Ultra-thin strip production of high-frequency inverters

Are ultra-thin grain-oriented silicon steel sheets fabricated based on strip casting and secondary recrystallization?
5. Conclusions In this work,0.05-0.15mm-thick ultra-thin grain-oriented silicon steel sheets were successfullyfabricated based on strip casting and secondary recrystallization. The microstructure,texture and inhibitor evolutions along the processing route were briefly investigated with a focus on the mechanism of secondary recrystallization.

Can twin-roll strip casting process produce silicon steel sheets?
Recently,Liu et al. ,,have successfully producedthe 0.23-0.27mm-thick grain-oriented silicon steel sheets based on twin-roll strip casting process. The evolutions of the microstructure,texture and inhibitor along the processing route were investigated in detail.

Is cutting-based deformation a viable route for low-cost production of Li strip?
In this study,we show,for the first time,that cutting-based deformation processes can be a viable route for low-cost production of Li stripin thin and ultrathin gauge formats,with thickness of 10 to 560 µm. Lithium strip,with very good (commercial) quality,is produced directly from ingot in a single step of deformation without pre-heating.

Can ultra thin steel strip be cold rolled?
In this paper, the cold rolling experiments of ultra thin steel strip were carried out on an experimental rolling mill.

What is the magnetic induction of ultra-thin grain-oriented silicon steel?
It should be noted that the magnetic induction of the ultra-thin grain-oriented silicon steel where the secondary recrystallization induced by inhibitor exceeded those prepared by conventional methods, such as by primary recrystallization, secondary recrystallization and tertiary recrystallization.

What is cold rolled ultra thin strip?
Cold rolled ultra thin strip has a wide application in electronic and instrument industries,and its production has always been of major interest to the manufacturers and researchers in the area of metal rolling.

The team initially explored current-assisted ultra-thin strip forming [13, 14] and studied the effects of electrical pulses on the mechanical properties and microstructure of the SUS 304 stainless steel ultra-thin strip during tensile deformation using simultaneous deformation-current loading.The results showed that the pulsed current inhibited the transformation from ...

Grain-oriented silicon steel is widely used as core material in transformers and exhibits excellent magnetic

properties due to sharp {1 1 0} <0 0 1> (Goss) texture [1] the past decade, with more application for high-frequency electrical devices, there has been a great demand for ultra-thin grain-oriented silicon steel because of extremely low iron loss, especially ...

It has very low iron loss in the high frequency range, and contributes to higher efficiency and energy saving of high frequency transformers and high frequency reactors. With ...

A new procedure consisting of the cross shear rolling (CSR) and the subsequent tertiary recrystallization annealing under dry hydrogen atmosphere was developed to produce the grain oriented ultra-thin silicon sheets less than 0.1 mm with high magnetic property performance. For comparison, the conventional rolling (CR) was also used to process the grain oriented ...

Process Control System of Ultra Thin Strip Production line at Tangshan Iron and Steel Group Co. in China. Author links open overlay panel K. Okamoto *, Y. Wakamiya *, N. Shimoda *, ... -Unity power factor and small higher hannonics -Higher output frequency -High efficiency. 5. CONTROL SYSTEM The overall control system for this plant is shown in ...

Considering that the eddy current loss is dominant in high-frequency range, and is proportional to the square of the thickness, decreasing the thickness of non-oriented silicon steel is considered to the effective way to significantly decrease the high-frequency iron loss [2, 6].However, detrimental ?-fiber (<111>//ND) texture accumulate with increased of cold rolling ...

MCCR is a compact, cutting-edge hot strip mill system for the stable and efficient production of ultra-thin materials. The full endless rolling*1 capability of the facility is achieved by integrating pre-processed continuous thin-slab ...

Ultra-thin hot-rolled strip is the developing result of the modern plate and strip rolling technology and can be used to replace cold-rolled products for energy saving and emission ...

With improvements to the analytical and experimental methods, a new understanding of ultra-thin strip rolling is possible. Fleck et al. [3], [13] proposed a new model for ultra-thin strip cold rolling: the deformation zone may be divided into the inlet elastic, inlet plastic, neutral, exit plastic and exit elastic zones. The most important ...

