CLAIMS

1. A mechanism for transferring a flexible sheet material from a first substrate to a second substrate, wherein the sheet material comprises a flexible component for a fuel cell assembly and the second substrate comprises a less flexible component for the fuel cell assembly, the mechanism having a head rotatable and translatable relative to the first and second substrates, the head comprising a cylindrical curved portion having an outer face across which are provided openings configured to apply air pressure to sheet material contacting the outer surface such that the head is adapted to transfer the sheet material from the first substrate to the second substrate by a combination of rotation and translation of the head, wherein the cylindrical curved portion of the head is rotatable relative to a central portion of the head, the central portion of the head comprising a first port for applying negative pressure to the openings with the curved portion in a first rotated position relative to the central portion and a second port for applying a positive pressure to the openings with the curved portion in a second rotated position relative to the central portion.

2. The mechanism of claim 1 wherein the mechanism is configured to lift the sheet material from the first substrate by applying a negative air pressure to the openings while rotating the head during translation of the head relative to a surface of the sheet material.

3. The mechanism of claim 1 or claim 2 wherein the mechanism is configured to apply the sheet material to the second substrate by combined relative rotation and translation of the head across a surface of the second substrate.

4. The mechanism of any preceding claim wherein the mechanism is configured to apply a positive air pressure to the openings during or after application of the sheet material to the surface of the second substrate.

5. The mechanism of any preceding claim wherein the mechanism is configured to apply mechanical pressure to the second substrate across the thickness of the sheet material during application of the sheet material to the surface of the second substrate.

~~6. The mechanism of any preceding claim wherein the cylindrical curved portion of the head is rotatable relative to a central portion of the head, the central portion of the head comprising a first port for applying negative pressure to the openings with the curved~~

~~portion in a first rotated position relative to the central portion and a second port for applying a positive pressure to the openings with the curved portion in a second rotated position relative to the central portion.~~

~~7~~6. The mechanism of any preceding claim ~~6~~ wherein the first and second ports and the openings in the curved portion are configured to sequentially apply air pressure to the openings as the curved portion is rotated relative to the central portion.

~~8~~7. The mechanism of claim ~~7~~ 6 wherein the central portion of the head comprises a first plenum connected to the first port extending circumferentially around a first part of the central portion of the head and a second plenum connected to the second port extending circumferentially around a second part of the central portion of the head.

~~9~~8. A method for transferring a sheet material from a first substrate to a second substrate, wherein the sheet material comprises a flexible component for a fuel cell assembly and the second substrate comprises a less flexible component for the fuel cell assembly, using a mechanism according to any one of claims 1 to ~~8~~7, the method comprising the steps of:

positioning the curved portion over the sheet material on the first substrate;

rotating and translating the curved portion across the sheet material while applying a negative air pressure to the openings in the outer face of the curved portion;

translating the sheet material on the head from the first substrate to the second substrate; and

applying the sheet material to the second substrate by rotating and translating the curved portion across surface of the second substrate.

~~10~~9. A method of manufacturing a fuel cell comprising the method of claim ~~9~~8, wherein the sheet material comprises a gasket material and the second substrate comprises a planar electrode component for a fuel cell assembly.