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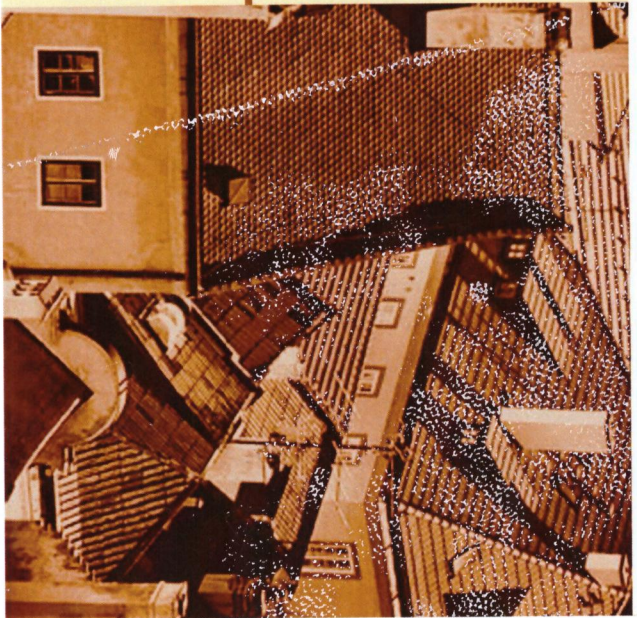
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TECHNICKÉ VĚDY HUTNICTVÍ

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RATIONAL FORM WORKING PART PIERCING MANDREL

Pipe production technology provides firmware round billets for the hollow shells. The internal cavity of the sleeve forms a technological tool – piercing mandrel. During operation, the mandrel are long-term cyclical effects of high temperatures and high pressures, so the material mandrels must have a high strength, heat resistance and high thermal conductivity. Even with high-strength material, but its lack of heat resistance and thermal conductivity, too dolly quickly heated, loses its shape and drift out of order. In addition, the surface of the mandrel should not be fused to the metal being rolled. This is achieved by the formation of an oxide film on the surface of the mandrel by heat treatment and in contact during her work with the metal being rolled.

On the stability of bars has a significant impact a large number of factors: the chemical composition of the material and heat treatment regime bars, their caliberation, the brand rolled steel, the quality of heating billets, rolling mode, the cooling conditions mandrels. At the present time as the material of steel bars commonly used brand 20HNAFA containing 0.17 – 0.24% C, 0.25 – 0.35% Mn; 0.17 – 0.37% Si; 0.7 – 1% Cr; 3.17 – 4.25% Ni; 0.15 – 0.30% V.

As a result, patent studies, the authors proposed to optimize the shape of bars for the firmware.

Known arbor piercing mill helical rolling, which has a cylindrical tip with a spherical convex surface end, made of hard alloy, and the working cone, made of steel [3].

However, although thus increase the service life of the mandrel, which influences the quality of the internal surface of pipes, but do not provide sleeves.

Arbor is known for helical rolling, containing a cylindrical nozzle, increasing the cross section along the axis of the working part and a non-circular tail, which allows to obtain products with different wall thicknesses without having to reconfigure the mill [4]. However, the mandrel has a small life.

Arbor is known for helical rolling, containing nose with a linear generator (cylindrical) and the working part of the profile.

However, this arbor is working under difficult conditions, in contact with hot metal, it requires frequent changes in order to ensure the quality of the inner surface of the liner. With a little ovalisation liners in the deformation, especially in the nose

to the rear end of the mandrel sleeve, there is an annular gap between the metal «mus-tache», which spoils the surface of the liner, causing cuts or sunsets.

Closest to the proposed technical essence is mandrel for screw driver containing spout having a cross-section in the shape of an oval with a ratio of its axes 1.3 – 1.5 and a smooth decrease in the ratio to 1 in the early part of the work [5].

However, such a drift does not provide significant improvement of quality liners at the expense of increasing sleeves. The technical result is to increase the quality liners at the expense of changing the design of the mandrel for screw insertion. The required technical result is achieved that the mandrel for screw driver containing nose with a straight profile and forming part of the work for which the cross section of the nozzle is made in the shape of a square with rounded edges, obtained a radius of inscribed square in ovals with axial ratio 1.3 – 1.5 and a gradual transition into the circle at the beginning of the test section, which reduces the rear end of the sleeve and enhances sleeves.

Physical impact mill is passed through the tool to the workpiece contact surfaces, the geometric center of the strain with restricted free from external forces and external surfaces, undeformable at the moment, parts of the workpiece. The partition of the volume of procurement is manifested in the predominant localization of metal flow over the surface of shear. The value of breakdown when flashing depends on several factors, including power equipment (correlative to resist deformation of the workpiece), the plasticity of the workpiece material, the final degree of deformation, etc. In addition to the technological goal – rapid achievement of a given drawing, the magnitude of reduction determines the degree of elaboration of the bulk metal structure.

Thus, the flashing unit with large compression surface of maximum shear strains are redistributed for the most part the geometric center of deformation. As a result of contact friction forces of the volume of the geometric center of deformation is hindered in areas of strain. The size of these zones in the longitudinal section blank as compression decreases and the cross section – first increase and then decrease. Therefore, the result of displacement of the metal flow along the workpiece in the direction of broadening is different.

