[0004] Glass reinforced epoxy (GRE) gaskets have sometimes been used as an alternative to metal gaskets where metal gaskets would themselves be ineffective. However, all current GRE gaskets on the market utilize "quad seal" or "incline plane" elastomeric seals. This sealing style is very effective so long as the minimum gasket stress can be achieved. However, the minimum gasket seating stress for this style seal is higher than what is achievable in many cases. These types of seals also require very uniform and even load, which is also not often accomplished with such flanged connections as water meters, ductile iron, and epoxy coated.

[0005] Conventional approaches using soft compressed sheet gaskets still require substantial load to adequately seal and often resulted in leaks due to pressure and or temperature cycles which cause the material to creep and relax thus leading to bolt load loss and leaks.

[0006] Again, while metal gaskets are also conventionally known for having better sealing properties than the soft compressed sheet, metal gaskets require much higher bolt loads which cannot be achieved in many of these problematic cases. Metal gaskets also introduce potential galvanic corrosion cells onto the pipeline causing much larger problems along the pipeline.

SUMMARY OF THE INVENTION

[0007] Embodiments of the present invention seek to solve the problem of effectively sealing problematic flanged connections such as water meters, ductile iron, epoxy coated, and stainless steel. It utilizes a non-metallic glass reinforced epoxy core and combines it with a kammprofile serration and sealing material placed on top of the serrations. It gives a superior non-metallic option for these problematic flanged connections which conventionally utilized only either a sheet gasket, which does not provide high quality sealing characteristics, or a metal gasket. Metal gaskets are, in some cases, not an option due to the load needed to seal them and/or potential corrosion issues when using metal gaskets.

[0008] In order to solve these limitations, embodiments of the present invention can provide a unique approach utilizing the above referenced glass reinforced epoxy gasket core material but we then machine a kammprofile serration pattern into the glass reinforced epoxy and then have the ability to utilize many different sealing materials on top of the kammprofile serrations. This results in a non-metallic gasket that can seal at low loads, high loads, and uneven loads – the primary issue that continues to plague many flanged connections.

[0008a] According to an aspect of the present invention, there is provided a gasket for joining flanged connections comprising: a gasket core composed of a non-metallic material, said gasket core comprising: a first gasket portion having a top face with a top primary sealing area and a bottom face with a bottom primary sealing area, wherein said top primary sealing area is configured with a sealing geometry pattern and said bottom primary sealing area is configured with said sealing geometry pattern; a substantially central opening; a sealing material, wherein a first layer of said sealing material is disposed on said top primary sealing area and a second layer of said sealing material is disposed on said bottom primary sealing area, wherein said sealing material is deformable; and an outer guide portion positioned exterior relative said first gasket portion, wherein a top face and a bottom face of said outer guide portion are devoid of said sealing geometry pattern and said sealing material.

CLAIMS

1. A gasket for joining flanged connections comprising:
   a gasket core composed of a non-metallic material, said gasket core comprising:
      a first gasket portion having a top face with a top primary sealing area and a bottom face with a bottom primary sealing area, wherein said top primary sealing area is configured with a sealing geometry pattern and said bottom primary sealing area is configured with said sealing geometry pattern;
      a substantially central opening;
      a sealing material, wherein a first layer of said sealing material is disposed on said top primary sealing area and a second layer of said sealing material is disposed on said bottom primary sealing area, wherein said sealing material is deformable; and
      an outer guide portion positioned exterior relative said first gasket portion, wherein a top face and a bottom face of said outer guide portion are different from said sealing geometry pattern.

2. The gasket of claim 1 wherein said non-metallic material is glass reinforced epoxy.

3. The gasket of claim 2 wherein said sealing geometry pattern is kammprofile serrations.

4. The gasket of claim 3 wherein said gasket core is substantially annular in shape.