

NingBo DeChang Electrical Machinery Made Co.,Ltd

Supplier Corrective Action

(Required 8D steps and recommended 8D format)

Supplier Corrective Plan 8D report 供应商纠正 8D 计划报告	Problem title: 问题名称: 客户退回 2 台不良电机 Customer return 2pcs NG motor.	8D ID: 8D-1601
		Update: 纠正时间 2016. 3. 9
Start date: 开始时间: 2016.3.8	Type: YDC30A-2	Product number code:
	Customer: TTI-USA	Remark:
D1 Team member Department 队员 部门: 王庆锋/技术部 黄建芬、毛仙凤/品管部、张初生/生产部	D2 Problem: 问题: 电机失效 Motor failed.	
D3 Containment action(s) : 牵制政策行动 分析异常原因, 并制定纠正预防措施。Analyze abnormal reasons, make corrective and preventive measures.	Efficiency : 功效	Introduction date: 2016.3.9

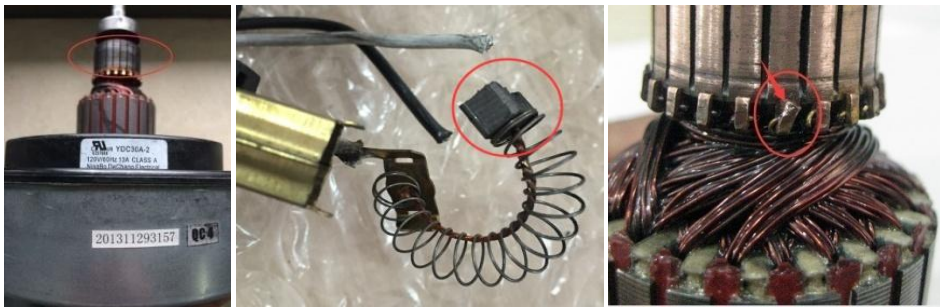
D4 Root cause(s) : 根部原因

Contribution:

201311293157

王庆锋

- 1、检查电机外观发现转子换向器发黑，碳刷磨损严重。Exam motor appearance, find rotor commutator turning black, carbon brush has serious abrasion.
- 2、拆开电机发现转子换向器有一钩歪斜，上面有被碰撞痕迹。将转子换向器表面重新清理，对其进行转子综合值检测时，发现钩处点焊电阻异常超出范围。Take motor apart, find one hook skew in rotor commutator with collision mark above. Clean rotor commutator surface, test rotor synthetical value, find the spot welding resistance for hook is abnormal and out of range.
- 3、结论：经对生产过程进行分析排查，换向器钩部在装配时被碰撞变形，漆包线与铜排的焊点产生虚焊现象，短时间检测性能正常，但在长时间高速运转过程中，焊点分离、电阻增大产生火花，碳刷磨损快，最终引起失效。Conclusion: analyse and check the production process, commutator hook was collided and deformed during assembling, and dry joint in welding spot between enameled wire and cooper bar. It was regular for short-time performance, but after long-time high speed running process, welding spot was separated, resistance increased and had spark, carbon brush wear fast, and finally lead to lose efficacy.



R1	R2	R3	R4	R5	R6
0.025	0.027	0.021	0.047	0.015	0.013
R9	R10	R11	R12	R13	R14
0.030	0.019	0.026	0.027	0.077	0.016
R17	R18	R19	R20	R21	R22
0.040	0.025	0.028	3.815	0.029	0.032

点焊电阻 NG

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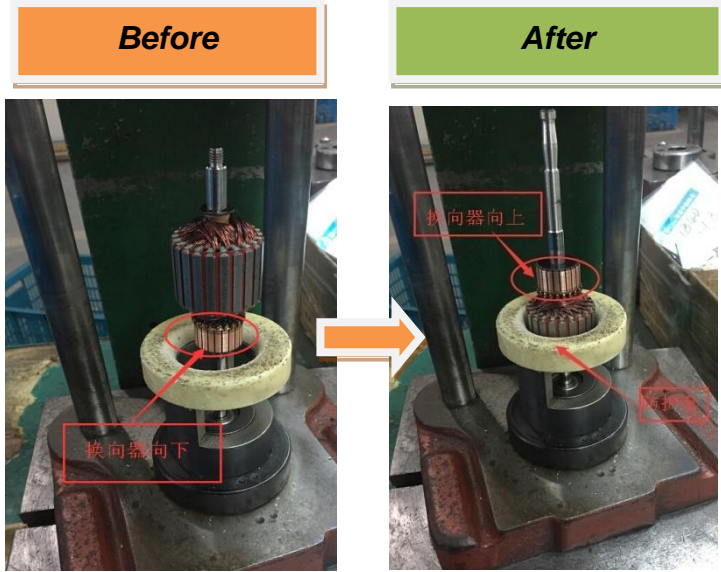
- 1、电机进行性能检测，能运转但是火花较大。Motor had performance test, it can run but spark was large.
- 2、拆开电机发现转子换向器发黑，局部有黑点，但是碳刷长度与磨合面正常。Take motor apart, find rotor commutator turning black, some parts with dark spot, but length of carbon brush and running surface was normal.
- 3、将转子重新精车，检查电阻值正常，重新装配电机功能、火花均正常。Finish turning rotor again, exam resistance value normal, reassemble motor, function and spark are normal.
- 4、结论：转子换向器表面重新精车后能正常运转，说明转子绕组没有问题，应是换向器表面粘贴了胶水或其他异物，使碳刷于换向器接触不良，引起火花。Conclusion: rotor commutator can run well after finish turning cover, so there is no issue for rotor winding, but it should be glue or others in commutator cover, leading to commutator having bad contacting and result in spark.



