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Thermal Ceramics helps customers in the Petrochemical market to reduce their carbon emissions and impact on the environment

Manufacturing industries' interest in environmental, social, and governance (ESG) issues has become more prominent in attracting investors and the pressure on corporate leaders to improve sustainability practices in material ways that both benefit their businesses bottom line and create a broader impact on the customers they serve.

At Thermal Ceramics, a business of Morgan Advanced Materials, we invest in our manufacturing technology to reduce carbon emissions. Sustainability and environmental stewardship are integrated into our daily operations and corporate functions. Additionally, we look to further capture the environmental impact by sharing with our customers how material selection and furnace design may enable them to reduce their carbon emissions.

Partnering with an Ethylene producer (our Customer) to capture the most improved efficiencies for their ethylene cracking unit, we can offer two case studies providing scenarios allowing customers to choose the best solution that reduces their carbon emissions over the unit's expected life (20 years).

Using our carbon emissions calculator and designing with our Applications Engineering team, we provide an estimated calculation using energy loss and CO2 emission rate to calculate carbon emission savings over the lifetime of the equipment with the chosen solution. This information allows the customer to see Morgan's estimated carbon emissions and, depending on the lining solution chosen, how the ethylene cracker can be designed to improve energy efficiencies by reducing the carbon footprint with one of the delivered design solutions.

Using these two case examples, we can estimate that Morgan can help offer savings from 27 to 60 times the CO2 we generate for materials manufacturing over the lifetime of such designed ethylene crackers.

Considering 2 cases which are the most representative of ethylene crackers possible lining configurations:

1. CASE 1 - Ethylene Cracker Radiant section
    a. Lining composition: Lower walls (3,5m) by IFBs / Upper walls and Arch by Fibre modules
2. CASE 2 - Ethylene Cracker Radiant section
    a. Lining composition: Walls by IFBs / Arch by Fibre modules

For each case, we considered two options with the same total lining thickness:

1. Option 1 - using high-performing Morgan materials
2. Option 2 - using high-performing Morgan materials, including our WDS microporous boards in the backup.

Case 1: Ethylene Cracker – Radiant Section

- Lining composition: Lower walls (3.5m) by IFB, Upper walls and Arch by Fibre Modules
- Result with the two options for Case 1 over the lifetime of the equipment:
    1. Option 1 - high performing Morgan materials: we save approx. 24 times the CO_2 required to manufacture the lining materials;
    2. Option 2 - high performing Morgan materials + WDS microporous: we save approx. 57 times the CO_2 required to manufacture the lining materials.

Case 2: Ethylene Cracker – Radiant Section

- Lining composition: Walls by IFB, Arch by Fibre Modules
- Result with the two options for Case 2 over the lifetime of the equipment:
    1. Option 1 - high performing Morgan materials: we save approx. 43 times the CO_2 required to manufacture the lining materials;
    2. Option 2 - high performing Morgan materials + WDS microporous: we save approx. 69 times the CO_2 required to manufacture the lining materials.