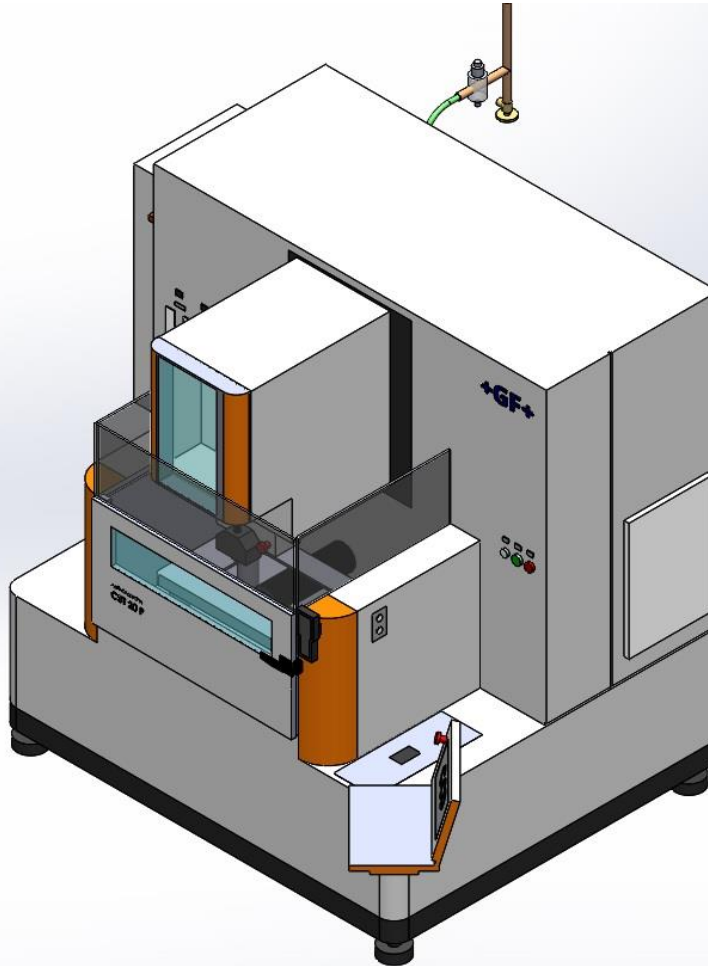


principium

```
G20;  
H000 = 0;  
H001 = 0.00872;  
H002 = 0.00642;  
H003 = 0.00527;  
H004 = 0.00508;  
( ) (VBLOCK 4PASS);  
G90 G92 X0 Y0;  
M60;  
(ROUGH PRIMARY CUT VBLOCK 4PASS);  
G90 G92 X0 Y0;  
C096;  
G01 X-.1 Y0;  
C001;  
G42 H000;  
G01 X-.25 Y0;  
G42 H001;  
G01 X-.25 Y.15;  
G01 X-.385 Y.15;  
G03 X-.4 Y.135 I0 J-.015;  
G01 X-.4 Y.1;  
G01 X-.5 Y.1;  
G01 X-.5 Y.135;  
G03 X-.515 Y.15 I-.015 J0;
```



```
(SKIM PRIMARY CUT [ 1] VBLOCK 4PASS);  
G90 G92 X-.23 Y-.2;  
C002;  
G41 H000;  
G01 X-.25 Y-.2;  
G41 H002;  
G01 X-.25 Y-.35;  
G01 X-.385 Y-.35;  
G02 X-.4 Y-.335 I0 J.015;  
G01 X-.4 Y-.3;  
G01 X-.5 Y-.3;  
G01 X-.5 Y-.335;  
G02 X-.515 Y-.35 I-.015 J0;  
G01 X-.75 Y-.35;
```

Wire EDM
Module 1.2
CNC Wire EDM Programming

CNC Wire EDM Programming

Items in this presentation can be referenced in the
AgieCharmilles ISO codes manual

All sections

Wire EDM

Module 1.2

CNC wire EDM programming

Here are some basic addresses which will be discussed in further detail as we move forward

