



Pergamon

Energy 24 (1999) 285–296

ENERGY

A study on wood gasification for low-tar gas production

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Received 18 May 1998

Abstract

We present results of an experimental study on two-stage wood gasification and attempts to reduce the tar content of the gas. Increasing the wood-chip moisture content resulted in an increase of CO₂ and H₂ but a decrease of the CO concentration without significantly affecting the tar content in the producer gas. For a particular primary air flow rate, an increase in the secondary air flow of the two-stage gasifier resulted in decrease of the tar content and the CO₂ and H₂ concentrations while that of CO increased. A charcoal gasifier and a floating-drum gas-storage system were coupled to a two-stage wood gasifier. The tar content of the product gas was in the range 19–34 mg/Nm³ for a charcoal gasifier coupled to a two-stage wood gasifier. With a floating-drum gas-storage system and a 3.5 h retention time, the tar content was reduced to 9.24 mg/Nm³, which is 85% less than that obtained by using the a two-stage wood gasifier alone. © 1999 Published by Elsevier Science Ltd. All rights reserved.
