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Applicability of Laser Welding to Steel Strip for Cold Rolling

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(Jun-ichiro Tsuboi)

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Synopsis :

Applicability of the CO**2 laser welding to hot-rolled steel coils for a higher efficiency production of cold rolled steel strip is discussed with emphasis on how to determine welding conditions best suited to each production line and on increasing fit-up tolerance. Rollability of welds is evaluated in rimmed, killed, and silicon steels by using reverse bend test and miniature mill rolling. As a result, the CO**2 laser welding is found applicable to cold-rolled sheet steel production, and the weld joints of 3% silicon steel have shown good rollability.

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薄鋼板製造プロセスに対するレーザー溶接の適用性に関する基礎的検討

Applicability of Laser Welding to Steel Strip for Cold Rolling

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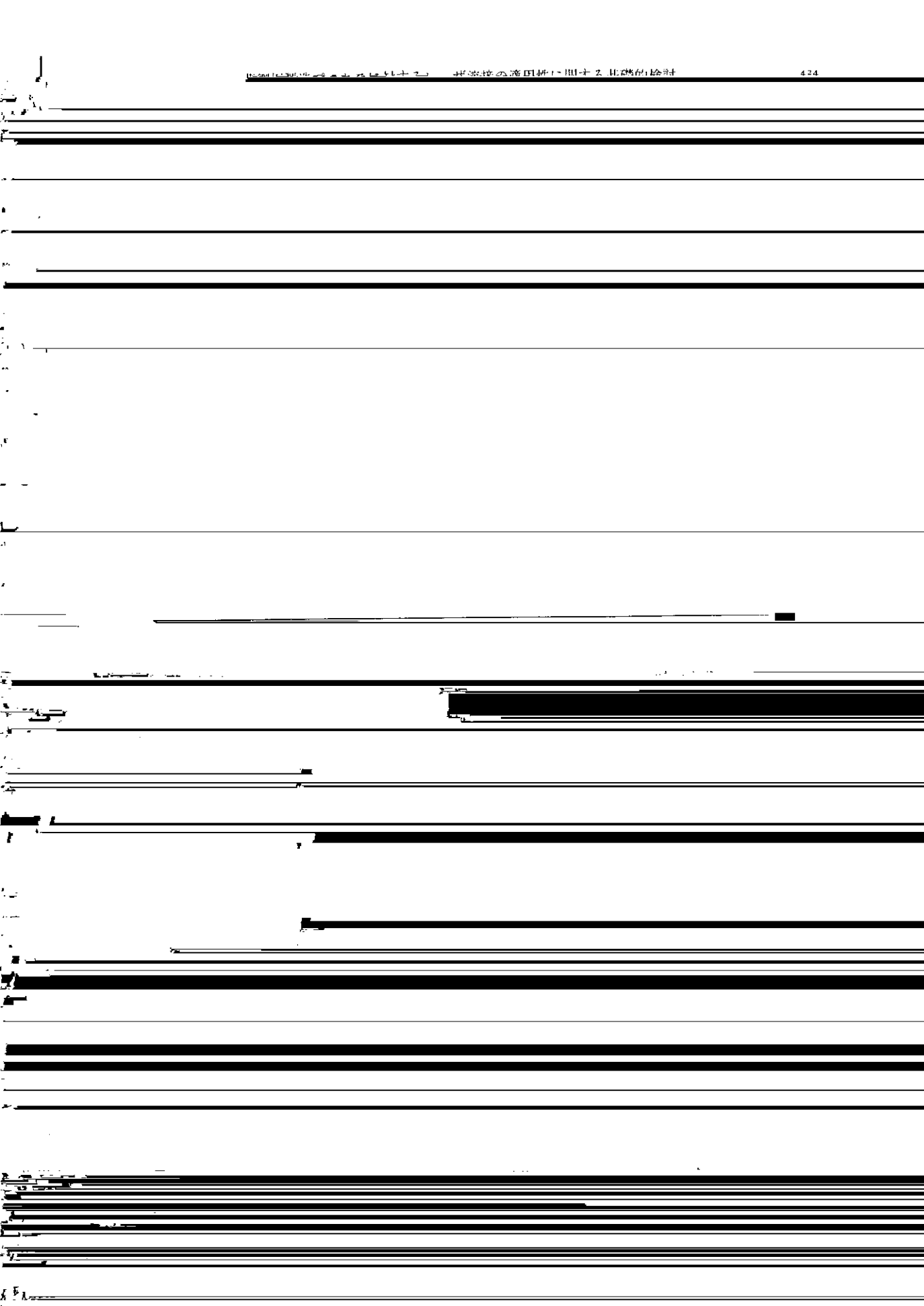
坪 井 潤一郎**

Jun-ichiro Tsuboi

Synopsis:

Applicability of the CO₂ laser welding to hot-rolled steel coils for a higher efficiency production of cold-rolled steel strip is discussed with emphasis on how to determine welding conditions best suited to each production line and on increasing fit-up tolerance.

Weldability of welds is evaluated in rimmed, killed, and silicon steels by using reverse bend test and miniature



(二) 係占太地打斷物率所₁ あ 又 上 き 最小打斷幅

にその組織を示す。ビード中央のビッカース硬さ

に示す。いずれも裏当材を用いないで溶接した。

図 10 裏当材を用いないで溶接したときの組織と硬さ (単位: ビッカース硬さ)

とに問題は残るが、いずれも反復曲げ延性は良好。レーザー溶接継手は急冷によって結晶粒粗大化が抑
 であつた。珪素鋼の溶接継手は通常のTIG、MIG法で行なつた場合、熱影響部の結晶粒の粗大化の
 止されるため、反復曲げ延性が良好である。Photo. 3に珪素鋼のレーザー溶接継手の組織を示す。



Steel A, 2mm thick, TIG 6000 J/cm

