Baoding Zhuoli Machinery Co., Ltd

Boye Rubber Industry Technical Development Park, Baoding City, Hebei, China
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Conveyor idler delivery inspection procedures

In order to ensure the quality of the idlers, our QC team will carry out strict inspection on each batch of conveyor idlers before leaving factory, the details of the inspection procedures are as follows.

I. Conveyor idler overall inspection:

In accordance with the standard: MT821-1999 "Technical Conditions of Belt Conveyor idlers for Coal Mine Underground" as reference.

2.Bearing Inspection:

Bearing is the most core part of the conveyor idler, the quality of the bearing must be tested in detail before assembled.

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1. The factory inspection is carried out by the quality inspection department, conveyor idler can only leave the factory after passing the inspection, and there is a factory inspection report, certificate of conformity, and inspection records.

2. When the test results of all the inspection items meet the above requirements, the batch of idler is qualified, when the test results of any one of the inspection items do not meet the standard requirements, the idler sampling shall be doubled, if the re-inspection results meet the standard requirements, the batch of products passed, otherwise, failed.

1. Conveyor idler overall inspection:

<table>
<tr><th>Item</th><th colspan="5">Technical Standard</th><th>Detection method</th><th>Tester</th></tr>
<tr><td>Idler size</td><td colspan="5">Meet drawing requirements</td><td>Routine inspection</td><td>Micrometer</td></tr>
<tr><td rowspan="4">Radial run out</td><td rowspan="2">Belt speed(m/s)</td><td colspan="4">Conveyor idler length(mm)</td><td rowspan="4">Rotate the tube once, measure at three positions of the idler shaft, and take the maximum value as the basis for stabilization.</td><td rowspan="4">Dial indicator</td></tr>
<tr><td colspan="2">< 460</td><td>460-950</td><td><950-1600</td></tr>
<tr><td>>3.15</td><td colspan="2">0.50</td><td>0.7</td><td>1.30</td></tr>
<tr><td><3.15</td><td colspan="2">0.70</td><td>1.00</td><td>1.50</td></tr>
<tr><td rowspan="8">Rotational resistance</td><td>Conveyor idler Dia (mm)</td><td colspan="2">Conveyor idler length (mm)</td><td colspan="2">Rotational resistance(N)</td><td rowspan="8">1. The idler should continuously rotate for 15min at a speed of 1450r / min.
2. Place the conveyor idler on the support idler, install a power arm on one end of the support idler, and the other on the dynamo meter, put down the friction wheel, so that the support idler can withstand 250N pressure.
3. Start the motor. After the outer linear speed of the idler idler stabilizes to 2.0m / s, record the dynamo meter reading P and calculate the rotation resistance according to the formula F = P × L / R.</td><td rowspan="8">Rotational resistance tester</td></tr>
<tr><td rowspan="3">ф89 ~ ф108</td><td colspan="2">≤ 460</td><td colspan="2">2.5</td></tr>
<tr><td colspan="2">≥ 750-950</td><td colspan="2">3.0</td></tr>
<tr><td colspan="2">≥ 1150-1350</td><td colspan="2">3.5</td></tr>
<tr><td rowspan="2">ф133</td><td colspan="2">≥ 525-600</td><td colspan="2">3.0</td></tr>
<tr><td colspan="2">≥ 790-900</td><td colspan="2">3.5</td></tr>
<tr><td rowspan="2">ф159</td><td colspan="2">≥ 675-750</td><td colspan="2">3.0</td></tr>
<tr><td colspan="2">≥ 1010-1120</td><td colspan="2">3.5</td></tr>
<tr><td rowspan="3">Axial load of idler</td><td>Dia (mm)</td><td colspan="4">Applied axial load (kN)</td><td rowspan="3">At a speed of 1mm / minR, slowly apply an axial load to the idler shaft until the load value on the press reaches the specified value.</td><td rowspan="3">Stress test Inspection machine</td></tr>
<tr><td>ф89-ф108</td><td colspan="4">10</td></tr>
<tr><td>ф133-ф159</td><td colspan="4">15</td></tr>
<tr><td>Dust and Water in idler</td><td colspan="7">After 200 hours running operation in a container filled with dust,there will be no dust in seal grease chamber of idler(national standard is:there will be no dust in bearing grease).After 72 hours running operation under the operation condition of pouring water.water,the amount of water in seal will be less than 5g(national standard is≤150g).</td></tr>
<tr><td>Idler shell</td><td colspan="7">Conveyor idler shell will employ high precision welded steel pipe special for idler.The pipe selected is above the higher precision of GB13792-92.The thickness of pipe can entirely meet the needs of intensity and rigidity.</td></tr>
</table>

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2.Bearing Testing Report:

Bearing type	FAG 6206	Bearing size	30*62*16 mm	Test standard AQLL5 4.0	
Total number	1000 pcs	Sampling number	20 pcs		