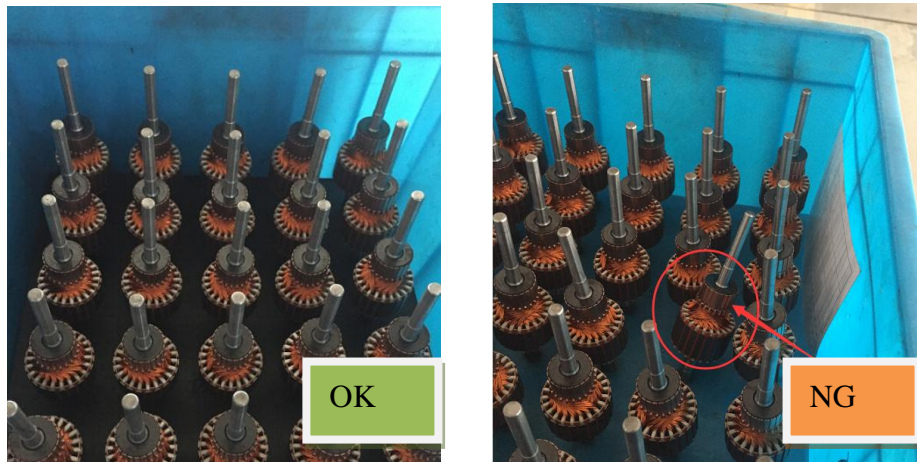
<p>D5 Chosen permanent corrective action(s): 选择持久的纠正行动</p> <p>1、转子点焊后的各个加工及装配工序，应加强对换向器的保护，避免碰伤、跌落等现象。The process and assemble after spot welding rotor, enhance protection of commutator to avoid damage or drop.</p> <p>2、转子精车后的各个工序，不得用手触碰换向器表面，以保证换向器表面清洁。The processes after finish turning rotor, no hand touch allowed on commutator surface, to ensure clean.</p> <p>Verification (确认:) 张初生</p>	<p>Efficiency (%)</p>																																																																																																			
<p>D6 implemented corrective action(s): 贯彻矫正行动</p> <p>1、库存成品电机进行全检，火花等级控制在 $1\frac{1}{2}$ 以内。Full test for stock motor, control spark level under $1\frac{1}{2}$.</p> <p>2、库存转子进行电阻值及外观检查。Stock rotor have resistance value and appearance exam.</p> <p>3、寿命试验：火花等级 $1\frac{1}{2}$ 的 5 台电机已运行 500 小时以上，3 月 16 日正常停止运行。另 3 台 2 级火花的电机也已运行 479 小时。(详见寿命试验报告) life test: 5 motors with spark level $1\frac{1}{2}$ have been running for over 500 hours, were stopped running on Mar 16 normally. Another 3 motors with level-2 spark have been running for 479 hours. (more details in lift test report)</p> <p style="text-align: center;">TTI-USA 电机寿命试验记录</p> <table border="1"> <thead> <tr> <th>型号</th> <th>规格</th> <th>试验条件</th> <th>起始日期</th> <th>记录日期</th> <th>累计已运行时间</th> <th>终止日期</th> <th>累计时间</th> <th>判定</th> <th>备注1</th> <th>备注2</th> </tr> </thead> <tbody> <tr> <td>YDC30A-2</td> <td>120V/12A</td> <td>Φ16mm, 500h 8min开2min停</td> <td>2.18 10:30</td> <td>3.16 8:00</td> <td>516.4</td> <td>3.16 8:00</td> <td>516.4</td> <td>OK</td> <td>量产</td> <td>火花等级: $1\frac{1}{2}$</td> </tr> <tr> <td>YDC30A-2</td> <td>120V/12A</td> <td>Φ16mm, 500h 8min开2min停</td> <td>2.18 10:30</td> <td>3.16 8:00</td> <td>516.4</td> <td>3.16 8:00</td> <td>516.4</td> <td>OK</td> <td>量产</td> <td>火花等级: $1\frac{1}{2}$</td> </tr> <tr> <td>YDC30A-2</td> <td>120V/12A</td> <td>Φ16mm, 500h 8min开2min停</td> <td>2.18 10:30</td> <td>3.16 8:00</td> <td>516.4</td> <td>3.16 8:00</td> <td>516.4</td> <td>OK</td> <td>量产</td> <td>火花等级: $1\frac{1}{2}$</td> </tr> <tr> <td>YDC30A-2</td> <td>120V/12A</td> <td>Φ16mm, 500h 8min开2min停</td> <td>2.18 10:30</td> <td>3.16 8:00</td> <td>516.4</td> <td>3.16 