ЎЗБЕКИСТОН РЕСПУБЛИКАСИ ОЛИЙ ВА ЎРТА МАХСУС ТАЪЛИМ ВАЗИРЛИГИ

НАМАНГАН ДАВЛАТ УНИВЕРСИТЕТИ

ИҚТИДОРЛИ ТАЛАБАЛАР ИЛМИЙ АХБОРОТНОМАСИ

2020 йил 2 сон

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Т А Ҳ Р И Р Ҳ А Й Ъ А Т И

Техник муҳаррир: ***Р. Акбаров***

Таҳририят манзили:
Наманган шаҳри, Уйчи кўчаси, 316-уй.

“Иқтидорли талабалар Илмий Ахборотномаси”журнали НамДУ Илмий-техникавий Кенгашининг 10.06.2020 йилдаги кенгайтирилган йиғилишида муҳокама қилиниб, илмий тўплам сифатида чоп этишга рухсат этилган (Баённома № 7). Мақолаларнинг илмий савияси ва келтирилган маълумотлар учун муаллифлар жавобгар ҳисобланади.

In addition, losses in the transportation of electricity from the central part of the power system to the Samarkand-Bukhara power plant will be reduced. Electricity generation at both BGQs was 1,520.2 million kWh as of early February 2017. The Talimarjan thermal power plant has generated 66.72 billion kWh of electricity since its commissioning. In 2016, the station generated 6,939.6 million kWh of electricity.

Feasibility studies for two more similar BGQ construction projects by 2022 are currently being developed.

The implementation of this project will increase the electricity generated by thermal power plants to 20.4 billion kWh per year.

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TECHNICAL DESCRIPTION OF NEW JOULE J-4015S WAGON RETARDER

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Annotatsiya: Temir yo'l transportida vagonlarni saralash eng muhim jarayonlardan biri hisoblanadi. Bunda saralash parki yo'llarining har bir tormoz pozitsiyasidan belgilangan me'yoriy tezlikda o'tishi saralashi xavfsiz tashkil

qilishni ta'minlaydi. Ushbu maqolada New Joule J-4015S vagon sekinlatgichining texnik ko'rsatkichlari haqida yozilgan.

Kalit so'zlarni: Saralash tepaligi, vagonlarni saralash, vagon sekinlatgich, New Joule J-4015S.

Annotation: Sorting wagons on railway transport is one of the most important processes. This ensures the safe organization of sorting parking paths from each brake position at the established standard speed. This article describes the technical characteristics of the New Joule J-4015S wagon retarder.

Keywords: marshalling yards, sorting methods, wagon retarder, New Joule J-4015S

Аннотация: Сортировка вагонов на железнодорожном транспорте является одним из важнейших процессов. Это обеспечивает безопасную организацию сортировки парковочных путей из каждого тормозного положения при установленной нормативной скорости движения. В данной статье описываются технические характеристики вагонного замедлителя New Joule J-4015S.

Ключевые слова: сортировочные станции, сортировочные методы, вагонный замедлитель, новый Джоуль J-4015S

Marshalling yard which its another name is classification yard is a railway yard found at some freight train stations, used to separate railway cars onto one of several tracks. First of all, the cars are taken to a track, sometimes called a lead or a drill. From there the cars are sent through a series of switches called a ladder onto the classification tracks. Larger yards tend to put the lead on an artificially built hill called a hump to use the force of gravity to propel the cars through the ladder.

Wagons are pushed over this hump and are allowed to run down the other side into the sorting sidings. The height and gradients of the hump differ from several yards to suit different conditions, but the main principle is that it must be designed to give sufficient momentum to carry wagons into the sorting sidings for which they are intended.With this layout-reception roads, hump, and classification sidings-long trains can be pushed over the hump at a unchanging speed and are

split up much more speedily than is possible with ordinary flat shunting, where the engine has to be continually stopped and reversed as wagons are run off the end of the train.