Testing items				Standard(mm)	Test tool	Test record	Result
Hardness		Inner ring HRC		60-65	Hardness tester HVI	61	Qualified
		Outer ring HRC		60-65		64	Qualified
Size precision	Inner ring	△dmp	Upper deviation	0	Inner diameter tester	0	
			Lower deviation	-0.010		-0.005	Qualified
		Vdp		/	D922	/	
		Vdmp		0.006		≤0.005	Qualified
	Outer ring	△	Upper deviation	0	Outer diameter tester	0	
		Dmp	Lower deviation	-0.013		-0.006	Qualified
		VDp		/	D051	/	
		VDmp		0.006		≤0.004	Qualified
	width	△Bs	Upper deviation	0	lleight tester G903	0	
			Lower deviation	-0.06		-0.030	Qualified
		VBs		0.015		0.013	Qualified
		△Cs	Upper deviation	0		0	
			Lower deviation	-0.04		-0.030	Qualified
		VCs		0.015		≤0.015	Qualified
Radial clearance				0.013-0.028	Wind age tester X092	2-13MIU	Qualified
Rotation accuracy		Kia		0.01	Radial tester B002	≤0.01	Qualified
		Kea		0.015		≤0.015	Qualified
Residual magnetic value		mT		0.40	CIZ--1	＜0.40	Qualified
Exterior		Chamfer, black skin, bump, abrasion			Visual inspection	no damage	Qualified

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Steel Pipe Inspection (Q235):

Q235 ordinary carbon structural steel is also called A3 steel. “Q” stands for the yield limit of this material. The latter 235 refers to the yield value of this material, which is about 235 Mpa. With the increase of the thickness of the material, its yield value decreases. Due to the moderate carbon content, the comprehensive performance is good, and the strength, plasticity, abrasion resistance and welding properties are well matched, and it is the most widely used.

Q235 Steel pipe chemical composition:

Comp.	C	Si	Mn	P	S
Rate (%)	≤0.17	≤0.35%	≤0.14	≤0.035	≤0.035

Q235 Mechanical properties:

Item	Density (g/m3)	Elastic Modulus (E/Gpa)	Poisson's ratio(v)	tensile strength σb (Mpa)	Yield Strength (Mpa)
Standard	≥600	200~210	0.25~0.33	≥40	235

Shaft Steel Material (45# Steel):

45 # steel is a high-quality carbon structural steel, corresponding to Japanese standard S45C, American standard: 1045, German standard C45. It is characterized by higher strength, better wear resistance and resistance to deformation than ordinary A3 steel.

45# steel chemical composition:

Comp.	C	Si	Mn	P	S	Cr	Ni	Cu
Rate (%)	0.42~0.5	0.17~0.37	0.5~0.8	≤0.035	≤0.035	≤0.25	≤0.35	≤0.25

45 # Mechanical properties:

Item	Tensile strength σb (Mpa)	Yield Strength σs(Mpa)	Elongation δ5 (%)	Reduction rate ψ(%)	Impact power Akv(J)
Standard	≥600	≥355	≥16	≥40	≥39

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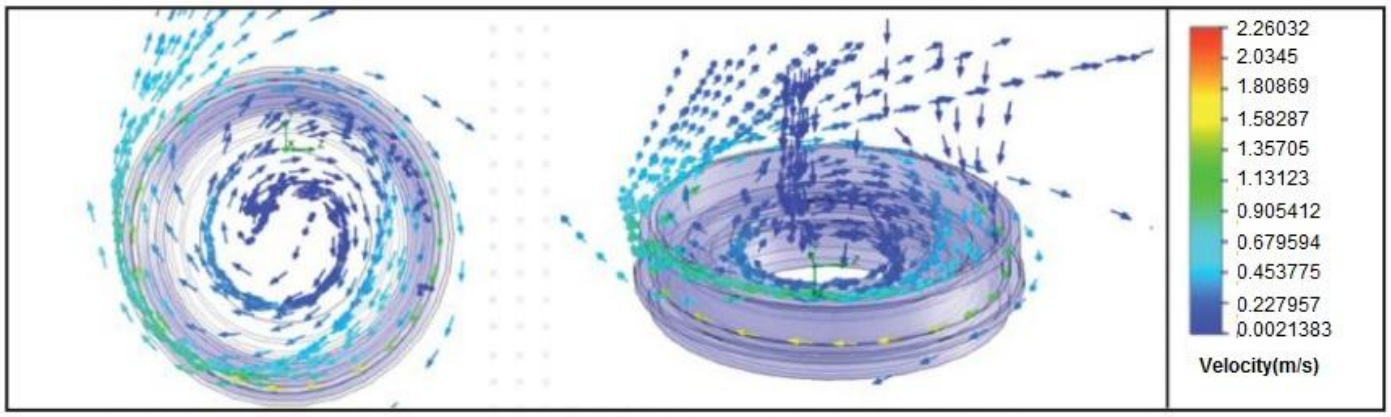
Labyrinth Seal System:

The labyrinth seal of the idler is the most ideal seal structure. This structure is waterproof and dust-proof, which effectively protects the idler bearing. It consists of five parts: inner seal, outer seal, bearing, middle seal and end seal. It is installed on the idler shaft and uses a spring as the axial positioning and axial force to make the middle seal and end seal form a waterproof cavity. And eccentric spherical cyclone cavity, so as to achieve the waterproof and dust-proof function of the bearing. The inner seal ring and the outer seal ring are closely combined to form different forms of labyrinth.



Internal labyrinth performance

The system's first protective labyrinth, unwanted particles due to the precise design of the components of the seal. With the help of centrifugal force, this effect is multiplied. The expulsion effect of the second set of labyrinths is scientifically proven. The combined work between the two sets of labyrinths and the low friction baffle ensures the efficient operation of the seal system.

Water resistance tests.