

CLAIMS

1. An intravascular blood pump (1) for percutaneous insertion into a patient's blood vessel, comprising:
 - 5 - a pump casing (2) having a blood flow inlet (21) and a blood flow outlet (22),
 - an impeller (3) arranged in said pump casing (2) so as to be rotatable about an axis of rotation (10), the impeller (3) having blades (31) sized and shaped for conveying blood from the blood flow inlet (21) to the blood flow outlet (22), and
 - a drive unit (104) for rotating the impeller (3), the drive unit (104) comprising a
10 plurality of posts (140) arranged about the axis of rotation (10), wherein each of the posts (140) has a longitudinal axis and includes a shaft portion (141) extending along the longitudinal axis and a head portion (142) pointing towards the impeller (3), wherein a coil winding (47) is disposed about the shaft portion (141) of each of the posts (140), the coil windings (47) being sequentially controllable so as to create a rotating magnetic field,
15 wherein the impeller (3) comprises at least one magnet (132) arranged to interact with the rotating magnetic field so as to cause rotation of the impeller (3), wherein the shaft portion (141) of each of the posts (140) comprises a soft magnetic material which is discontinuous in cross-section transverse to the longitudinal axis of the respective post (140).
2. The blood pump of claim 1, wherein the soft magnetic material is provided in the
20 form of a plurality of sheets (171) of a soft magnetic material, preferably electrical steel.
3. The blood pump of claim 2, wherein the sheets (171) are electrically insulated (172) from each other.
4. The blood pump of claim 3, wherein the sheets (171) are electrically insulated from each other by insulating layers (172), each insulating layer (172) having a thickness of
25 about 1 μm to about 50 μm .
5. The blood pump of claim 2 or 4, wherein the sheets (171) extend parallel to the longitudinal axis of the respective post (40).

6. The blood pump of any one of claims 2 to 5, wherein the sheets (171) have a thickness of about 25 μm to about 350 μm , preferably about 50 μm to about 200 μm .
7. The blood pump of any one of claims 2 to 6, wherein the plurality of sheets (171) form a stack of sheets, wherein a thickness of the sheets (171) decreases from a center of the stack towards the outermost sheets of the stack.
8. The blood pump of any one of claims 1 to 7, wherein the head portion (142) of each of the posts (140) comprises the soft magnetic material.
9. The blood pump of claim 7 and any one of claims 2 to 7, wherein the sheets (173) in the head portions (142) extend in the same direction as the sheets (171) in the shaft portions (141).
10. The blood pump of any one of claims 1 to 9, wherein top surfaces (143) of the head portions (142) of the posts (140) extend in a plane perpendicular to the axis of rotation (10).
11. The blood pump of any one of claims 1 to 10, wherein a top surface (143) of each of the head portions (142), as seen in a top view in an axial direction, is aligned with the respective shaft portion (141) in the axial direction.
12. The blood pump of claim 1, wherein the soft magnetic material is provided in the form of a plurality of wires (181) of a soft magnetic material, which are electrically insulated (182) from each other.
13. The blood pump of any one of claims 1 to 12, wherein the drive unit (104) further comprises a back plate (150) which engages ends (144) of the shaft portions (141) of the posts (140) opposite the head portions (142).
14. The blood pump of claim 13, wherein the back plate (150) comprises a soft magnetic material which is discontinuous in cross-section parallel to the longitudinal axis of the respective post (140).

15. The blood pump of any one of claims 12 to 14, wherein the soft magnetic material is provided in the form of a plurality of sheets (173, 175) of a soft magnetic material, preferably electrical steel.
16. The blood pump of claim 15, wherein the sheets (173, 175) are electrically
5 insulated (174, 176) from each other.
17. The blood pump of claim 16, wherein the sheets (173, 175) extend transversely to the axis of rotation.
18. The blood pump of any one of claims 15 to 17, wherein the sheets (173, 175) have a thickness of about 25 μm to about 350 μm , preferably about 50 μm to about 200 μm .
- 10 19. The blood pump of any one of claims 1 to 18, wherein the blood pump is an axial type blood pump.