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(54) **ENCLOSURE FOR A GAS TURBINE AND METHOD FOR ENCLOSING THE SAME**

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(57) **ABSTRACT**

Disclosed is an enclosure for a gas turbine, the enclosure including an enclosure section configured to partially enclose the gas turbine, and at least one other enclosure section, the at least one other enclosure section being configured to assemble with the enclosure section in a manner that associates the at least one other enclosure section with the enclosure section, wherein said at least one other enclosure section and said enclosure section are configured to substantially enclose the gas turbine when the at least one other enclosure section is associated with the enclosure section.

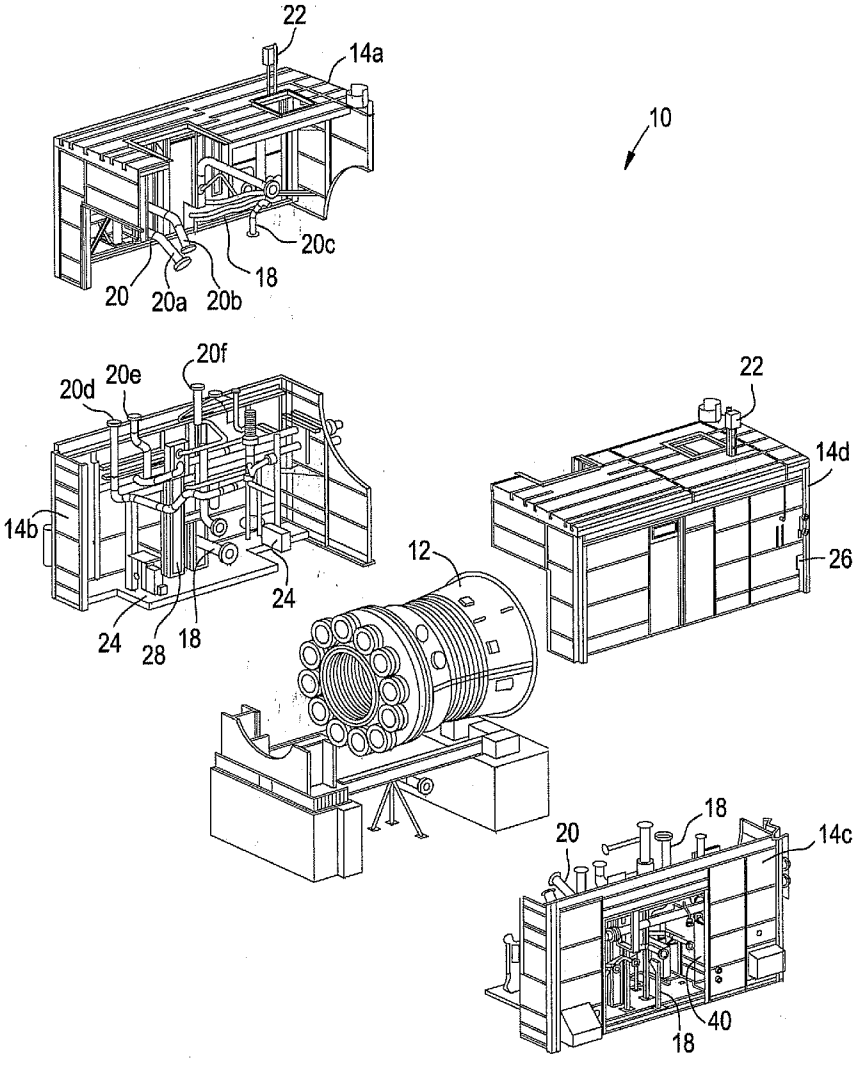


FIG. 1

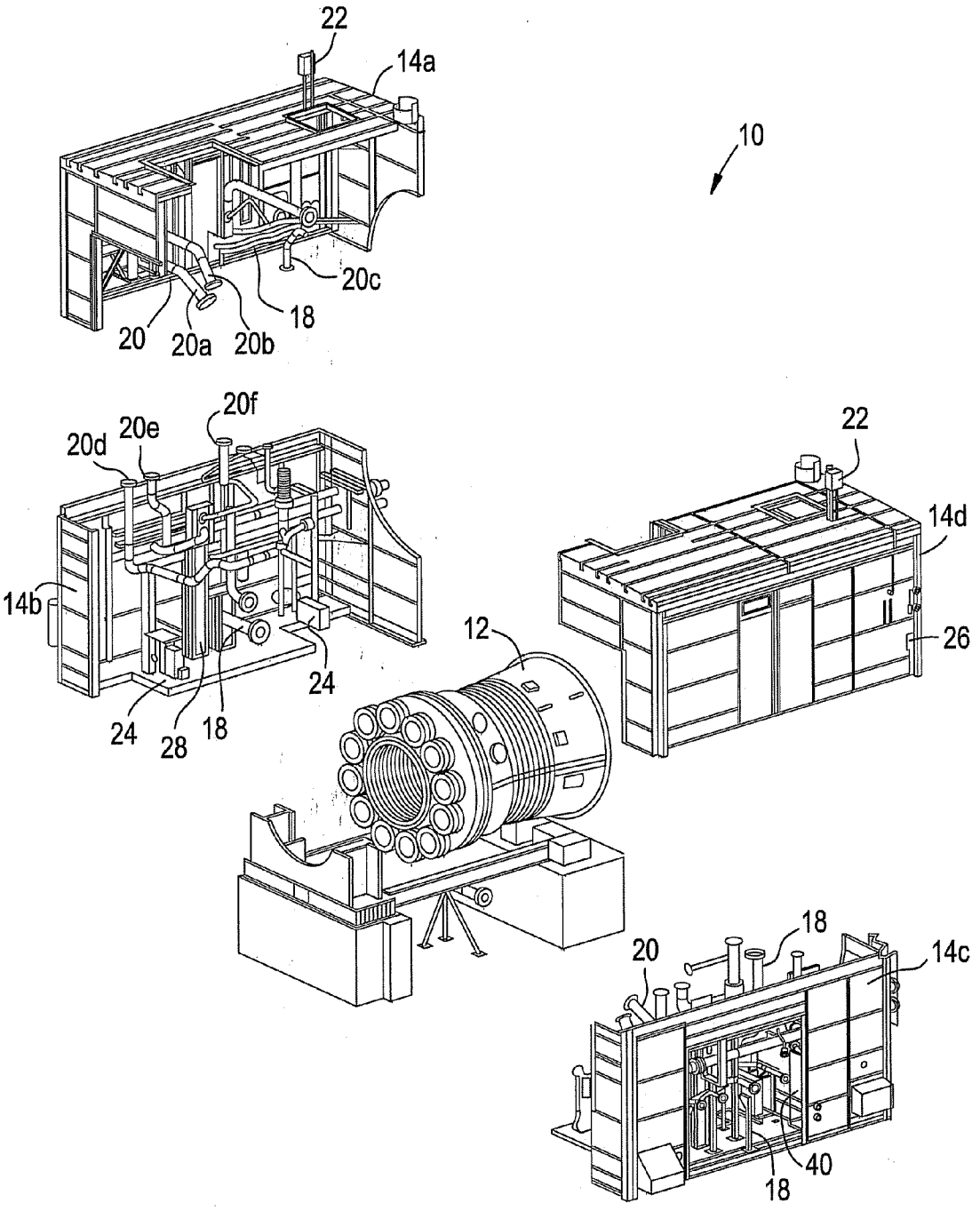

22
14a
10
20c
18
20
20a
20b
20f
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24
28
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22
14d
26
12
18
20
14c
40
18

