Summary

According to an aspect of the present disclosure, there is provided a thermal barrier double-wall construction panel used in the H.V.A.C industry with an insulating foam core layer with a first side and a second side, and at least one honeycombed structure layer secured to the first side of the insulating foam core layer and at least one honeycombed structure layer secured to the second side of the insulating foam core layer, and wherein the honeycombed structure layers are made up of rigid frame structure with air gaps, and wherein at least one of the at least one honeycombed structure layers has a plurality of liners placed thereon.

In an embodiment, the thermal barrier double-wall construction panel may have the insulating foam core layer made from a polyurethane foam or a polyvinyl chloride foam, or any other foam plastic as defined by the I.B.C. 2012 as requiring a thermal barrier. In another embodiment, the thermal barrier double-wall construction panel may also have the engineered structural cover made from a honeycombed structure, such as a polypropylene honeycomb structure or an aluminum engineered support structure. In another embodiment, the engineered support structure is made up of a rigid frame structure which creates air gaps, wherein the air gaps represent a significant contribution to the thermal performance of the barrier. In yet another embodiment, the engineered structural covering made from a honeycombed structure can have circles, triangles, squares or other geometric forms in the honeycombed configuration.

According to an aspect of the present disclosure, there is provided a thermal barrier double-wall construction panel 55 used in the H.V.A.C industry with an insulating foam core layer 52 with a first side 56 and a second side 58, and at least one honeycombed structure layer 51, 53 secured to the first side of the insulating foam core layer and at least one honeycombed structure layer secured to the second side of the insulating foam core layer 52, and wherein the honeycombed structure layers are made up of rigid frame structure with air gaps, and wherein at least one of the at least one honeycombed structure layers has a plurality of liners placed thereon.

In an embodiment, the thermal barrier double-wall construction panel 55 may have the insulating foam core layer made from polyurethane or polyvinyl chloride foam, or any other foam plastic as defined by the I.B.C. as requiring a thermal barrier. In another embodiment, the thermal barrier double-wall construction panel 55 may also have the engineered structural cover 51, 53 made from a honeycombed structure, such as a polypropylene honeycomb structure or an aluminum engineered support structure. In another embodiment, the engineered support structure is made up of a rigid frame structure which

creates air gaps, wherein the air gaps represent a significant contribution to the thermal performance and reduction of the weight of the barrier.

In an embodiment, a chemical bonding layer such as a resin-absorbing material may be used to increase the bonding between the foam core 52 and the engineered barriers 51, 53, and the foam core 52, the engineered barriers 51, 53 and the inner liner and outer liner 50, 54 increase the overall H.V.A.C. housing wall strength. H.V.A.C housings can be rated to many different standards of strength: one example being TAS 201 issued by the International Code Council and required for Miami Dade County notice of acceptance. The addition of a layer is designed to hold wet resin in place between the foam core 52 and the engineered barrier 51, 53 and the engineered barrier 51, 53 to the inner liner 50 and an outer liner 54 as it dries, to create a high strength bond, and will increase the panel strength.

CLAIMS:

What is claimed is:

1. A thermal barrier double-wall construction panel, comprising;
    a. an insulating foam core layer with a first side and a second side, and
    b. at least one honeycombed structure layer secured to the first side of the insulating foam core layer and

    at least one honeycombed structure layer secured to the second side of the insulating foam core layer, and wherein the honeycombed structure layers are made up of a rigid frame structure with air gaps, and wherein at least one of the at least one honeycombed structure layers has a plurality of liners placed thereon.

2. The thermal barrier double-wall construction panel of claim 1, wherein the insulating foam core layer comprises polyurethane foam or polyvinyl chloride foam.

3. The thermal barrier double-wall construction panel of claim 1, wherein the at least one honeycombed structure layers are composed of a honeycombed polypropylene.

4. The thermal barrier double-wall construction panel of claim 1, wherein the at least one honeycombed structure layers comprise a honeycombed structure with circles, triangles, squares or other geometric forms.

5. The thermal barrier double-wall construction panel of claim 1, wherein a resin absorbent material is located between the insulating foam core layer and the at least one honeycombed structure layers to hold a resin throughout a plane of contact between the insulating foam core layer and the at least one honeycombed structure layers to increase a bond strength between them.

6. The thermal barrier double-wall construction panel of claim 5, wherein the resin absorbent layer is a woven roving, fiberglass cloth, or fiberglass mat.

7. The thermal barrier double-wall construction panel of claim 1, wherein a resin absorbent material is located between the at least one honeycombed structure layers and at least one liner covering the at least one honeycombed structure layers to hold a resin throughout a plane of contact between the at least one honeycombed structure layers and the at least one liner to increase a bond strength between them.

8. The thermal barrier double-wall construction panel of claim 1, wherein the insulating foam core layer is comprised of a plurality of foam core layers.