Round Industrial Duct Construction Standards

The program is designed to automate the Round Industrial Duct Construction Standards published by the Sheet Metal and Air Conditioning Contractors' National Association. It is designed for use by designers of industrial ventilation and air pollution control systems. It deals with the selection of duct gage and reinforcing systems for industrial duct. The program considers negative working pressure, temperature, diameter of the duct, number and distance between supports, type of particulate being conveyed, various internal and external loads, duct orientation (horizontal or vertical) and other factors affecting the design requirements of the duct.

Why it is innovative

The program is innovative because it is the first of its kind.

What it changed or replaced

The RIDCS eliminates hand calculations by automating the process of selecting duct for industrial ventilation and air pollution control systems.

Where and when it originated, has been used, and is expected to be used in the future

RIDCS was originated by the Sheet Metal and Air Conditioning Contractors National Association in 1996. It will be used by process design engineers, and industrial contractors who specify and construct industrial duct per the requirements of the Round Industrial Duct Construction Standards, 2nd edition.

Specifically identify its innovation

Using Visual Basic programming language it automates the many calculations necessary to define suitable construction details for industrial duct. The flexibility of the program and its database permit the user to select duct from a wide variety of metals, including various grades and alloys of carbon steel, stainless steel and aluminum. In the past this selection process was based on the use of tables of predesigned duct, but the selection was very limited because varying the design parameters can quickly create volumes of information far in excess of what can be conveniently published and sold at a reasonable price. The software has no such limitation, it generates specific details based on specific requirements.

Contact: Dennis Bradshaw • Sheet Metal and Air Conditioning Contractors' National Association
4201 Lafayette Center Dr. • Chantilly, Virginia 20151 • (703) 803-2980 • Fax 803-3732

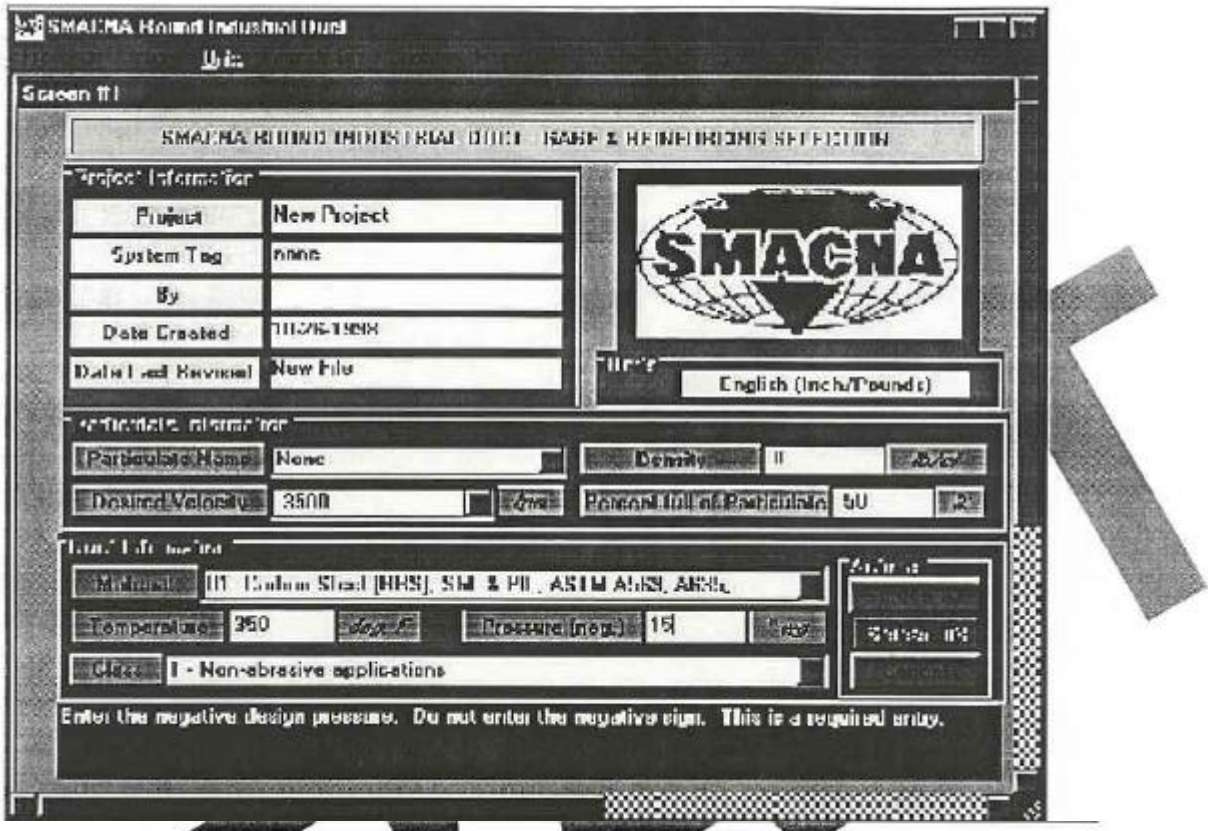

FIGURE 17-1 RIDCS SOFTWARE – SCREEN #1

17.2.6.1 Project Description

At the top of Screen #1 enter information identifying the project — the Project Description, a System Tag, and a user (or operator) identification field. The date created and date updated are automatically inserted by the program. The Project Description or the System Tag should uniquely identify the particular set of duct run designs (trials) to be run during this session.

17.2.6.2 Particulate Information

Choice of Particulate: In the middle of Screen #1 you must enter information pertaining to the particulate material. Clicking on the down arrow to the right of the top box will cause a list of particulates to be displayed. The particulate to be used is selected by clicking its name. Its default density will automatically be displayed in the box to the right of the list. If this value does not match data specific to the project, a new value may be entered and it will replace the default value for this Session only.

NOTE: If a permanent addition or modification to the database is intended, the new particulate or its characteristics must be added using the procedure described in section 17.4.2 of this Document).

Desired Velocity: Just below the particulate list is a box used to enter a design velocity. Using the tab key to move to that box will cause the default velocity, which appears there, to be automatically selected. Alternately, a different value may be selected from a drop-down list, or keyed-in and it will replace the default value for the current design Session only. This value of velocity will automatically appear in the Compute Diameters screen and will be used to compute duct sizes, unless changed locally by the operator. In the absence of known flow quantities, the desired velocity entered in Screen #1 is used to estimate a CFM value for each duct run displayed on Screen #3. The estimated flows displayed on Screen #3, are also printed in the fabrication report.

Percent Full: The last box in this section is used for entering the percent full of particulate assumed for the