

ALLEGATO A
“Scour Volume”

```
% Input parameters in mm
% Calculated Scour volume in cm3
Xmin=0;
Xmax=1500;
Ymin=-100;
Ymax=100;
DeltaXY=5;
```

```
% Input file
X = xlsread ('C:\Users\utente\Desktop\corrected Final\Sand\S144h.xlsx',1,'A:A');
Y = xlsread ('C:\Users\utente\Desktop\corrected Final\Sand\S144h.xlsx',1,'B:B');
Z = xlsread ('C:\Users\utente\Desktop\corrected Final\Sand\S144h.xlsx',1,'C:C');
```

```
i=1;
j=1;
k=1;
l=1;
```

```
while i<(((Xmax-Xmin)/DeltaXY)+1)
```

```
    while j<(((Ymax-Ymin)/DeltaXY)+1)
        while k<numel (X)+1
            if X (k)<Xmin+i*DeltaXY && X (k)>Xmin+(i-1)*DeltaXY
                if Y (k)<Ymin+j*DeltaXY && Y (k)>Ymin+(j-1)*DeltaXY
                    h (l)=Z (k);
                    l=l+1;
                end
            end
            k=k+1;
        end
        if l==1
            h=0;
        end
```

```
        Zmean (i,j)=mean (h);
        Xmean (i,j)=Xmin+(i-1/2)*DeltaXY;
        Ymean (i,j)=Ymin+(j-1/2)*DeltaXY;
```

```
        if mean (h)>0
            H (i,j)=0;
        else
            H (i,j)=mean (h);
        end
        clear h
        l=1;
        j=j+1;
```

```
    k=1;
end
    i=i+1;
    j=1;
end
```

```
Vmatrix=DeltaXY^2*H;
Vcm3=-sum(sum (Vmatrix))/1000 % # ok<NOPTS>

rectangle ('position',[1500,-100,20,200],'FaceColor','black')
axis ([0 3000 -100 100])
box on
hold on
[AA,BB]=contour (Xmean,Ymean,Zmean,[50,40,30,20,10,0,-10,-20,-30,-40,-50,-60,-70,-80,-90,-100,-110,-120,-130,-140,-150,-160,-170,-180,-200,-210,-220],'Color','black');
clabel (AA,BB,'manual','FontSize',8,'Color','black','Rotation',0)
xlabel ('X (mm)')
ylabel ('Y (mm)')
```