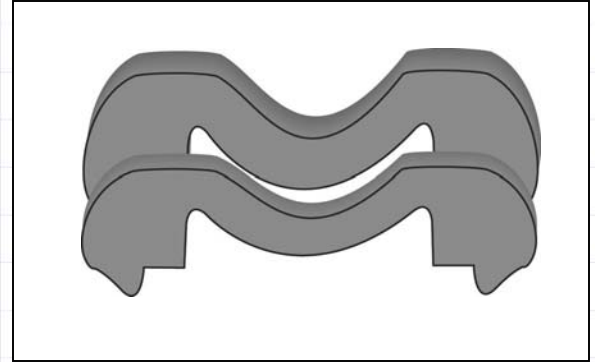


# NDT: Casting: Brake Caliper

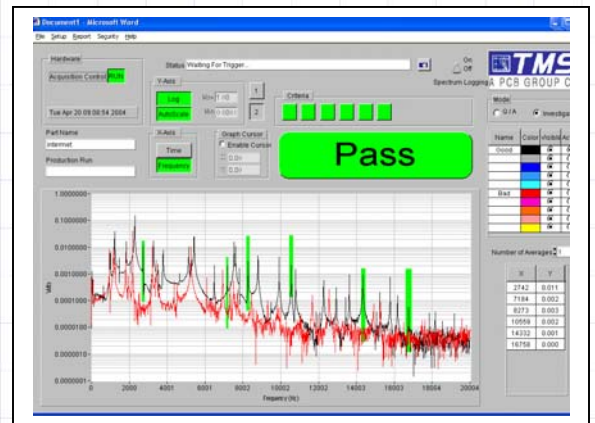
**Problem:** An automotive parts supplier of brake calipers was experiencing cracks in the finished parts. Heavy pressure from the supplier's customer drove the parts supplier to batch inspecting via magnetic particle technique and redundant 200% visual inspection.

**Solution:** A pass/fail criteria template was developed from trial parts then implemented in an on-line quality inspection system. Cracks in flawed parts were easily detected at high throughput rates using the RAM NDT resonant inspection technique. The system automates objective whole part inspection at up to 60 parts per minute using an industrial conveyor and synchronized electric impactor.

**Benefit:** 100% part quality inspection assured objective and reliable on-line inspection. Simple automation provided fast and reliable 24/7/365 operation with very high throughput. As a result, both magnetic particle and visual inspection were eliminated on this part saving time and money.



**Fig 1.** Sketch of approximately 9 inch generic brake caliper



**Fig 2.** Frequency spectrum of sample parts. Black is a good part and red shifted peaks are the flawed part.

	Freq 1	Freq 2	Freq 3	Freq 4
Average Passed:	820.3	6717.8	16772.5	19749
Std Dev Passed:	0	5.1	30.3	15.2
Average Failed:	1025.4	6843.8	16693.4	19664.1
Std Dev Failed:	41	46.9	427.7	35.2
<b>Passed - Failed</b>	<b>-205.1</b>	<b>-126.0</b>	<b>79.1</b>	<b>84.9</b>

**Fig 3.** Note (red) large frequency difference between (passed – failed) for first 2 frequency criteria.



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