Address	Meaning	Address	Meaning
N	Sequence No.	A	Conical Angle
G	Preparation Function	M	Auxiliary Functions
X, Y, Z, U, V	Axes	C	Designing machine conditions
I, J	Determining the center of an arc	R	Striking angle R function
D, H	Offset Designation	L	Number of time of a sub-program call
P	Sub-program call		

Wire EDM

Module 1.2

CNC wire EDM programming

Here are some basic addresses which you are already familiar with from conventional CNC that transfers over to CNC Wire EDM

CODE	DESCRIPTION	PAGE
G00	Rapid positioning and movement	11
G01	Linear interpolation	12
G02, G03	Circular interpolation	13

Wire EDM

Module 1.2

CNC wire EDM programming

Here are some basic addresses which you are already familiar with from conventional CNC that transfers over to CNC Wire EDM

CODE	DESCRIPTION	PAGE
G40	Offset cancellation	16
G41	Offset left	16
G42	Offset right	16

Wire EDM

Module 1.2

CNC wire EDM programming

Here are some basic addresses which you are already familiar with from conventional CNC that transfers over to CNC Wire EDM

CODE	DESCRIPTION	PAGE
G90	Absolute movement and location	22
G91	Incremental movement and location	22

Wire EDM

Module 1.2

CNC wire EDM programming

Here are some basic addresses which you are already familiar with from conventional CNC that transfers over to CNC Wire EDM

CODE	DESCRIPTION	PAGE
G20	Inch mode	
G21	Metric mode	

Wire EDM

Module 1.2

CNC wire EDM programming

Here are some basic addresses which you are already familiar with from conventional CNC that transfers over to CNC Wire EDM

CODE	DESCRIPTION	PAGE
M00	Program stop	30
M01	Optional program stop	30
M02	Program end	30

Wire EDM

Module 1.2

CNC wire EDM programming

Here are some basic addresses which you may have not seen or used in a conventional CNC program before

CODE	DESCRIPTION	PAGE
G92	Setting coordinate value as current point	23
G11	Skip block on	16
G12	Skip block off	16

Wire EDM

Module 1.2

CNC wire EDM programming

Here are some basic addresses which you may have not seen or used in a conventional CNC program before

CODE	DESCRIPTION	PAGE
M60	Wire threading	31
M50	Wire cut	31

Wire EDM

Module 1.2

CNC wire EDM programming

Here are some basic addresses which you may have not seen or used in a conventional CNC program before

CODE	DESCRIPTION	PAGE
M34	Fill work tank	
M35	Drain work tank	

Wire EDM

Module 1.2

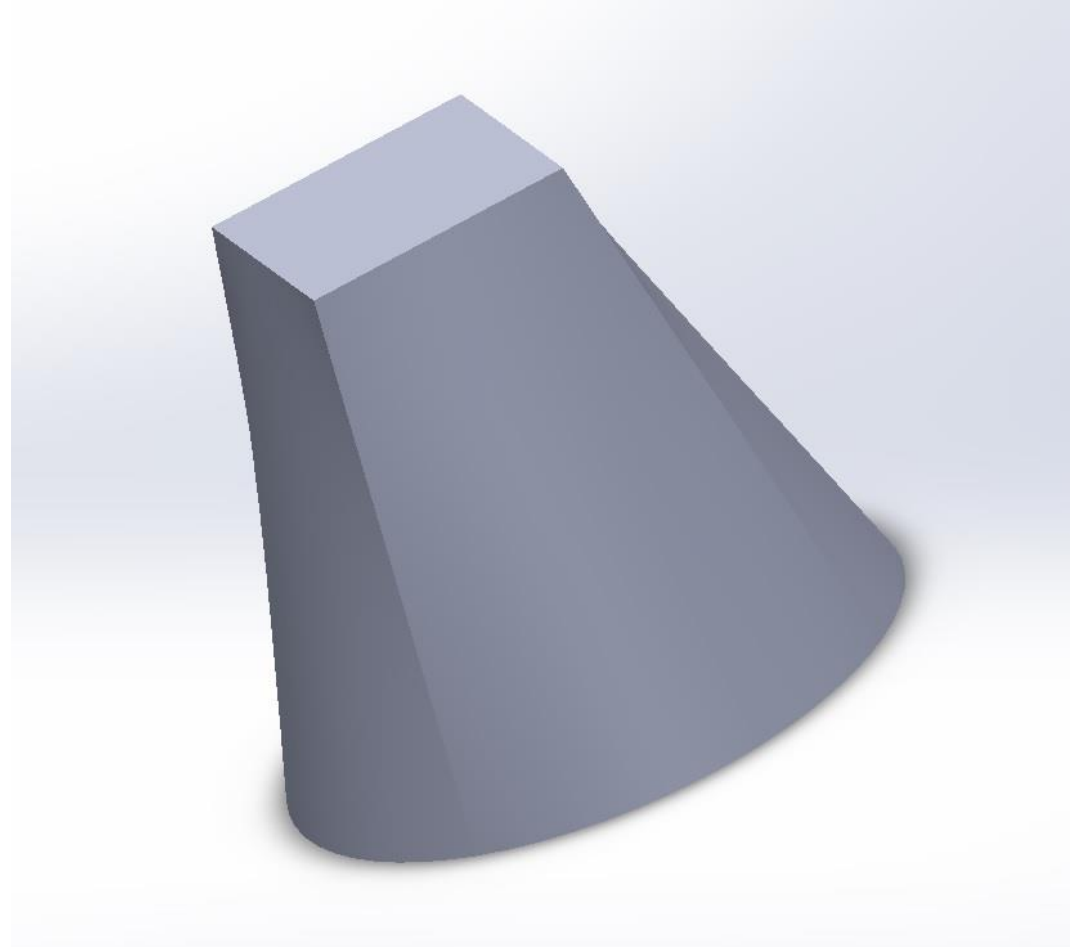
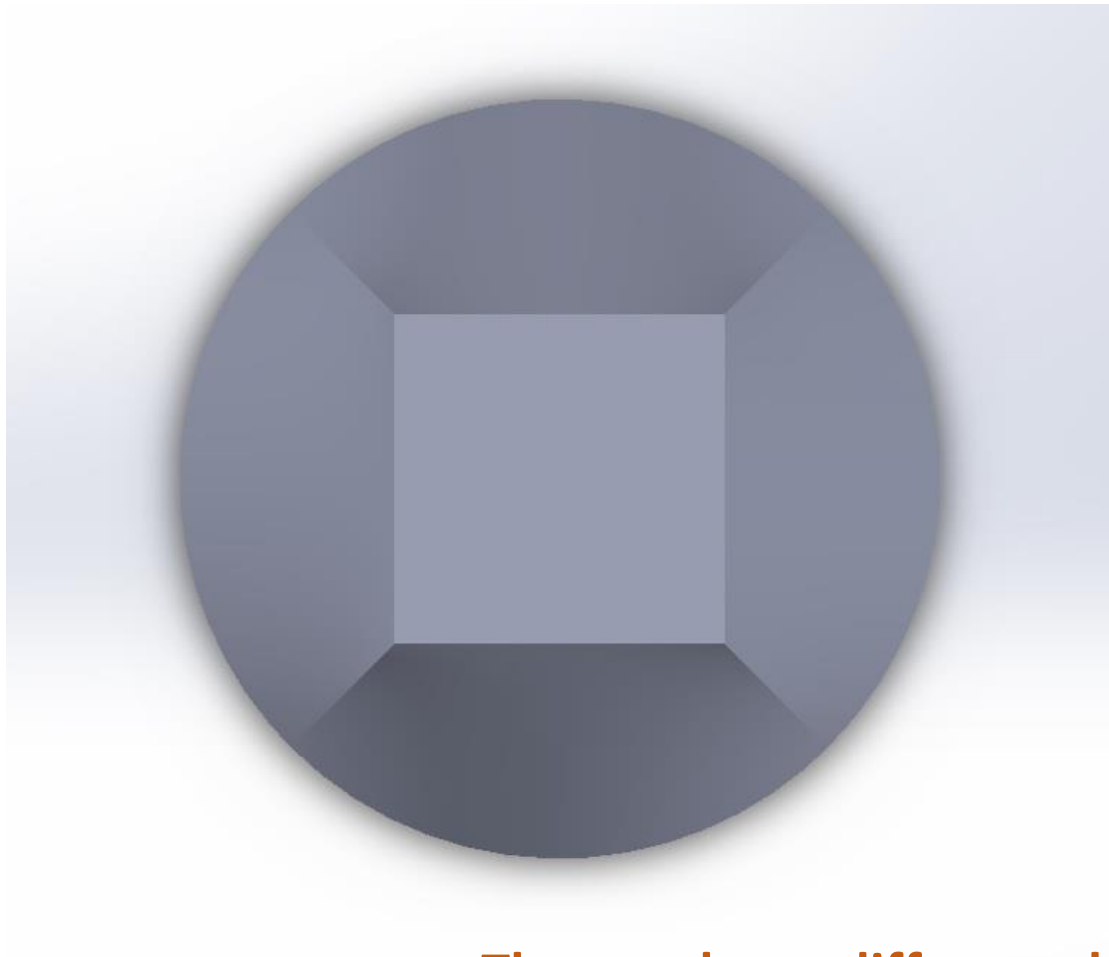
CNC wire EDM programming

Here are some basic addresses which you may have not seen or used in a conventional CNC program before

CODE	DESCRIPTION	PAGE
G60	Upper and lower heteromorphism control off	21
G61	Upper and lower heteromorphism allowed	21

Wire EDM
Module 1.2
CNC wire EDM programming

An example of a part cut using the heteromorphism function



The part has a different shape on the top and the bottom

Wire EDM

Module 1.2

CNC wire EDM programming

Here are some basic addresses which you may have not seen or used in a conventional CNC program before

CODE	DESCRIPTION	PAGE
G74	Four axis move simultaneously on	22
G75	Four axis move simultaneously off	22

Similar result as the hetromorphism function; but the code is written differently

Wire EDM

Module 1.2

CNC wire EDM programming

Here are some basic addresses which you may have not seen or used in a conventional CNC program before

CODE	DESCRIPTION	PAGE
G50	Taper cut off	21
G51	Taper cut left	21
G52	Taper cut right	21

Wire EDM

Module 1.2

CNC wire EDM programming

Here are some basic addresses which you may have not seen or used in a conventional CNC program before

CODE	DESCRIPTION	PAGE
	Mirror X, Y exchange, mirror image and exchange cancellation	
G05	X mirror image	14
G06	Y mirror image	14
G07	Z mirror image	14
G08	X - Y mirror image	14
G09	Cancel mirror image and X -Y exchange	14

Wire EDM

Module 1.2

CNC wire EDM programming

Here are some basic addresses which you may have not seen or used in a conventional CNC program before

CODE	DESCRIPTION	PAGE
C code	Cut	31

This is an important code as it relates to the **CUT CONDITION** in the TEC file.
This calls out the generator functions required for making the erosion process.

Wire EDM

Module 1.2

CNC wire EDM programming

Here are some basic addresses which you may have not seen or used in a conventional CNC program before

CODE	DESCRIPTION	PAGE
H code	Offset	34

This is an important code as it relates to the **OFFSET CONDITION** in the TEC file.

The CNC Wire EDM makes multiple cuts to achieve surface finish results. The **OFFSET CONDITION** along with the **CUT CONDITION** have a great affect on this.