FIG. 2

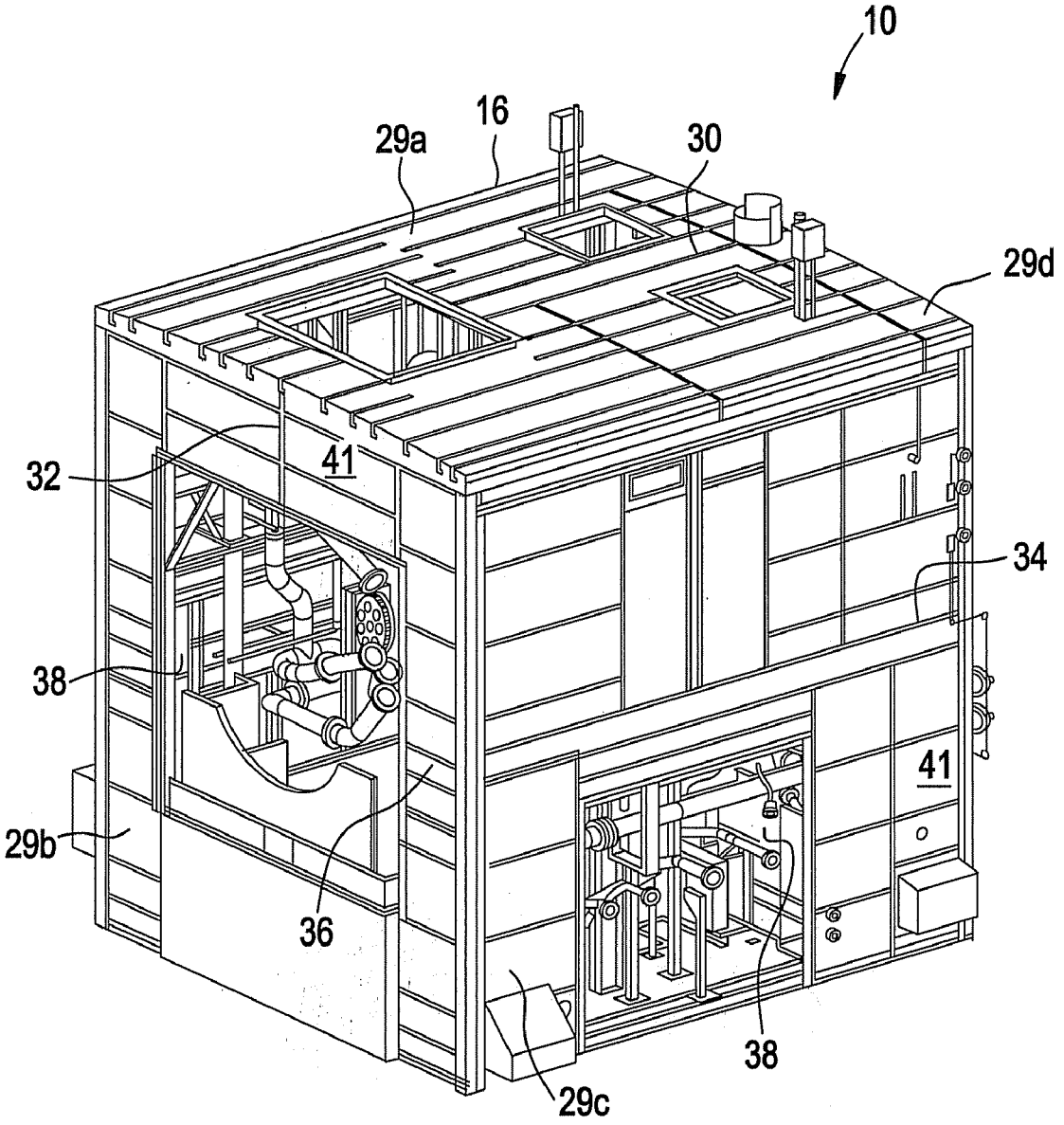


FIG. 3