Sorting wagons requires the use of technical means to prevent collisions and regulate the speed of movement of detachments (individual wagons or groups of wagons). For these purposes, various means are used on Railways. They have a different design and working principle.[2]

Due to thevariation in wagon rolling resistance and weight you need retarders to control their speed. Many yards use clasp retarders in the switching area. These are large air or hydraulically poweredbeams which squeeze the wheels at rail level. They can be manually or automatically controlled. They are commonly in the switching zone. Typically just 3 or 4 in a yard. Once a wagon has left the clasp you have no more control, so if the clasp operation is not perfect wagons can stall too early or overspeed.

A wagon retarder for installation on a railway track has a telescopic cylinder and piston device containing hydraulic fluid and compressed gas, said device being contracted by an approaching wheel and then being extended by the compressed gas as the wheel moves away. The cylinder slides in a fixed guide cylinder, and it slides on the piston which has a piston rod of smaller diameter extending through a sealing device into engagement with the base of the guide cylinder. The piston carries a flow-sensitive valve which is closable during contraction of the device whereby hydraulic fluid flows from one side of the piston to the other side through a pressure relief valve. The relief valve generates a pressure which acts on the cylinder to exert a retarding force against the wagon wheel. While the device is extended, the flow-sensitive valve opens to enable hydraulic fluid to flow in the reverse direction across the piston.[3]

Piston retarders are used to afford constant speed control throughout a classification yard, and to ensure soft low impact couplings in the classification tracks. (Typical Coupling speed is 1.79 m/s (4.0 mph)). The advantage is that all cars will travel at constant speed between switches, within ± 0.5 mph (± 0.22 m/s)

from the set speed. Classic clasp retarders employ a system of "catchand-release" and require very high crest gradients and long entry leads to accommodate the installation of clasp retarders.

Figure 1. Piston retarders

Piston retarders are easy to install. The piston retarders can be maintained without excessive loss to track operating time. Maintenance can be done between trim operations, or in tracks that are not being used, without disrupting the overall flow of the yard.

Retarders does not require very advanced control software, as is the case with clasp retarders, to control it's speed control capabilities. Regular yard switching software is all that is required. They are completely self contained and no external software, hydraulic, or electrical control is required for the piston retarder's operation.

Table 1

Parameter Piston retarder New Joule - J-4015S	**Value**
Guaranteed speed of the car, Km.\h.	0.0
Return time, sec.	± 15
Lost energy, J.	± 800
Maximum speed, Km.\h.	30.0

Installation angle, °	from 11 to 13.5
Height of the capsule above the rail head, mm.	60.0 ± 2.0
Stroke, mm.	from 80 to 90
Diameter of the mounting hole, mm.	28.5 ± 0.10
The distance between the mounting holes for the horizontal step mm.	88.90 ±0.25
The distance between the mounting holes for the horizontal step mm.	80 ±0.75
Type of hydraulic oil	15
Operating temperature range, °C	От -50° до +50°C
The weight of the retarder, Kg.	± 16.6

The Joule piston retarder is able to “sense” the speed of a rail car due to the oil flow that is generated during the in stroke of the capsule. The stroking induces a flow of oil over the internal piston forcing the oil through the valves. The speed, or flow, sensitive valve will only be activated once the flow generated by the in stroke is higher than the valve’s trip flow rate. Thus, a valve set to trip at 3.0 m/s (6.7 mph) will not trip if the car speed is below 3.0 m/s, and the capsule will merely stroke in without any significant resistance. This condition is referred to as idling. Therefore cars running at speeds below this trip speed will not activate the retarder and will remove as little as 75 Joules per idling stroke. If the rail car travel at a speed higher than the trip speed then the valve will close and energy in the region of 1,100 to 1,300 Joules will be removed from the car. This energy removal is the process by which the car is slowed down. This stroke is referred to as a retard stroke.

