WHAT IS CLAIMED IS:

1. A metal-air fuel battery system with follow-up adjustment of a large-sized anode, comprising: a flexible case, a follow-up adjustment module, a drive mechanism, a fixing bracket, a camera and a controller; wherein

the flexible case, as an electrochemical reaction space, is configured to accommodate an electrolyte solution and a metal ingot therein, and have a flexible air electrode embedded in an inner wall of the flexible case;

the fixing bracket is provided above the flexible case;

the camera is movably mounted on the fixing bracket, and is configured to collect spacing distance data between the metal ingot and a wall of the flexible case, which indicates a size of the metal ingot;

the follow-up adjustment module is configured to change a shape of the flexible case according to a size change of the metal ingot to reduce the electrochemical reaction space;

the drive mechanism is configured to control action of the follow-up adjustment module; and

the controller is connected to the camera, electrically connected to the drive mechanism, and is configured to process the spacing distance data and send command information to the drive mechanism.

2. The metal-air fuel battery system with follow-up adjustment of the large-sized anode according to claim 1, wherein the flexible case is a square roof-less case with rounded corners made by demolding flexible rubber material; the follow-up adjustment module is fixedly connected to four side walls of the flexible case, and configured to push walls of the flexible case to deform elastically under action of an external force so as to compress inwards; and an electrolyte solution circulation interface connecting an electrolyte solution circulation system is provided at a bottom corner of the flexible case.

3. The metal-air fuel battery system with follow-up adjustment of the large-sized anode according to claim 2, wherein the follow-up adjustment module comprises four rigid supporting rods fixedly inserted into vertical through holes provided in centers of the four side walls of the flexible case; a sliding block is fixedly connected at a bottom of each rigid supporting rod, and a threaded through hole is provided at a side of each sliding block, and a lead screw arranged

horizontally is in thread connection with the threaded through hole, and an end of the lead screw is in transmission connection with the drive mechanism.

4. The metal-air fuel battery system with follow-up adjustment of the large-sized anode according to claim 2, wherein a sliding groove is provided at each of four corners on a top of the flexible case, and four horizontal connecting rods, each located in the sliding groove, are fixedly connected to side walls of the fixing bracket.

5. The metal-air fuel battery system with follow-up adjustment of the large-sized anode according to claim 3, wherein the drive mechanism comprises a drive motor, the drive motor is in transmission connection with a drive bevel gear through a coupling, a driven bevel gear arranged horizontally engages with the drive bevel gear, a disc-type bevel gear is coaxially provided above the driven bevel gear, a compression bevel gear is fixedly provided at an end of each rigid supporting rod, and four compression bevel gears are in transmission connection with the disc-type bevel gear respectively.

6. The metal-air fuel battery system with follow-up adjustment of the large-sized anode according to claim 5, further comprising a first bottom plate and a second bottom plate, a bottom of the first bottom plate is fixedly connected with the second bottom plate via a plurality of telescopic rods; a guide groove toward a center is provided on each of four side walls of the first bottom plate, and the four rigid supporting rods are disposed vertically and movably in four guide grooves respectively; a compression bevel gear outer bearing pedestal is fixedly provided below an outer side of the guide groove, and a compression bevel gear bearing connected with the compression bevel gear is mounted on the compression bevel gear outer bearing pedestal; a disc-type bevel gear bearing pedestal is mounted on an inner bottom of the first bottom plate, a driven bevel gear bearing pedestal coaxial with the disc-type bevel gear bearing pedestal is mounted on a top of the second bottom plate, the disc-type bevel gear bearing pedestal and the driven bevel gear bearing pedestal are configured to connect with a disc-type bevel gear shaft and a gear shaft of the driven bevel gear respectively; a drive bevel gear bearing pedestal is provided on a side of the driven bevel gear bearing pedestal, and a drive motor mounting through hole is provided on the second bottom plate outside the drive bevel gear bearing pedestal.

7. The metal-air fuel battery system with follow-up adjustment of the large-sized anode according to claim 2, wherein a temperature sensor, a flow rate sensor and a viscosity sensor are embedded in the electrolyte solution circulation interface, and the temperature sensor, the flow rate sensor and the viscosity sensor are electrically connected to the controller, respectively.

8. The metal-air fuel battery system with follow-up adjustment of the large-sized anode according to claim 7, wherein the electrolyte solution circulation system comprises a water tank and a sedimentation tank, the electrolyte solution circulation interface communicates with the water tank through a first water inlet pipe, the water tank communicates with the flexible case through a first water return pipe, the water tank communicates with a lower part of the sedimentation tank through a second water inlet pipe, the water tank communicates with an upper part of the sedimentation tank through a second water return pipe; and each of the first water inlet pipe, the first water return pipe, the second water inlet pipe and the second water return pipe is provided with a water pump.