Examine some CNC code from a wire EDM program



```
G20;  
H000 = 0;  
H001 = 0.00872;  
H002 = 0.00642;  
H003 = 0.00527;  
H004 = 0.00508;  
( ) (VBLOCK 4PASS);  
G90 G92 X0 Y0;  
M60;  
(ROUGH PRIMARY CUT  
VBLOCK 4PASS);
```

→ (ROUGH PRIMARY CUT
VBLOCK 4PASS);
G90 G92 X0 Y0;
C096;
G01 X-.1 Y0;
C001;
G42 H000;
G01 X-.25 Y0;
G42 H001;
G01 X-.25 Y.15;
G01 X-.385 Y.15;
G03 X-.4 Y.135 I0 J-.015;
G01 X-.4 Y.1;
G01 X-.5 Y.1;
G01 X-.5 Y.135;
G03 X-.515 Y.15 I-.015 J0;

→ G03 X-.515 Y.15 I-.015 J0;
G01 X-.75 Y.15;
G01 X-.75 Y.1;
G01 X-.57 Y-.08;
G01 X-.53 Y-.08;
G01 X-.53 Y-.12;
G01 X-.57 Y-.12;
G01 X-.75 Y-.3;
G01 X-.75 Y-.35;
G01 X-.515 Y-.35;
G03 X-.5 Y-.335 I0 J.015;

→ G03 X-.5 Y-.335 I0 J.015;
G01 X-.5 Y-.3;
G01 X-.4 Y-.3;
G01 X-.4 Y-.335;
G03 X-.385 Y-.35 I.015 J0;
G01 X-.25 Y-.35;
G01 X-.25 Y-.2;
C097;
G40 H000 G50 A0 G01 X-.23 Y-.2;

(SKIM PRIMARY CUT [1] VBLOCK
4PASS);