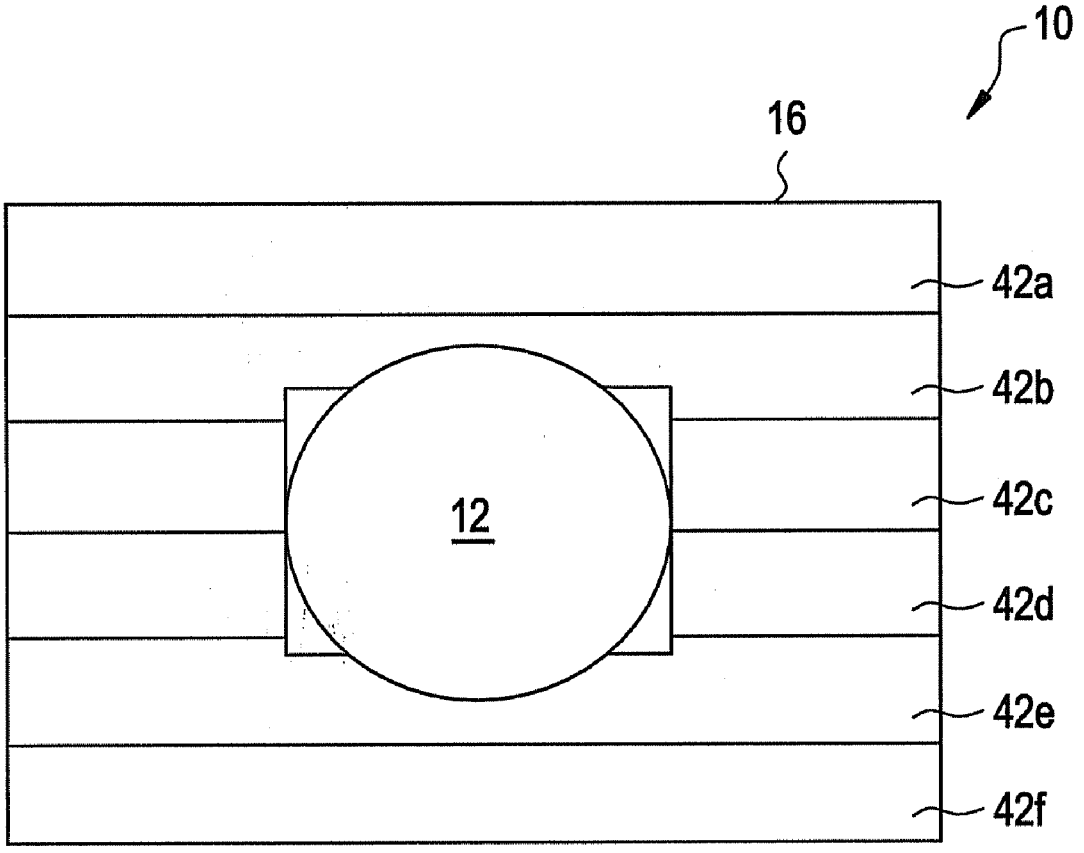
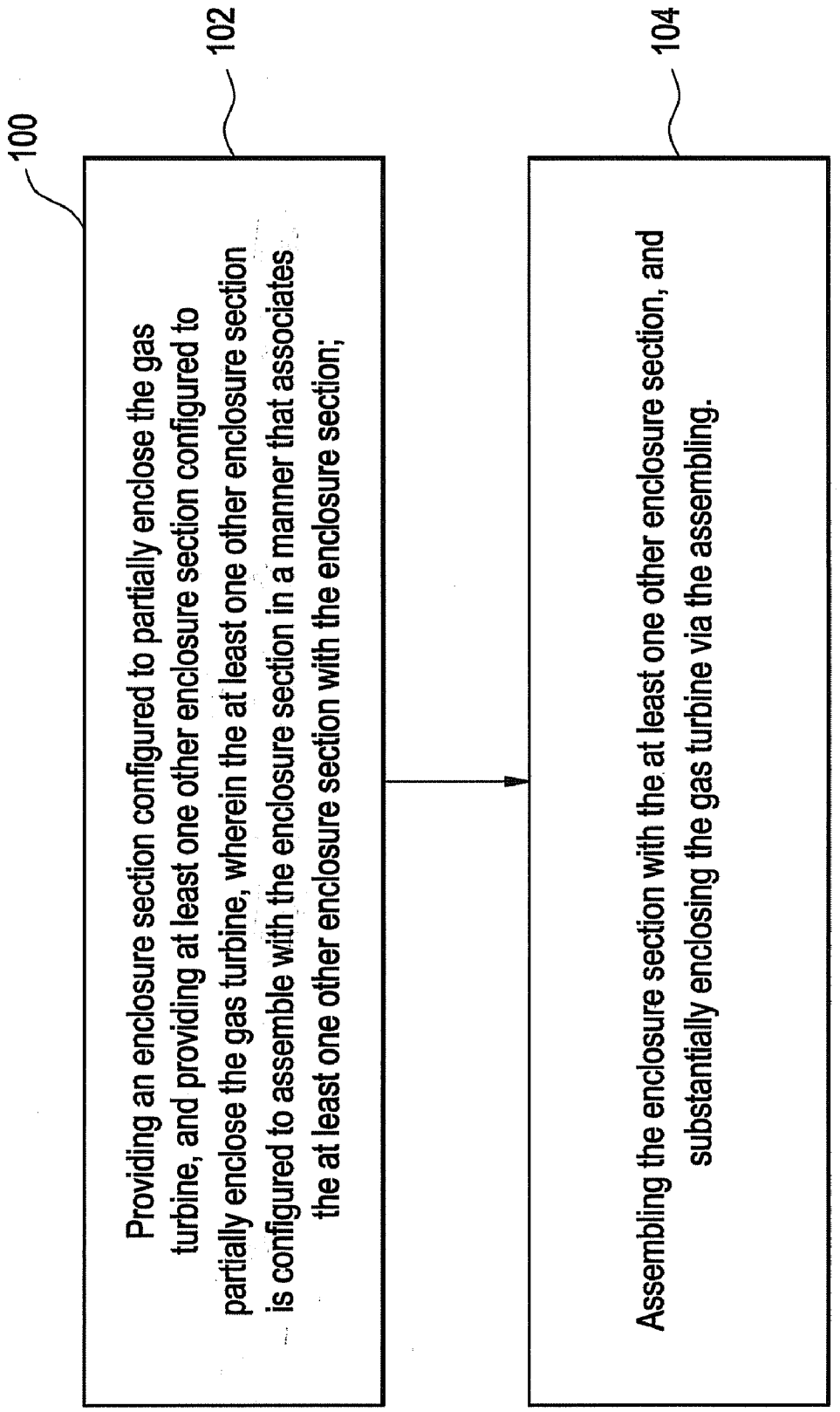


