COMPRESSED AIR FILTERS
SERIES HE, GP, AC, DP AND NONLUBE MODULE

FUNDAMENTALS OF AIR FILTRATION (Continued)

FILTER DESIGN (Cont'd)

Efficiency is usually measured in terms of removing a percentage of particles larger than a certain size, such as 99.99% 1-micron and larger. It is important to remember that cost and pressure drop usually increase with higher efficiency. Judgement must be exercised when specifying filter efficiency. For most industrial applications, an efficiency of 99 .99% removal of particles 1 micron and larger is quite satisfactory.

Depending on filter design, as more and more contaminants are trapped in the filter, the pressure drop can increase significantly. In interception and inertial impaction type of filters, element life is determined solely by pressure drop, because the solid particles cling to the fibers of the filter, and cannot be removed. With adsorption filters, element life is governed by saturation.

FILTRATION STANDARDS

General Industry - There are no generally accepted standards for industrial applications. Extent of filtration requirements is normally based on local experience with contaminant source, type and loading as well as requirements of critical downstream equipment.

Instrument Quality Air - This is defined by the Instrument Society of America as comprising of four elements:

1. **Dew Point, (at line pressure):**
   - **A. Outdoor installations** (where any part of the instrument air system is exposed to the outdoor atmosphere).

   The dew point at line pressure shall be at least 18°F below the minimum local recorded ambient temperature at the plant site.

   - **B. Indoor Installations** (Where the entire instrument air system is installed indoors).

   The dew point at line pressure shall be at least 18°F below the minimum temperature to which any part of the instrument air system is exposed at any season of the year. In no case should dew point at line pressure exceed 35°F.

2. **Particle Size.**
   The maximum particle size in the air stream at the instrument shall be three (3) micrometers.

3. **Oil Content**
   The maximum total oil or hydrocarbon content, exclusive of non-condensables, shall be as close to zero (0) w/w or v/v as possible; and under no circumstances shall it exceed one (1) ppm w/w or v/v under normal operating conditions.

4. **Contaminants**
   The instrument air shall be free of all corrosive contaminants and hazardous gases, flammable or toxic, which may be drawn into the instrument air stream. If contamination exists in the compressor intake area, the air should be taken from an elevation or remote location free from contamination or processed to remove such contamination. Any cross connections or process connections to the instrument air piping shall be isolated to preclude contamination of the air system. A regular periodic check should be made to assure high quality instrument air.