The present study provided a novel method to produce high efficiency ultra-thin grain-oriented silicon steel, which may significantly contribute to energy saving in high-frequency electrical devices. Primary recrystallization characteristics and magnetic properties improvement of high permeability grain-oriented silicon steel by trace Cr addition

at high frequencies has been strongly required to increase efficiency and downsize electrical equipment 1).

Although higher Si contents and sheet thickness reduction are ...

process. JNHF is a suitable material for high efficiency and downsizing of high-frequency devices, and is used in high-frequency reactors and ultra-high-speed motors. 2.3 Si Localized Material JNSF TM As described above, in Si gradient magnetic materi-als, eddy current loss is reduced by the Si concentration

Thin-gauge non-oriented silicon steel with high strength was successfully processed using strip casting.Texture evolution and strengthening mechanism via nanoscale Cu-rich precipitates were studied to fundamentally understand the balanced combination of magnetic properties and mechanical properties. Coarse equiaxed grains with average size of ~190 um ...

In this study, 0.08-0.15 mm-thick ultra-thin grain-oriented silicon steels were produced using conventional process based on retention of Goss texture and strip casting ...

The textured roll and polished roll were applied instead of the ground roll in a 20-high mill to conduct two-pass rolling of 316L stainless steel strip with thickness of 0.027 mm. After the two-pass rolling with the textured roll and polished roll (TPR), the surface roughness of the strip is dramatically reduced, and the surface topographical anisotropy index is diminished to ...

Schematic of Hybrid Cutting-Extrusion (HCE) process (plane strain) for Li strip. This shear-based deformation processing uses a constraint tool with the primary cutting tool to produce strip of pre-defined thickness (t c).The controllable process parameters are workpiece speed V o, tool rake angle (?) and undeformed chip thickness (t 0) ee Cutting (FC) is strip ...

0.05-0.15 mm-thick ultra-thin grain-oriented silicon steel sheets were successfully produced by a novel processing route including strip casting, hot rolling, normalizing, two-stage cold rolling with intermediate annealing, primary recrystallization annealing and secondary ...

Effect of hot rolling on the evolution of microstructure of ultra thin cast strip recently produced by the CASTRIP process a) acicular ferrite content b) allotriomorphic / irregular grain boundary ...

IPPON KINZOKU Group, through subsidiary NIKKINDENJI KOGYO CO., leads in crafting Ultra-thin Electrical Steel Strips (3% silicon steel), under 0.1mm thick. With 50+ years" ...

The cores made of B PLUS ultra-thin nanocrystalline ribbon can reach an ultra-high permeability of higher than 32,000 at the frequency of 100kHz, which is very suitable for high-end choke applications in the frequency band above 100kHz. ...

P-type tin monoxide (SnO) thin-film phototransistors were developed with high photoresponsivity of $2.94times 10^{{5}}$ A/W and high detectivity of $1.82times 10^{{14}}$ Jones, and these values ...

frequency of pass-band are 30.7 GHz (?g = 13.45 mm) and 31.8 GHz (?g = 12.38 mm), respectively. Affected by a negative length brought by the K-impedance inverters, the distance between the two metal septa is slightly less than 0.5?g [10]. Normalized K-impedance inverter value and negative electrical length are given by [11].

In this study, we show, for the first time, that cutting-based deformation processes can be a viable route for low-cost production of Li strip in thin and ultrathin gauge formats, with thickness of 10 to 560 µm. Lithium strip, ...

Fig.1 OM image of 0.5 mm thickness GH3600 nickel-based superalloy strip (Arrow A shows the twin terminate inside grain, arrow B shows the twin throughout the grain) Fig.2 OM images of GH3600 nickel-based superalloy cold rolled strips with thicknesses of 0.25 mm (a), 0.125 mm (b), and 0.07 mm (c) (RD--rolling direction, ND--rolling direction)

China"s production of ultra-thin strips started relatively late and nickel-based ultra-thin strips rely on imports. ... Fig.9 Low (a1-d1) and locally high (a2-d2) SEM images showing tensile fracture morphologies of 0.125 mm thick GH3600 nickel-based superalloy o C ...