FIG. 4


100
102
Providing an enclosure section configured to partially enclose the gas turbine, and providing at least one other enclosure section configured to partially enclose the gas turbine, wherein the at least one other enclosure section is configured to assemble with the enclosure section in a manner that associates the at least one other enclosure section with the enclosure section;
104
Assembling the enclosure section with the at least one other enclosure section, and substantially enclosing the gas turbine via the assembling.

ENCLOSURE FOR A GAS TURBINE AND METHOD FOR ENCLOSING THE SAME

FIELD OF THE INVENTION

[0001] The disclosure relates generally to an enclosure for a gas turbine, and more particularly to a modular enclosure for a gas turbine.

BACKGROUND OF THE INVENTION

[0002] Currently, enclosures for gas turbines are built in the field using individual piece parts. Building turbine enclosures in this manner can be time consuming and expensive due to such issues as inclement weather and costly field labor. Other issues arise when the individual piece parts do not match up, or when two parts occupy the same space inside the enclosure. These issues take time to resolve, with modifications having to be made in the field by the costly laborers discussed above. In addition, turbine maintenance can be costly and time consuming in that many individual piece parts (enclosure walls pipes, wiring, etc.) must be removed to access the turbine. Accordingly, a turbine enclosure that could be more efficiently manufactured, and offer easier access to the turbine for maintenance, would be desirable.

SUMMARY

[0003] Disclosed is an enclosure for a gas turbine, the enclosure including an enclosure section configured to partially enclose the gas turbine, and at least one other enclosure section, the at least one other enclosure section being configured to assemble with the enclosure section in a manner that associates the at least one other enclosure section with the enclosure section, wherein said at least one other enclosure section and said enclosure section are configured to substantially enclose the gas turbine when the at least one other enclosure section is associated with the enclosure section.

[0004] Also disclosed is a method for enclosing a gas turbine, the method including providing an enclosure section configured to partially enclose the gas turbine, providing at least one other enclosure section configured to partially enclose the gas turbine the at least one other enclosure section being configured to assemble with the enclosure section in a manner that associates the at least one other enclosure section with the enclosure section, assembling the enclosure section with the at least one other enclosure section, and substantially enclosing the gas turbine via the assembling.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] The following descriptions should not be considered limiting in any way. With reference to the accompanying drawings, like elements are numbered alike:

[0006] FIG. **1** is a schematic exploded view of an enclosure for a gas turbine;

[0007] FIG. **2** is a schematic view of an assembled enclosure for the gas turbine;

[0008] FIG. **3** is a schematic view of another embodiment of an assembled enclosure for the gas turbine; and

[0009] FIG. **4**, is a block diagram illustrating a method for enclosing a gas turbine.

