## **Generate Coil**

#### **Table of Contents**

Parameters	1
Code	
Discretization	
AWG Standard sizes	

s=generate\_coil(coil\_name,X,sigma,w,h,nhinc,nwinc,rh,rw)

Packages geometry, conductor information and discretization information into a struct the sctruct is compatible with the function fasthenry\_Creator

#### **Parameters**

- @param coil\_name Coil Identifier
- @param **X** Coil Geometry X(1,:) X points X(2,:) Y points X(3,:) Z points
- @param sigma Conductor Conductivity
- @param w Coil Width
- @param h Coil Height
- @param nhinc Conductor Discretization Height
- @param **nwinc** Conductor Discretization Width
- @param rh Discretization range
- @param rw Discretization range
- @retval s Struct Packaged Coil

### Code

# **Discretization**

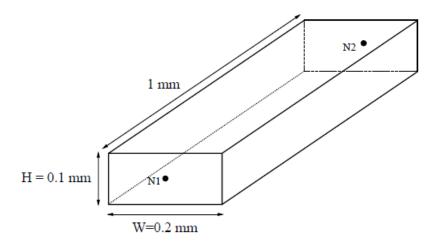


Figure 1: Example Segment for Sample Input File

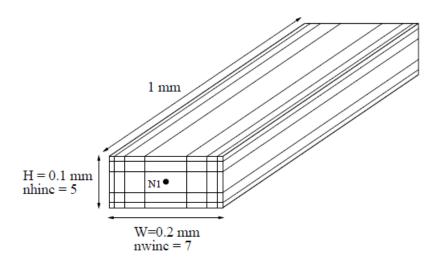


Figure 2: Segment discretized into 35 filaments

## **AWG Standard sizes**

%{ Conductor			Ampacity[A]								
AW	G Diam	[mm] A	rea[mm2]	mOhm/m		60	°C	75 °C	90 °C		
2	6.544	33.6	0.4066 0.5127 0.6465		115	130					

```
4 5.189 21.2 0.8152
                       70 85 95
  4.621 16.8 1.028
  4.115
        13.3 1.296
                       55 65 75
6
7
  3.665
        10.5 1.634
                       - - -
8 3.264 8.37 2.061
                       40 50 55
9
  2.906
        6.63 2.599
10 2.588 5.26 3.277
                       30 35 40
11 2.305 4.17 4.132
   2.053 3.31 5.211
                        20 25 30
12
   1.828
         2.62 6.571
13
14
   1.628 2.08 8.286
                       15 20 25
15
  1.450
         1.65 10.45
                        - 18 -
   1.291
         1.31 13.17
16
17
   1.150 1.04 16.61
18 1.024 0.823 20.95
                       10 14 16
19
   0.912
         0.653 26.42
20
   0.812
         0.518
               33.31
                        5 11 -
21
   0.723 0.410 42.00
22
   0.644 0.326 52.96
                        5 7 -
   0.573 0.258 66.79
23
   0.511 0.205 84.22
24
                         2.1 3.5
25 0.455 0.162 106.2
26 0.405
         0.129 133.9
                        1.3 2.2 -
27
   0.361
         0.102 168.9
28
   0.321 0.0810 212.9
                        0.83 1.4 -
29
   0.286 0.0642 268.5
                         - - -
30 0.255 0.0509
                338.6
                        0.52 0.86 -
31
   0.227
         0.0404
                426.9
32 0.202 0.0320 538.3
                        0.32 0.53 -
33 0.180
         0.0254 678.8
                         - - -
   0.160
         0.0201 856.0
                        0.18 0.3 -
34
35
   0.143 0.0160 1079
36 0.127 0.0127 1361
37
   0.113 0.0100 1716
   0.101 0.00797 2164
38
39
   0.0897 0.00632 2729
40 0.0799 0.00501 3441
```

Published with MATLAB® R2018b

응}