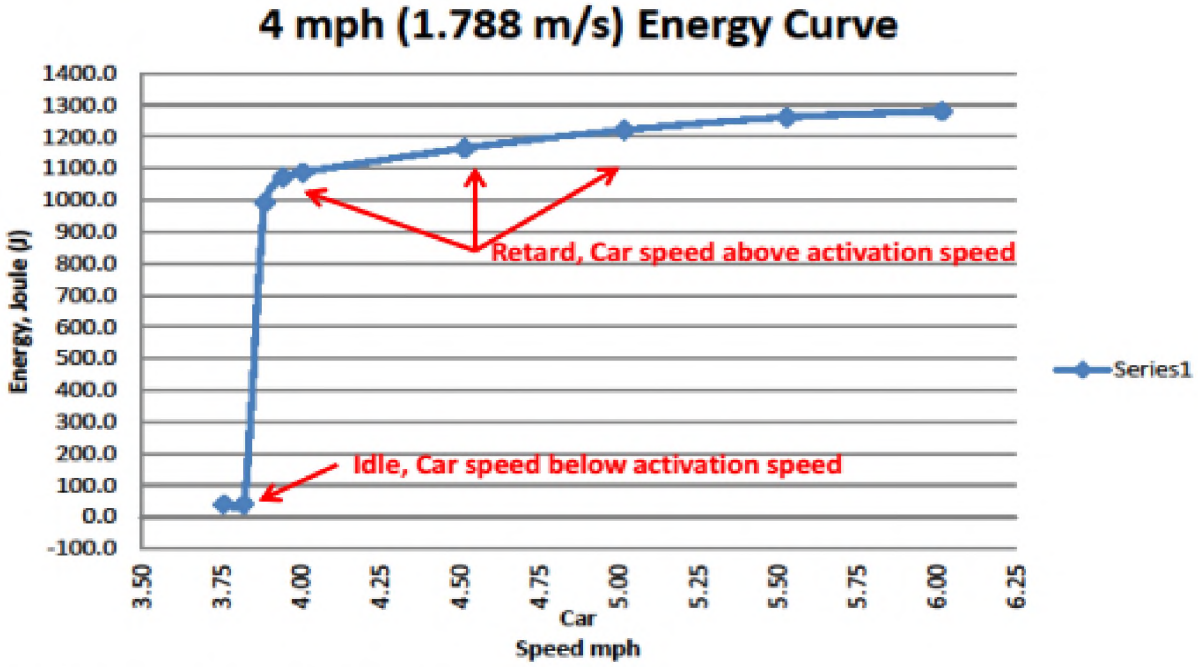

Diagramm 1. Energy Curve for series1

Basic Technical Specifications

Many combinations of speed and energy settings are possible and are calculated

based on the individual application and needs.

- Speed Settings = Typically ranging from 0 m/s (0 mph) to 3.69 m/s (8.25 mph)

(Most popular 1.79 m/s (4 mph) and 2.68 m/s (6.0 mph)) Speed

setting can be adjusted for customer's requirements.

- Energy Settings = Typically ranging from 900 Joule to 1,350 Joule

(Most popular is 1,100 to 1,280 Joule)

- Rail Sizes = Typically vary from 48 kg/m to 65 kg/m, and 115 lb/yd to 136 lb/yd.

(Housings are designed and machined to properly fit any rail size.)

- Mounting Hole Sizes = 28 mm (1.125")

- Mounting Hole Center Distance Between Holes (Pitch) = 88.90 mm (3.50")

- Mounting Hole Center Distance From Crown Of Rail = 80 mm (3.15”)

The retarders can be set for speeds ranging from 0 m/s (0 mph) to 3.58 m/s (8.25 mph), and energy extractions up to 1,350 Joule. It is important to limit the end loads in order to prevent derailments due to wheel lift, which is caused by excessive end load settings.

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МУНДАРИЖА

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