8:00</td> <td>516.4</td> <td>OK</td> <td>量产</td> <td>火花等级: $1\frac{1}{2}$</td> </tr> <tr> <td>YDC30A-2</td> <td>120V/12A</td> <td>Φ16mm, 500h 8min开2min停</td> <td>2.18 10:30</td> <td>3.16 8:00</td> <td>516.4</td> <td>3.16 8:00</td> <td>516.4</td> <td>OK</td> <td>量产</td> <td>火花等级: $1\frac{1}{2}$</td> </tr> <tr> <td>YDC30A-2</td> <td>120V/12A</td> <td>Φ16mm, 500h 8min开2min停</td> <td>2.20 12:30</td> <td>3.16 8:00</td> <td>479.5</td> <td></td> <td></td> <td></td> <td>量产</td> <td>火花等级: 2级</td> </tr> <tr> <td>YDC30A-2</td> <td>120V/12A</td> <td>Φ16mm, 500h 8min开2min停</td> <td>2.20 12:30</td> <td>3.16 8:00</td> <td>479.5</td> <td></td> <td></td> <td></td> <td>量产</td> <td>火花等级: 2级</td> </tr> <tr> <td>YDC30A-2</td> <td>120V/12A</td> <td>Φ16mm, 500h 8min开2min停</td> <td>2.20 12:30</td> <td>3.16 8:00</td> <td>479.5</td> <td></td> <td></td> <td></td> <td>量产</td> <td>火花等级: 2级</td> </tr> </tbody> </table> <p>Owner: 落实人员: 赵秋丽、李建华</p>	型号	规格	试验条件	起始日期	记录日期	累计已运行时间	终止日期	累计时间	判定	备注1	备注2	YDC30A-2	120V/12A	Φ16mm, 500h 8min开2min停	2.18 10:30	3.16 8:00	516.4	3.16 8:00	516.4	OK	量产	火花等级: $1\frac{1}{2}$	YDC30A-2	120V/12A	Φ16mm, 500h 8min开2min停	2.18 10:30	3.16 8:00	516.4	3.16 8:00	516.4	OK	量产	火花等级: $1\frac{1}{2}$	YDC30A-2	120V/12A	Φ16mm, 500h 8min开2min停	2.18 10:30	3.16 8:00	516.4	3.16 8:00	516.4	OK	量产	火花等级: $1\frac{1}{2}$	YDC30A-2	120V/12A	Φ16mm, 500h 8min开2min停	2.18 10:30	3.16 8:00	516.4	3.16 8:00	516.4	OK	量产	火花等级: $1\frac{1}{2}$	YDC30A-2	120V/12A	Φ16mm, 500h 8min开2min停	2.18 10:30	3.16 8:00	516.4	3.16 8:00	516.4	OK	量产	火花等级: $1\frac{1}{2}$	YDC30A-2	120V/12A	Φ16mm, 500h 8min开2min停	2.20 12:30	3.16 8:00	479.5				量产	火花等级: 2级	YDC30A-2	120V/12A	Φ16mm, 500h 8min开2min停	2.20 12:30	3.16 8:00	479.5				量产	火花等级: 2级	YDC30A-2	120V/12A	Φ16mm, 500h 8min开2min停	2.20 12:30	3.16 8:00	479.5				量产	火花等级: 2级	<p>Introduction date:</p> <p>初步时间: 2016.3.16</p>
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D7 Action(s) to prevent recurrence: 预防重复发生的行动

1、改进转子压轴承工装，由换向器向下改为向上，而且在入口处必须要有防护套，防止转子放入时碰伤。



2、转子装箱时必须每一个都竖立，不得有偏斜现象。



3、拿取转子时，要求拿在铁芯或转轴上，不得触碰换向器。



4、要求车间做到有序生产，不得有堆积现象，如有不慎掉落时也应重新确认合格后再使用，确保产品符合规定要求。

Owner: 落实人员: 张永军、李庆华

Introduction date:

即日起

As of today

D8 Close, congratulate your team

Date of closure:

Qualify by:
黄建芬

Approved by: