



## Jahresbericht 2000

Über die Arbeiten gemäss Vertrag: 68 502

**Titel des Projekts:** Kontinuierliche Teermessung mittels FID  
bei einem Holzvergaser

Das Projekt wurde im Berichtsjahr abgeschlossen. Der Schlussbericht kann bezogen werden bei ENET (63 Seiten, Deutsch mit Englischem Abstract).

### Abstract

Tar components in the producer gas from biomass gasifiers can cause severe operational problems in IC engine applications. Hence the minimization of the tar levels is considered as a key task for the successful implementation of gasification based power generating systems. Traditionally, tar concentrations are determined using impingement methods followed by gravimetric or chromatographic analysis. These methods do not allow an on-line measurement and results are determined with a time delay of several days. An on-line tar measurement would be a very helpful tool both for monitoring as well as for the development and optimization of individual system components.

The quasi continuous on-line FID tar analyzer TA 120-3 developed at the University of Stuttgart has been implemented and used for monitoring a cocurrent gasifier based CHP pilot plant. A single measurement cycle lasts about three minutes, thus allowing a quasi continuous measurement of the tar concentration in the gas. The accuracy of the FID tar measurement has been determined as approximately  $\pm 150 \text{ mg/Nm}^3$  and is independent on the total tar concentration. The tar concentrations determined with the FID tar analyzer are compared with results from a conventional tar sampling method.

During normal gasifier operation, the tar evolution in the raw gas shows only little variation ranging from  $150 \text{ mg/Nm}^3$  to  $600 \text{ mg/Nm}^3$ . However, process disturbances such as IC engine ignition procedures or ash removal cycles lead to tar concentrations peaks of several  $1000 \text{ mg/Nm}^3$ . Such transient effects can only be observed with continuous methods.

The FID tar analyzer is also used for the determination of the tar collection efficiencies in a simple gas conditioning system with a water spray quench and a drop separator. The collection efficiencies range from 45% to 55% based on gravimetric tar concentrations.

**Dauer des Projekts:** 1.7.1998 bis 30.6.2000 (abgeschlossen)

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