APPLICATION NOTE A011-EN99

FUEL TESTING

Testing and adjusting motorized outdoor power equipment is a becoming more and more important due to strong environment regulations.

Traditional measurement of CO/ CO2 exhaust is extended by direct inline fuel flow measurement to accurately correlate fuel flow to unburned Hydrocarbons, CO and CO2 and engine speed.



Application requirements

At test benches in the production facilities there is a need for a highly accurate, fast responsive, reproducable and reliable in line fuel flow meter. Mass flow measurement has proven to be more accurate than volume flow measurement to meet environment regulations. Each test location needs to have the flexibility to test engines with very different horsepower (and therefore fuel flowrates) with different hook-up points. Ranges from 30 g/h…3 kg/h are typical for these devices.

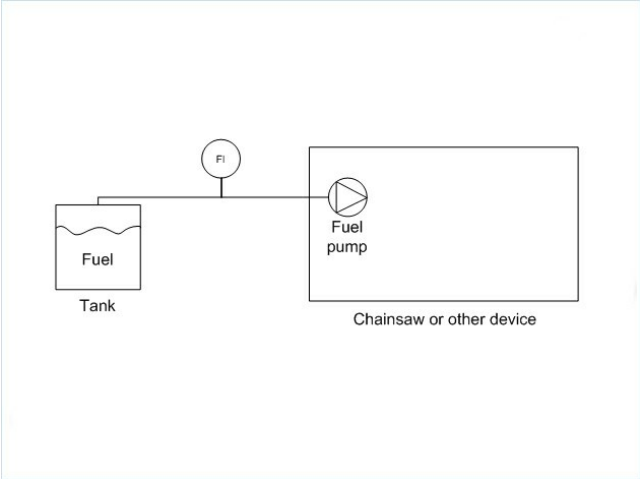
Important topics

- High fuel efficiency
- Improve drivability and durability
- Comply to emission legislation

Process solution

Testing and adjusting motorized power equipment
This is a highly interesting application for Coriolis mass flow meters (mini CORI-FLOW series). Several Coriolis instruments (type M14 mini CORI-FLOW) are already in use in the field to accurately adjust the 2-stroke engines for all kinds of power tools for outdoor use. Traditional methods using only CO/CO_2 concentration measurement at the engine exhaust are extended with fuel flow meters between the fuel tank and the engine. With atmospheric inlet pressure the fuel pump will suck the fuel through the flow meter into the engine. An exact fuel flow measurement with an accuracy of up to 0.2% reading ± zero stability can be guaranteed. An M14 mini CORI-FLOW mass flow instrument can measure fuel flows from 30 g/h…30 kg/h. The actual needed flow rate will depend on the type of engine. E.g. Chainsaws will use flow rates up to 1 kg/h. Weed eaters up to 0.5 kg/h. Where mini CORI-FLOW instruments are multi-variable flowmeters, also density and temperature measurement will be available at the same time. In fact everywhere where fuel powered engines are used, this type of applications can be found. The hardest parameter to predict are unburned Hydrocarbons, but with accurate fuel flow this is easy.

The testing is for two reasons, both of which are important. 1. Emissions, 2. Quality. Using previously collected data, it is possible to accurately correlate fuel flow to unburned Hydrocarbons, CO and CO_2 and engine speed.



Flow scheme

Recommended Products



MINI CORI-FLOW™ M14

Min. flow 0,03…1 kg/h
Max. flow 0,3…30 kg/h
Pressure rating 200 bar
Independent of fluid properties
High accuracy, fast response



CORI-FLOW™ M54

Min. flow 0,2…5 kg/h
Max. flow 5…100 kg/h
Pressure rating 200 bar
Independent of fluid properties
High accuracy, fast response

BRONKHORST USA INC.

57 South Commerce Way

Suite 120

USA - Bethlehem, PA 18017

Tel. +1-610-866-6750

sales@bronkhorstusa.com