What is claimed is:

1. An implantable circulatory support system, configured to connect a ventricular chamber of a heart, comprising:

a blood pump comprising a blood sac, a blood pump housing, a stem suspension integrating the blood sac within the blood pump housing, a sensor embedded in the blood pump housing and configured to detect a heart rhythm of the heart, and an inlet adapter with a beak flange;

a deformable flow cannula having a conduit body, a bellmouth and a flange ramp, wherein the conduit body is between the bellmouth and the flange ramp, the bellmouth is at a first end of the flow cannula and is configured to be inserted into the heart chamber, and the flange ramp is at a second end of the flow cannula and is configured to be interfaced to the blood bump assembly; and

a male fastener and a female fastener, being screw interconnected, wherein the male fastener is anchored on the flow cannula, and the female fastener is compressed against an epicardium of the heart ventricular chamber; and

a coupler, connecting the second end of the flow cannula with the inlet adapter of the blood pump, and comprises a flange base and a pair of collars pinned on the flange base;

a driveline assembly; and

a co-pulsatile driver,

wherein the collars have an internal grooved slot configured to receive and compress together the flange base, the flange ramp of the flow cannula, and the beak flange of the inlet adapter so as to secure the flow cannula to the blood pump and form a continuous flow interface therebetween;

wherein the driveline assembly pneumatically communicates with the blood pump and transmits a signal indicative of a heart rhythm to the co-pulsatile driver; and

wherein the co-pulsatile driver commands pneumatic pumping support according to a sensed heart rhythm waveform, such that pump ejection is performed during systolic ventricular contraction and pump filling is performed during diastolic ventricular relaxation.

2. The implantable circulatory support system as claimed in claim 1, wherein the flow cannula comprises a stent embedded in a cannula wall of the flow cannula.

3. The implantable circulatory support system as claimed in claim 2, wherein the stent is disposed within he conduit body and the bellmouth.

4. The implantable circulatory support system as claimed in claim 3, wherein the stent comprises an array of zig-zag rings, a connecting portion, and cone-shaped stent rings, wherein the connecting portion connects the array of zig-zag rings disposed within the conduit body and the cone-shaped stent rings disposed within the bellmouth.

5. The implantable circulatory support system as claimed in claim 1, wherein the bellmouth has a gradually thinning wall thickness toward a tip of the bellmouth, and the tip is sharp-edged.

6. The implantable circulatory support system as claimed in claim 1, wherein a surface portion of the flow cannula configured for contact with the myocardium of the heart is textured or is covered with a porous material to promote cell and tissue ingrowth.

7. The implantable circulatory support system as claimed in claim 1, wherein the female fastener comprises a female fastener cap configured for contact with the

epicardium for promoting cell and tissue ingrowth for hemostasis and immobilization purposes, wherein porous materials are attached to the female fastener cap.

8. The implantable circulatory support system as claimed in claim 7, wherein the female fastener comprises a cushion cuff disposed around and attached to an outer rim of the female fastener cap and configured to contact the epicardium.

9. The implantable circulatory support system as claimed in claim 7, wherein the conduit body comprises a plurality of protruded seats on an outer surface thereof, the male fastener comprises a plurality of through slots corresponding to the plurality of protruded seats, and the protruded seats are engaged with the through slots.

10. The implantable circulatory support system as claimed in claim 1, wherein the flow cannula is made of a deformable polymeric material.

11. The implantable circulatory support system as claimed in claim 1, wherein the conduit body of the flow cannula is curved or bendable.

12. The implantable circulatory support system as claimed in claim 1, wherein the inlet adapter comprises a beak configured to interface with the flange ramp of the flow cannula, an inner diameter of the beak is larger than an inner diameter of the conduit body such that the beak is configured to receive the conduit body, and the flange ramp is inclined at an angle of 30 to 60 degrees relative to a centerline of the flow cannula.

13. The implantable circulatory support system as claimed in claim 1, wherein the coupler further comprises an anti-decoupling latch and a collar contour configured to engage an entire peripheral rim of the flange base upon closing of the collars so as to form a connection with minimal discontinuities in blood-contacting surfaces.