging of cleanable filter media can be attributed to various mechanisms, including physical degradation, chemical reaction, and biological contamination. This study aims to investigate the role of specific aging mechanisms in the degradation of cleanable filter media.

2. Methods

A series of experiments were conducted to study the aging mechanisms of cleanable filter media. These experiments involved exposing the media to different conditions, such as temperature, humidity, and chemical agents, to simulate real-world aging scenarios.

3. Results

The results of the experiments show that different mechanisms contribute to the degradation of cleanable filter media. Physical degradation and chemical reaction were observed, with the extent of aging varying depending on the specific conditions.

4. Discussion

The findings of this study highlight the importance of understanding the mechanisms involved in the aging of cleanable filter media. This knowledge can guide the development of strategies to mitigate the effects of aging and improve the performance of these materials.

5. Conclusion

This study investigated the role of specific aging mechanisms in the degradation of cleanable filter media. The results indicate that physical degradation and chemical reaction contribute to the aging process, and understanding these mechanisms is crucial for improving the performance of these materials.

References


Acknowledgments

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Supporting Information

The supplementary material includes detailed experimental procedures and data analysis methods used in this study.
To see where the development of the pressure drop and the closing head leads to figure 1: A Nyquist diagram with data from 7440 to 17400 cycles in the paper and above 2500 cycles.

The Nyquist diagram shows the data from 7440 to 17400 cycles in the paper and above 2500 cycles with measurements of the pressure drop during aging, which have been recorded in 2 reps.

1 Nyquist diagram: The Nyquist diagram shows the data from 7440 to 17400 cycles in the paper and above 2500 cycles with measurements of the pressure drop during aging, which have been recorded in 2 reps.

2 Aging chamber: The new designed aging chamber with a door that is closed on the bottom of the chamber, and which holds a thin sample. The new designed aging chamber with a door that is closed on the bottom of the chamber, and which holds a thin sample.
The graph in Figure 1 shows the trend of the data collected during the experiment. The x-axis represents the cycle time, and the y-axis represents the pressure drop. The data points indicate a clear correlation between the two variables, suggesting that the pressure drop increases with the cycle time.

In Figure 2, the graph illustrates the pressure drop over time for the different cycle lengths. Each line color represents a different cycle length, and the graph clearly shows that the pressure drop increases as the cycle length increases.

Figure 3 presents the results of the experiment under various conditions. The graph displays the relationship between the pressure drop and the cycle time for different media. The data points are color-coded to indicate the type of media used, and the graph reveals that the pressure drop is significantly affected by the type of media.

Figure 4 demonstrates the effect of temperature on the pressure drop. The graph shows that the pressure drop increases with an increase in temperature, indicating a direct correlation between the two.

In conclusion, the experimental results indicate that the pressure drop is influenced by multiple factors, including cycle time, media type, and temperature. These findings are crucial for optimizing the performance of the system and ensuring efficient operation.
ACKNOWLEDGEMENT

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- California Air Resources Board

REFERENCES


TABLE 1: Performance of Different Dust Suppression Systems

<table>
<thead>
<tr>
<th>System Type</th>
<th>Efficiency</th>
<th>Cost</th>
<th>Ease of Use</th>
<th>Environmental Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water-based</td>
<td>90%</td>
<td>$5,000</td>
<td>4</td>
<td>Low</td>
</tr>
<tr>
<td>Air-based</td>
<td>80%</td>
<td>$7,000</td>
<td>3</td>
<td>Moderate</td>
</tr>
<tr>
<td>Hybrid System</td>
<td>85%</td>
<td>$6,500</td>
<td>3.5</td>
<td>High</td>
</tr>
</tbody>
</table>

FIGURE 1: Schematic of low-flow dust suppression system installation.