Hydro Expertise

ROTOR AND STATOR SWEEPS USING AIR GAP SENSORS

Dany Lessard started as early as 1994 to make use of air gap sensors, temporarily installed on a unit, to perform rotor and stator sweeps. The air gap sensors provide a voltage signal from which air gap values are calculated, and then stator or rotor shapes and characteristics like eccentricity, circularity are calculated.

We use this technique with air gap sensors whenever beneficial for diagnosis tests or for alignment purpose. It can also be time saving when correcting a rotor shape or simply doing a rotor shrink

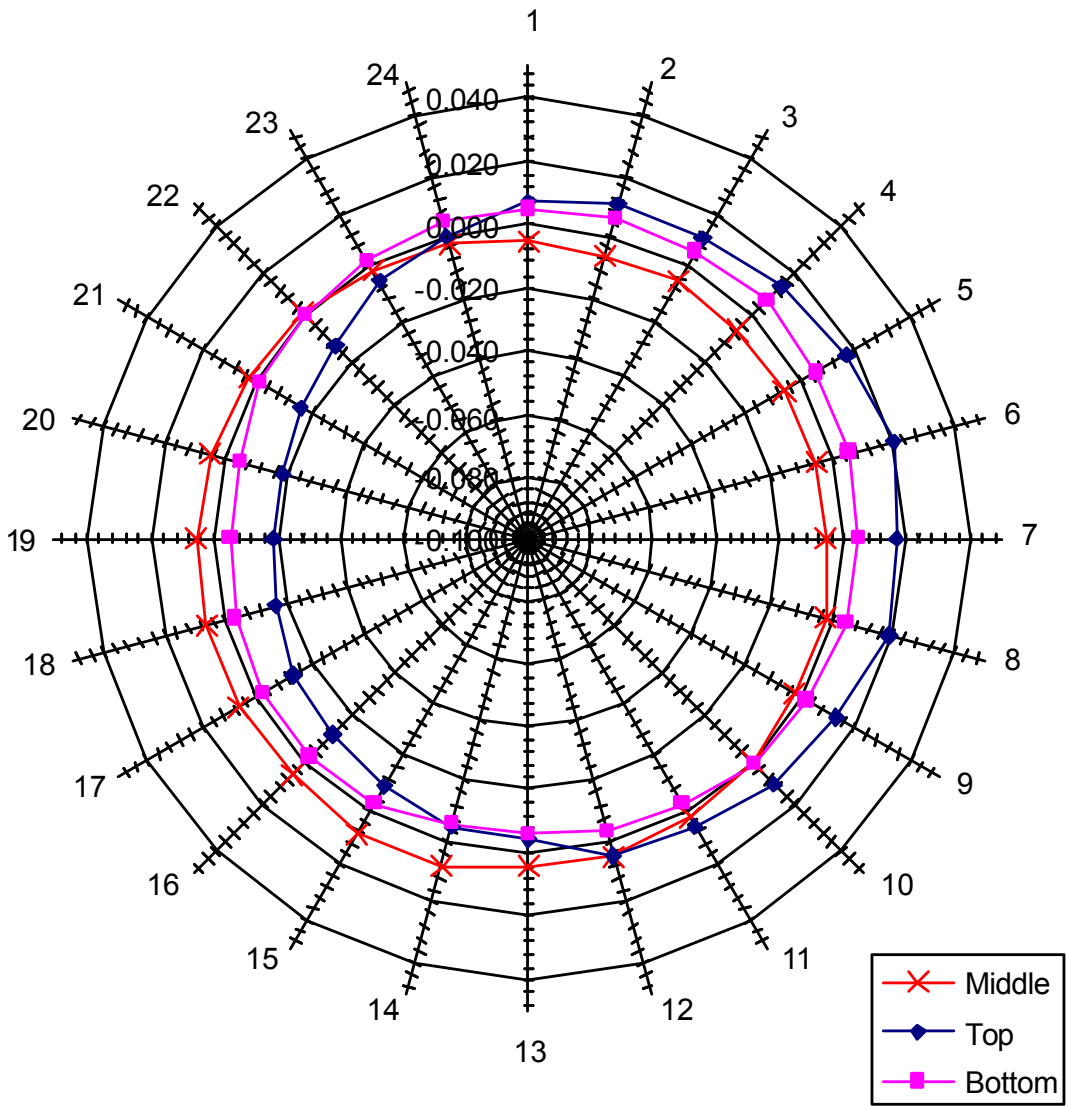
In every occasion, the use of the air gap sensors resulted in a reduction of time for taking the readings and an increase in the readingsí accuracy.

There are a few variances in the method. We can get a stator sweep or a rotor sweep. For the stator sweeps, the sensors are normally mounted on the face of a rotor pole while it is manually rotated. We obtain from it the stator shape, its circularity and the concentricity of the stator with respect to the rotor axis of rotation. For a rotor sweeps, we can mount the sensor on the stator, taking readings while the unit is rotated, or we can mount the sensor on a compass that is manually rotated.

EXAMPLE OF ROTOR SHAPE ANALYSIS

The following example shows data recorded during a rotor sweep. For that example, we did not use guide bearing segments to maintain the shaft, therefore we used a proximity probe to record the shaft movement and correct the readings.

Rotor shape



RESULTS SUMMARY ON ROTOR

	BEST CENTER		Concentricity	Circularity
	X	Y		
TOP	0.018	0.003	0.018	0.008
MIDDLE	-0.005	-0.005	0.007	0.003
BOTTOM	0.004	0.004	0.006	0.006
AVERAGE	0.006	0.001	0.006	

The above results were obtained from the recording on the following page.

ROTOR SWEEP Example

Note : values are relative readings only.