

## ***BUILDING AND TESTING A NEW TYPE OF COMPRESSOR OF STRIPPER WELL PRODUCTION APPLICATION***

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A novel new type of variable capacity compressor has been developed to solve compressor problems encountered in low deliverability gas production operations. The design of the new type of compressor is the result of 10 years research by Paul Weatherbee and Associates. We are proposing to evaluate the new compressor concept by constructing a model and testing it in a controlled environment. Once the prototype model has been proven, it is expected that an additional project will be undertaken to test the pump in a field application.

The Weatherbee Positive Displacement Compressor/Vacuum Pump, a patented device, has the largest volume displacement to size ratio of any device on the world. The geometry of the spherical design provides the largest internal volume to surface area ratio possible so that with each 360-degree revolution, the Weatherbee Pump displaces almost all of its internal volume.

Another unique design feature and only available on the Weatherbee Pump is a capacity control mechanism. This volume control feature works like a throttle on an engine; set on high it can easily handle high volumes, and by throttling back the mechanism, volumes are reduced \_ thereby saving on energy usage and operating costs. With most compressor devices, volume or output capacity is limited to increasing or decreasing revolutions per minutes (RPMs) to the input shaft. The device uses only the energy necessary to compress the amount of gas the well is actually producing. The capacity control feature is a major selling point for a majority of applications. The ease of sizing makes one pump appropriate for various volume requirements. This feature will be particularly beneficial to applications where compression requirements fluctuate or where volume can only be estimated and may vary drastically, as in gas well compression.

The Weatherbee Pump functions equally well whether rotating clockwise or counter-clockwise and is controlled by the direction in which the input shaft is rotating. Additionally, the device can be mounted in any position without normal operations being affected. The versatility of this pump is particularly useful when the unit is being used as a component part of a system where pump orientation or shaft rotation is predetermined or limited by other components.

When compared to existing products of similar output capacities, the Weatherbee Pump provides the following advantages: (1) substantially reduced size and weight; (2) the versatility of the volume control mechanism; (3) input shaft energy requirement; (4) less maintenance and lowered operating costs; (5) pump can be operated with input shaft turning either clockwise or counter-clockwise; (6) the direction of flow can be completely reversed in the device without disconnecting the pump or changing rotational direction of input shaft; and (7) pump can perform a dual function; i.e., one-half motor and one-half pump/compressor.