DETAILED DESCRIPTION OF THE INVENTION

[0010] Referring to FIGS. **1** and **2**, an enclosure **10** for a gas turbine **12** is illustrated. The modular enclosure **10** of the embodiment of FIGS. **1** and **2** includes four enclosure sections **14***a-d* that are manufactured separately from each other. Each of these enclosure sections **14***a-d* are configured to partially enclose the turbine **12**. When assembled, the enclosure sections **14***a-d* are detachably associated with each other in a manner that substantially encloses the turbine **12**. The assembled sections **14***a-d* are best illustrated as an assembled enclosure **16** in FIG. **2**. Detachable association between the sections **14***a-d* may be accomplished via any desirable means, such as but not limited to industrial latching devices and threaded instruments.

[0011] As is best shown in FIG. **1**, each of the sections **14***a-d* include infrastructure components **18**. These components **18** comprise elements necessary to operation of the turbine **12**, such as piping **20**, junction boxes **22**, heaters **24**, wiring **26**, and support structures **28**. Since the enclosure sections **14***a-d* are manufactured separately from each other (as is mentioned above), each section **14***a-d* is manufactured to individually include its respective portion of the infrastructure components **18** (of the assembled enclosure **16** as a whole) prior to assembly of the sections **14***a-d* into an assembled enclosure **16**. The components **18** are configured and aligned within each section **14***a-d* such that, upon assembly into the assembled enclosure **16** of FIG. **2**, the components **18** of each section **14***a-d* will detachably associate with the appropriate components **18** of the other sections **14***a-d*, as well as the appropriate portions of the turbine **12**. For example, when the sections **14***a-d* are assembled, pipes **20***a-c* of section **14***a* are aligned to associate with pipes **20***d-f* of section **14***b*. Piping alignment such as this allows for an efficient assembling of the of the enclosure sections **14***a-d* into the assembled enclosure **16**.

[0012] As is best shown in FIG. **2**, the sections **14***a-d* in this embodiment, when assembled, comprise each of four corners **29***a-d* of the assembled enclosure **16**. As such, the geometries of the four sections **14***a-d* are at least partially defined by a cross section **30** taken along substantially vertical centerline **32** of the assembled enclosure **16**, and a cross section **34** taken along substantially horizontal centerline **36** of the assembled enclosure **16**. With the exception of intended access openings (such as opening **38**) that are defined by the sections **14***a-d* when the sections **14***a-d* are assembled, and with the exception of open space **40** that is internally disposed between the components **18** of each section **14***a-d*, the sections **14***a-d* essentially extend from outer walls **41** of the assembled enclosure **16** to the vertical centerline **32** and horizontal centerline **36** of the assembled enclosure **16**. This configuration allows the sections **14***a-d* to occupy the four corners **29***a-d* of the assembled enclosure **16**.

[0013] Referring now to the embodiment illustrated in FIG. **3**, the enclosure **10** may also include six enclosure segments **42***a-f*. Similarly to the enclosure sections **14***a-d* of FIGS. **1** and **2**, these six enclosure segments **42***a-f* detachably associate with each other and include detachably associable infrastructure components **18**. Besides including six enclosure segments **42***a-f* instead of four enclosure segments **14***a-d*, the enclosure segments **42***a-f* of the embodiment of FIG. **3** differ from the segments **14***a-d* of the embodiment of FIGS. **1** and **2** in that they are divided by horizontal cross sections **44** alone (as opposed to the vertical cross section **30** and horizontal cross section **34** of FIGS. **1** and **2**).

[0014] Referring now at least to the embodiments of FIGS. **103**, it should be appreciated that individual manufacture of the sections **14***a-d* and **42***a-f* allows the sections to be manufactured off-site and later assembled at a remote location (different form the manufacturing location) in the field. This off-site manufacturing can be accomplished in a factory setting, which can offer better manufacturing conditions (such as weather conditions) and hold down labor costs. In addition, the detachable nature of the sections **14***a-d* and **42***a-f* of the enclosure **10** allows for efficient access to the turbine **12** when turbine maintenance is necessary.

[0015] It should also be appreciated that though the sections **14***a-d* and **42***a-f* of FIGS. **1-3** are shown in specific numbers with specific geometries, the enclosure **10** may include any desirable number of sections that are configured in any desirable geometry to each individual section. Being that these enclosure sections may be manufactured in a factory and transported (possibly via flat-bed truck) to a field location, a number of sections of a modular enclosure, as well as the geometries of those sections, may me selected based on ease of transport.

