K-BAR System Introduction

The K-BAR is a multipoint sensor array to measure flow in applications that have:

- Changing flow profiles at the same flow rate
  Near valves, dampers, branching duct work etc.
- Need higher system reliability due to redundant sensors
- Need lower flow noise from averaging a duct cross section

The system is composed of two parts. Part one is the sensor array, part two is the flow computer which collects and processes the array data in to one flow and temperature output. Due to the wide range of duct sizes used for industrial applications, each K-BAR array is custom sized to measure the process velocity in equal area zones, when averaged the total duct flow can be computed based on the duct area, and any field calibration factors established at startup. This manual goes over most of the issues needed for the installation, operation, maintenance and troubleshooting of a multipoint system.

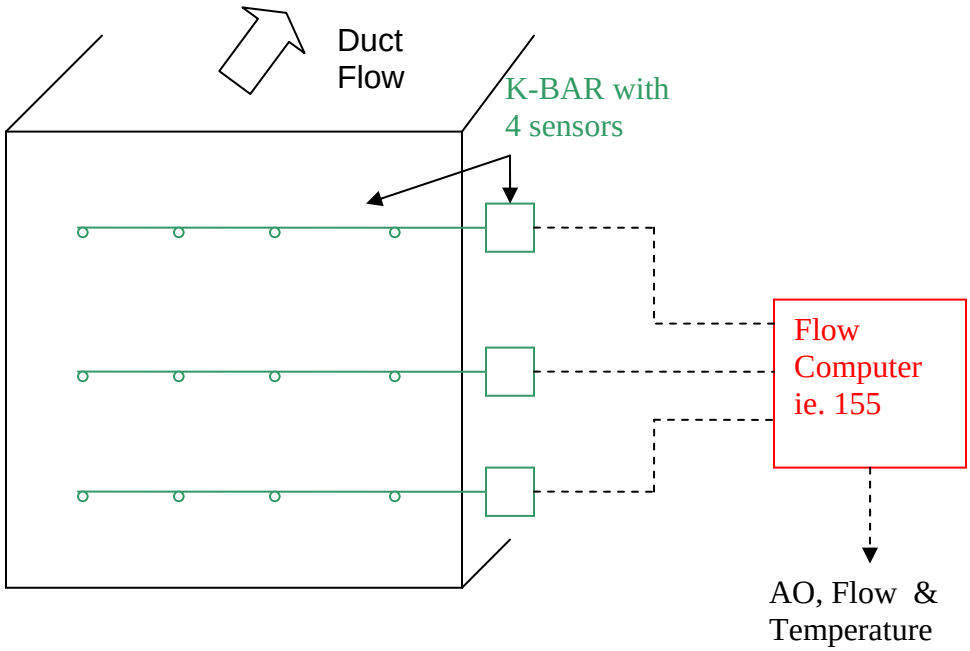

Figure A-1, 3x4 K-BAR sensor array with flow computer.

Issues needed for a successful multi-point flow measurements, design, installation, operation and support: Step 1, look over this manual.

Plan for a successful application

Pre-purchase

The initial system design will have a major impact on the success of the multipoint system. Kurz factory representatives and many of the local representatives have lots of advice on what works best and why.

The questions that need to be evaluated are:

- Gas properties, how stable is the gas composition, do we need to support more than one state?
- What are the expected velocities, minimum, maximum etc.?
- What are the accuracy expectations?
- Plan for field calibration if any?
- What are the process temperatures?
- How much dirt is present in the flow stream?
- What kind of vibration levels are present on the duct, near the electronics location, flow computer location?
- What is the duct size, ID, OD ?
- Is there clearance next to the mounting location for K-Bar insertion including its J-box or attached electronics?
- What kind duct wall re-enforcement may be needed?

Installation

Having an experienced installer on your team, will save a lot of time and aggravation thus minimizing the installation cost.

The following steps are typical of the installation sequence:

- Install any access scaffolding or new walk ways to support installation, field calibration etc.
- Weld mounting flanges to duct work and any hangers needed for the flow computer.
- Insert probes, mount flow computer.
- Review wiring diagram requirements to plan for proper wire type.
- Route conduit or braded shielded cable as needed between K-Bars and flow computer then from flow computer to process control system.
- Pull wiring, terminate per the Kurz wiring drawings

Mounting, wiring, configuration of sensor electronics, configuration of flow computer, Output setup (analog 4-20 mA, digital network). Conduit runs, shielding for wiring?

Operation

The averaged duct flow and temperature comes from the 155 flow computer. It handles the individual sensor kick outs in the event of a sensor or its electronics fails, averages the data, provides 24 VDC power etc.. Once the system is setup, most of your interfacing needs are done via the 155 flow computer.

EPA zero-span daily drift check can be done either at the K-bar electronics head with a contact closure (preferred method) or at the 155 flow computer. See the K-bar-2000B wiring diagram for contact location info.

Purge cleaning of the K-bar is also best controlled at the K-bar electronics head. Wiring for this is also found in the above wiring diagram. As this purge function holds the output during the cleaning cycle, you can generally leave the process in automatic. However, if the data change following a cleaning cycle is too much, it may jerk the control system too much so this must be investigated. More frequency cleaning cycles will help avoid this trouble.

Troubleshooting

There are four approaches to this.

- Use of this manual,
- Onsite support staff,
- Kurz field service,
- Factory service