Piercing mandrel square shape with a small quantity of individual breakdowns in reduced flow in broadening compared with the longitudinal displacement of the metal. In cross section billet metal particles move along a curved path. In terms of the contact friction of the metal volume in situations of obstructed deformations move along these trajectories through a reduction, whereas in the conventional boundaries of zones of hindered deformation (in the diagonal regions) intensive displacement occurs with each compression.

The advantage of flash unit with large compression is also reduced in absolute size of the initial zone of deformation hindered when compressing. Localization of the alternating flow of the metal is due to the alternating alternating and operations (eg. tilting or breakdowns with reciprocating workpiece along its axis).

Reduced deformation zone hindered in cross section billets and reduce the localization of metal flow over the surface of shear is achieved by decreasing the area of initial contact of the tool with the workpiece and the subsequent change in this area. The process of the firmware that is accompanied by additional lateral compressive

stress. Existing boundaries of the geometric center of deformation are more developed than usual when flashing firmware with a straight front.

Different orientation and size of the shortest normal from neutral lines of the geometric center of deformation causes significant changes in surface configuration changes.

In general, the variable parameters of the proposed instrument can be elements of the curvature of the front deformation and their periodicity.

Net effect of redistribution in the volume of workpiece deformation promotes resistance piercing mandrel – the main deforming tool.

The mandrel has a spout in the shape of a square with rounded edges to a radius of the resulting square inscribed in ovals with a ratio of its axes 1.3 – 1.5, working with the transition cone initial section 2 of the square with rounded corners to the circle, cone transverse rolling 3 cylindrical belt 4 and the reverse cone 5.

The process of the firmware is as follows.

Heated solid billet set obliquely set in rollers, which move the piece on a mandrel. Harvesting of the spout meets the mandrel in the form of a square with rounded edges. Square section allows you to periodically change the amount of compression and reduce posterior end of the sleeve.

Mandrel with a spout in the shape of a square with rounded edges was tested in laboratory conditions at the camp of the helical rolling. Test results showed that the sleeves sewn on the proposed mandrel, no ring-separation, or any other visible defects on the surfaces, as noted improvement sleeves.

Mandrel for screw driver enhances the quality liners at the expense of increasing sleeves and the intensity of the process of insertion.

The influence of wear of work rolls piercing mill for resistance bars. As noted above, the rollers wear significantly affects the setting piercing mill, reduced distance between the rollers, mandrel moves during rolling. This leads to a reduction in the length of the deformation and redistribution of the strain along the length gauge. Indeed, the process is carried out at a higher compression of the front toe of the mandrel, and the extract is mainly due constriction rolls.

Conclusion. We propose a rational form of piercing mandrel, ensuring quality of cases and an increase in resistance of the deforming tool of tube production.

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виробництва біостанолу. Тому, на нашу думку, обґрунтуювавши необхідність виробництва біостанолу в Україні можна зробити висновок, що стрімке вивчення біосировини для виробництва біостанолу допоможе вивести країну із економічної кризи, забезпечить багато робочих місць, підвищить конкурентоспроможність держави серед іноземних партнерів та надійне економіко – екологічне майбутнє.

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OBŠAN

TECHNICKÉ VĚDY

НУТНІСТВІ

Вогомолов А.У., Зһапабаєва Г.М., Sezһанов Р.І.
 Rational form working part рієсіng mandrel..... 3

Афанасьев В.К., Горшенин А.В., Старостина М.А., Кибко Н.В., Рудник А.А., Котова М.О. О создании легких сплавов с малым тепловым расширением (Сообщение 1) 6

Афанасьев В.К., Долгова С.В., Копытько А.А., Бояскина А.К., Чезозерова А.К. Об особенностях линейного расширения сплавов Fe – С (Сообщение 1)..... 7

Мєchanіka

Пацюк А.Г., Шерстюк Г.Г. Знаходження пошкоджень і неоднородностей механічних характеристик в тонкостійких конструкціях..... 11

Радченко В.П., Морозов А.П. Исследование характеристик поверхностного слоя образцов из алюминия АД-1 в зависимости от режимов упругопластического нагружения и испытаний на ползучесть..... 13

Гавеля Г.М. Сравнительный анализ вариационных постановок обратных задач в теории оболочек..... 15

Стєпанов А.В. К задаче оптимизации управления нелинейными объектами в реальном времени 18

STROJIRENŤVĪ

Гринько П.А., Щєглов О.М., Суглобов Р.В. Проблемы центрирования хода ленты ленточного конвейера..... 26

Дєнисов А.Ю., Дєнисов Ю.В. Статистический анализ температурных напряжений... 30

Кондрашов С.Г., Кондрашова И.Г., Иванов И.В. Теоретическое исследование автоколебаний при резании 35

DOPRAVA

Улюд О.А. Анализ необходимого оборудования для выполнения погрузочно-разгрузочных работ в грузовой терминале аэропорта 42

Сорокина О.В., Сорокина Ю.В. Нейронные сети как повышение качества управляющей системы управления транспортными потоками 46