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Application of TAWI[®] Ternary Alloy Coated Steel Cord in Tire

LYU Jiafeng, JIN Zhenhuan, HU Kai, CHAI Delong, CHEN Jiahui

(Zhongce Rubber Group Co., Ltd, Hangzhou 310018, China)

Abstract: The application of copper-zinc-cobalt ternary alloy coated steel cord (TAWI[®]) combined with cobalt-free adhesive compound in tire was studied, and compared with current brass (copper-zinc alloy) coated steel cord combined with cobalt-containing adhesive compound. The results showed that, compared with the brass coated steel cord, the adhesion between TAWI[®] steel cord and rubber compound under the condition of high temperature and high humidity was improved significantly, and the cobalt-free compound showed excellent anti-reversion property. The peeling force, rubber coverage rate and coverage surface of TAWI[®] steel cord in tire were better than those of brass coated steel cord. The adhesive layer in tire with TAWI[®] steel cord was also more uniform.

Key words: ternary alloy coating; steel cord; adhesion; cobalt-free adhesive compound

风神轮胎太原基地创新发明胎侧刺孔机

日前,风神轮胎太原基地发明了饱含“科技因子”的胎侧刺孔机。

气泡是轮胎生产过程中经常产生的一种病象,在轮胎病象中占比高达30%,通常产生于胎侧部位,受气温影响较大,夏季是高发期。风神轮胎太原基地原来工段采取人工扎眼方法,但效率低。

新发明的胎侧刺孔机主要由驱动、刺孔和机体移动3部分组成。驱动部分以链轮链条传动方式配以可调控式变频而控制传动速度,以匹配联动线,传动流畅无阻碍,从而达到连续不间断的生产目标。刺孔部分由刺孔针和专制花辊组成。刺孔针均匀分布于专制直径100 mm的沟槽式花辊上,刺孔针以底扣为基准固定镶嵌于花辊与沟槽之间,分布宽度约为200 mm,同时,专制花辊具有增大胎侧半成品通过时摩擦力以实现快速通过底辊的作用。在刺孔机对胎侧半成品刺孔完成

后,专门安装的一块剥离过渡板(采用反向勾股式设计)避免了刺孔针在周向翻滚下行过程中与胎侧半成品之间的粘连,同时达到兼容过渡板的作用。机体移动部分相对复杂,由于胎侧半成品规格型号不同,刺孔部位各异,而又需要结合联动线居中传动的固化流程。针对这一工艺要求,采用了机体与基座相互剥离的方式,通过相对运动的丝杠丝母传动位移进行解决,在两组相互平行移动的动滑轮的定轨移动下,在可控丝杠的相互传动下,刺孔针的定向移动可调控左右350 mm,丝杠的静止状态保证了刺孔针的相对定位,从而达到了工艺指标要求。

胎侧刺孔机的投入使用不仅简化了人工刺孔工序,优化了刺孔密度,提高了工作效率,提升了胎侧半成品质量,而且对胎坯成型工序与硫化定型工序过程中的排气功能均具改善作用,是提升轮胎成品质量的一项重要举措。

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