

CONSIDERATIONS ABOUT MATERIAL REMAKING BIOCOMPATIBLE WITH ABRASIVE WATERJET

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ABSTRACT:

In work is tackled the area of the material used-up biocompatible Of the in medicine with of a help fittings of remaking with abrasive water jet. First in part work it is presented principally property of the used materials for remaking. Then is presented the installation on which they achieved the remaking.

KEYWORDS: biocompatible material, abrasive water jet, working installation, experimental restates

1. INTRODUCTION

Were made the work as necessitate of replacement of the conventional technologies of remake material used biocompatible of the in medicine for the recurrence surfaces with complex forms and of a very good productivities these remaking. In figure 1 is presented one of the used proofs for remaking.



Fig. 1. Prove submissive the process of remaking

The submissive material the process of remaking is the inexorable steel resists to corrosion in atmosphere and afloat, as well as in the acid majority, of alkaline solutions and average loaded with chlorines.

2. WORKING INSTALATION

The experimentations were made with a cut-off installation with abrasive water jet with abrading model Idro 1740 presented in the figure 2.

The elements components of the used-up installation for remaking are:

- Part of the treatment and filter the water.
- Pump of high pressure of the water (4000 bar).
- Net of casting of the water below pressure.

Central made to order unit and check.



Fig. 2. Working instalation

The proper equipment of remaking his spatial plan foresee with:

- Systems of guide and drive head of remaking with spurt.
- Systems of fix piece and perform.
- Safe seat equipments and check.
- Feeder abrading system.
- Accumulator tank of the water with material the result abaft remaking.

The constructive features of the installation of remaking it are presented in the table 1.

3. THE RESULTS OBTAINED THROUGH THE REMAKING MATERIELOR BIOCOMPATIBLE

next sectional prove cute. Figure 3 presents one of the cuts made in material submissive in remaking.

In abaft remaking through cutting with abrastric water jet in suspension output in

Table 1 Characteristics of the installation

Nr.crt.	Parameter	UM	Value
1.	Power	KW	45
2.	Pres. max. of water	Bar	4137
3.	Maximum debit	L/min	5
4.	Water used	L/min	0 - 5
5.	Maximum diameter of water nozzle	mm	0.4
6.	Speed working	mm/min	0 -40000
7.	Dynamical precision	mm	+/- 0.1
8.	Movement from x,y,z ax	mm	4000 1700 250

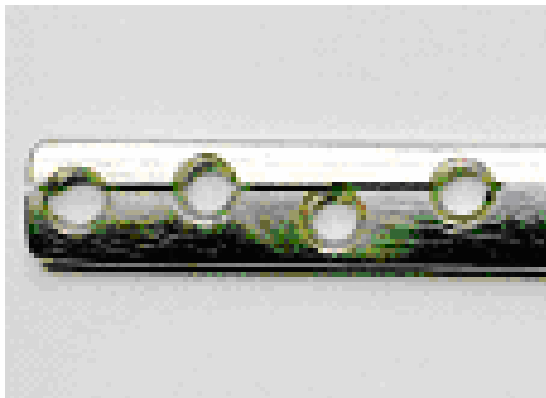


Fig. 3. Cuting made

In figure 4 are presented the surfaces obtained for three regimes of remaking. Most quick, one the average the respective it is most short.

In the figure 5 is presented the result obtained putting one two heteronymous surfaces on vertical by comparison.



Fig. 4. Surface obtained

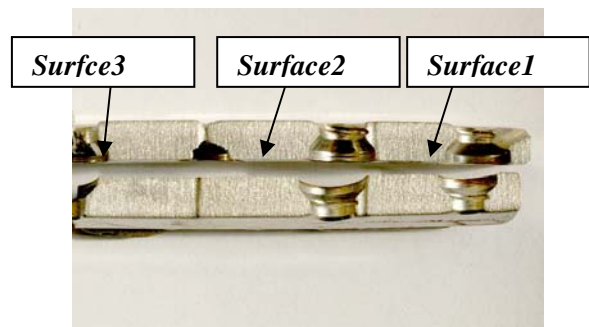


Fig. 5. Conjugated surfaces results

In figure 6 is presented the apparatus wherewith he caused the rugosity surface obtained through cutting with backwash with abrading.

In the table 2 is presented the moderate values ale rugosity on the surfaces prelucrate accordingly celor three regimes of remaking.



Fig. 6. Portable electronical aparat for rugosity

Table 2. Moderate values of the rugosity of the working surfaces

Nr. crt	Measure units	Surface 1	Surface 2	Surface 3
1	µm	12,21	10,43	8,51

Table 3. Mechanical propriety of material for working

Steel type			Mechanical resistance for braking (N/mm ²) (Transversal)		Mechanical resistance at the traction Rm (N/mm ²)
Type	EN	ASTM	0,2% Rp _{0,2}	1% Rp _{1,0}	
X6CrNiTi18-10	1.4541	321	220	250	520-720
X8CrTi18-10	1.4878	348	190	230	500-720

4. CONCLUSION

In work is analyzed the possibility material remaking biocompatible and the principals features of the surfaces results.

REFERENCES

[1] *** - Catalog of the Idro model instalation

AUTHORS

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