[0016] Referring now to FIG. **4**, a method **100** for enclosing a gas turbine **12** is illustrated. The method **100** includes providing an enclosure section **14***a* or **42***a* configured to partially enclose the gas turbine **12**, and providing at least one other enclosure section **14***b-d* and **42***b-f* configured to partially enclose the gas turbine **12**, wherein the at least one other enclosure section **14***b-d* and **42***b-f* is configured to assemble with the enclosure section **14***a* and **42***a* in a manner that associates the at least one other enclosure section **14***b-d* and **42***b-f* with the enclosure section **14***a* and **42***a*, as shown in operational block **102**. The method **100** also includes assembling the enclosure section **14***a* and **42***a* with the at least one other enclosure section **14***b-d* and **42***b-f*, and substantially enclosing the gas turbine **12** via the assembling, as shown in operational block **104**.

[0017] It will be noted that while the invention has been described with reference to an exemplary embodiment, it should be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or substance to the teachings of the invention without departing from the scope thereof. Therefore, it is important that the invention not be limited to the particular embodiment disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope of the apportioned claims. Moreover, it will be further noted that unless specifically stated any use of the terms first, second, etc. do not denote any order or importance, but rather the terms first, second, etc. are used to distinguish one element from another.

What is claimed is:

1. An enclosure for a gas turbine, the enclosure comprising:

an enclosure section configured to partially enclose the gas turbine; and

at least one other enclosure section, said at least one other enclosure section being configured to assemble with said enclosure section in a manner that associates said at least one other enclosure section with said enclosure section,

wherein said at least one other enclosure section and said enclosure section are configured to substantially enclose the gas turbine when said at least one other enclosure section is associated with said enclosure section.

2. The enclosure of claim **1**, wherein said at least one other enclosure section and said enclosure section include infrastructure components, said infrastructure components of said at least one other enclosure section and said enclosure section being configured for association with each other and the gas turbine.

3. The enclosure of claim **2**, wherein said infrastructure components include at least one of piping, junction boxes, heaters, wiring, and support structures.

4. The enclosure of claim **1**, wherein said at least one other enclosure section and said enclosure section comprise at least four total enclosure sections.

5. The enclosure of claim **4**, wherein said at least four total enclosure sections are four total enclosure sections, wherein a cross section taken along a substantially vertical centerline of an assembled enclosure and a cross section taken along a substantially horizontally centerline of said assembled enclosure at least partially define a geometry of each of said four total enclosure sections.

6. The enclosure of claim **4**, wherein a plurality of horizontal cross sections through an assembled enclosure at least partially define a geometry of each of said total enclosure sections.

7. The enclosure of claim **1**, wherein said at least one other enclosure section is configured to assemble with said enclosure section in a manner that detachably associates said at least one other enclosure section with said enclosure section.

8. A method for enclosing a gas turbine, the method comprising:

providing an enclosure section configured to partially enclose the gas turbine;

providing at least one other enclosure section configured to partially enclose the gas turbine, said at least one other enclosure section being configured to assemble with said enclosure section in a manner that associates said at least one other enclosure section with said enclosure section;

assembling said enclosure section with said at least one other enclosure section; and

substantially enclosing the gas turbine via said assembling.

9. The method of claim **8**, wherein said providing of said at least one other enclosure section and said enclosure section is a manufacturing of said at least one other enclosure section and said enclosure section, said manufacturing being preformed at a different location than said assembling.

10. The method of claim **9**, further including transporting said at least one other enclosure section and said enclosure section from said different location to a location for said assembling.

11. The method of claim **10**, wherein said at least one other enclosure section and said enclosure section are sized such that said transporting occurs via an automobile no larger than a flat-bed truck.

12. The method of claim **8**, further including providing said at least one other enclosure section and said enclosure section

with infrastructure components, and assembling said infrastructure components of said at least one other enclosure section and said enclosure section with each other and the gas turbine.

13. The modular enclosure of claim **8**, further including assembling said at least one other enclosure section with said enclosure section in a manner that allows said at least one other enclosure section to detach from said enclosure section.

14. The method of claim **13**, further including detaching said enclosure section from said at least one other enclosure section to perform maintenance on the gas turbine.

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