

GAS CARBURIZING DESIGN TOOL

G-Carb is a standalone utility able to predict carbon content and case depth for a particular gas carburizing schedule. G-Carb also has the ability to design the final time needed to achieve a desired case depth. Due to the simplicity and accuracy of G-Carb, it is a wonderful addition to any heat treat shop or process designer's toolbox.

Benefits of G-Carb

Ease of Use

Modeling physical processes can be an intimidating endeavor; enter the wrong material properties and the results can lead the user astray. With G-Carb, there is no need to enter any material properties. Just enter the material's alloying chemistry and a few process parameters, and let G-Carb do all the work.

Quickly and Accurately Predict Case Depths

G-Carb allows the user to enter a known gas carburizing schedule into the provided default input file and quickly determine the carbon profile. Not only is the effective and total case depth known, but also the entire carbon gradient. The data can be easily plotted in any spreadsheet software to easily compare different schedules.

```

** Model Title:
Gas carburization process prediction and design
-----
** Title:
Gas carburization process prediction and design
** 1--Prediction 2--Process Design
1
** Unit flags (C/F--Sec/Min--mm/inch)<==>(1 or 2)
2, 1, 2
** Time increment size
0.1
** Base carbon in percentage
0.10
** Steel Grade
AISI 9310
** Alloy content in percentage
PSi  PNi  PCr  PMn  PMo  PV  PN  PAl
0.22, 3.00, 1.25, 0.50, 0.05, 0.00, 0.00, 0.00,
** Gas Type Factor
1.0
** Number of carburization steps
2
** Step, Step_Time, Temperature, Carb_Potential
1, 14400.00, 1700.00, 0.95,
2, 18926.00, 1650.00, 0.80,
** End of File
    
```

G-Carb Prediction Input File

```

** Gas Carburization Process Schedule
** STP-NO. STP-TIME STP-TEMP CARB_P
1, 14400.00, 1700.00, 0.95,
2, 18926.00, 1650.00, 0.80,
** Total Furnace Time:
33326.00
-----
** Predicted Carbon Profile & Hardness
** Assume 100% Martensite for Hardness Calculation
** Depth Carbon Percent HRC
0.0000, 0.8000, 61.10
0.0008, 0.7924, 61.02
0.0016, 0.7847, 60.95
0.0024, 0.7769, 60.87
0.0031, 0.7691, 60.79
    
```

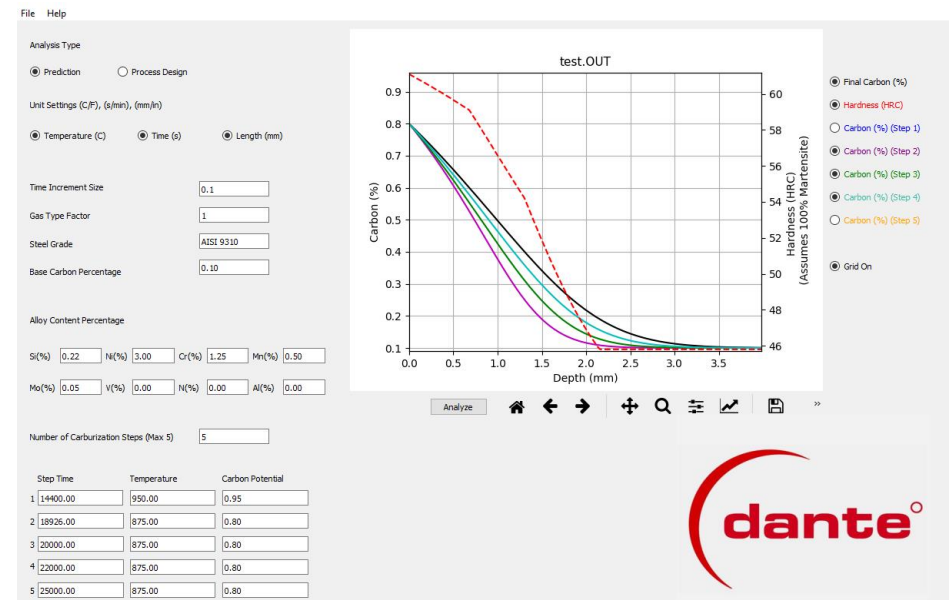
G-Carb Prediction Output File



DANTE Solutions, Inc.
7261 Engle Road, Suite 105
Cleveland, OH 44130
(440) 234-8477
sales@dante-solutions.com

Quickly and Accurately Design Furnace Time

G-Carb also has a predictive feature, allowing the user to determine the furnace time for the final carburizing step; e.g., 2 steps are used, with the user defining the first step time and carbon potential and the second step's carbon potential. G-Carb then calculates the time needed in the second step to acquire the desired case depth and carbon level at the ECD.



G-Carb User interface for prediction and Process Design