These movement commands are defined by the ISO program in the controller

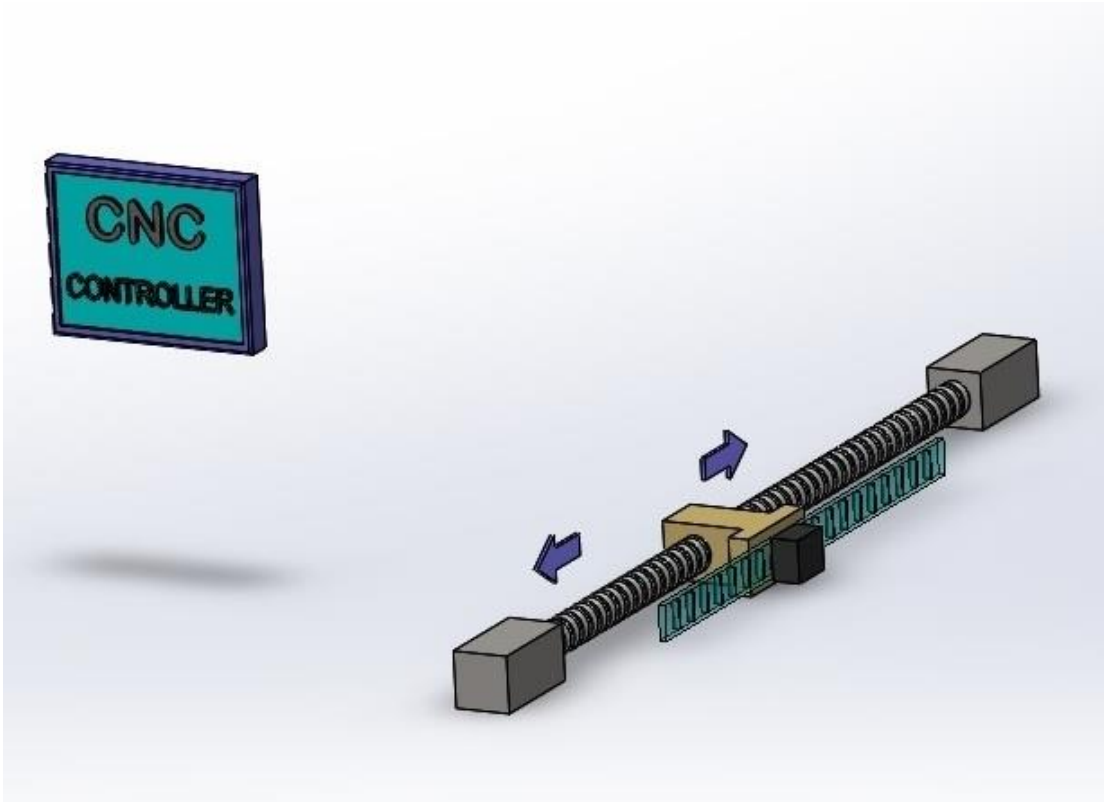


FIGURE 1

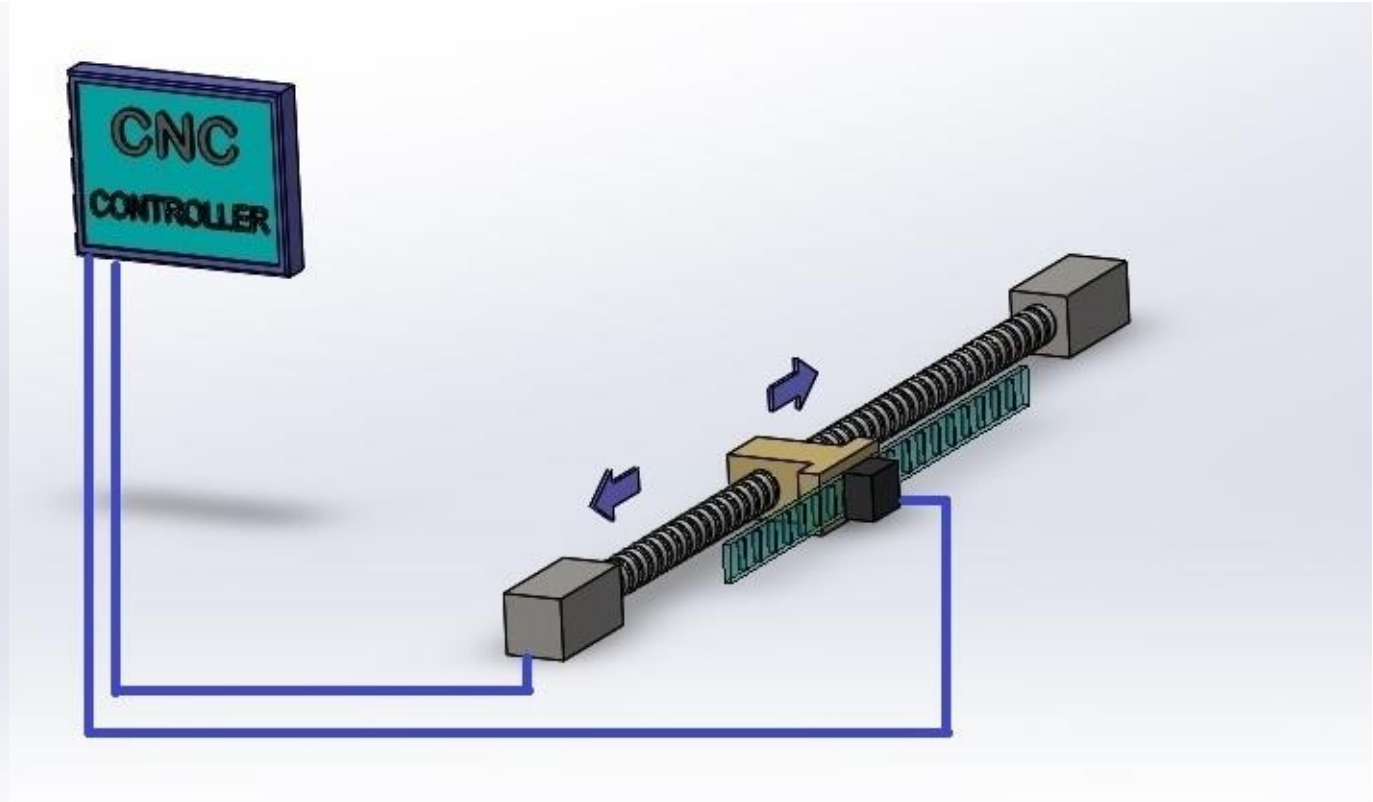
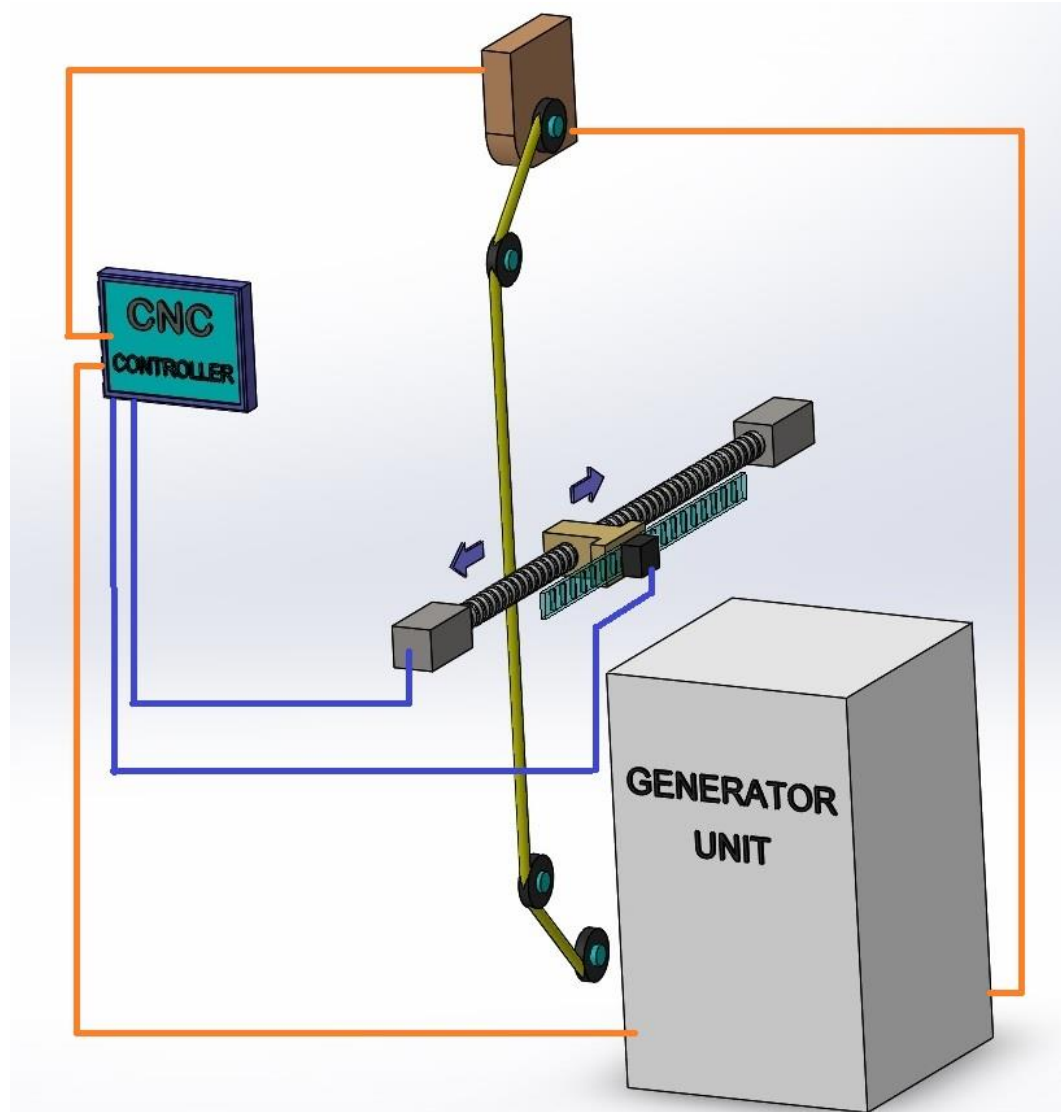


FIGURE 2



Wire EDM
Module 1.2
CNC wire EDM programming

The machine detects information about the erosion process and sends this information back to the CNC controller.



All of this information from both programs and from the movement and generator functions is constantly analyzed. The machine is in constant correction and compensation mode in both functions.

FIGURE 3

FINIS

