

Università degli Studi di Padova – Dipartimento di Ingegneria Industriale

Corso di Laurea in Ingegneria Meccanica

Relazione per la prova finale
**«STUDIO DEL PROCESSO PRODUTTIVO DI
COMPONENTI PER LA TAPPATURA A VITE »**

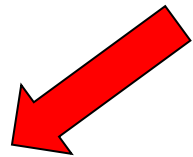
Tutor universitario: *Prof. Andrea Ghiotti*

Laureando: *Gianmaria Vittorio Battaglia*

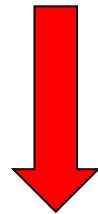
Padova, 16 Marzo 2023

bertolaso

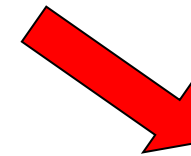
Fondata nel 1880, progetta sistemi automatici per l'imbottigliamento di vino e bevande.
Specializzata nella produzione di:



SCIACQUATRICI



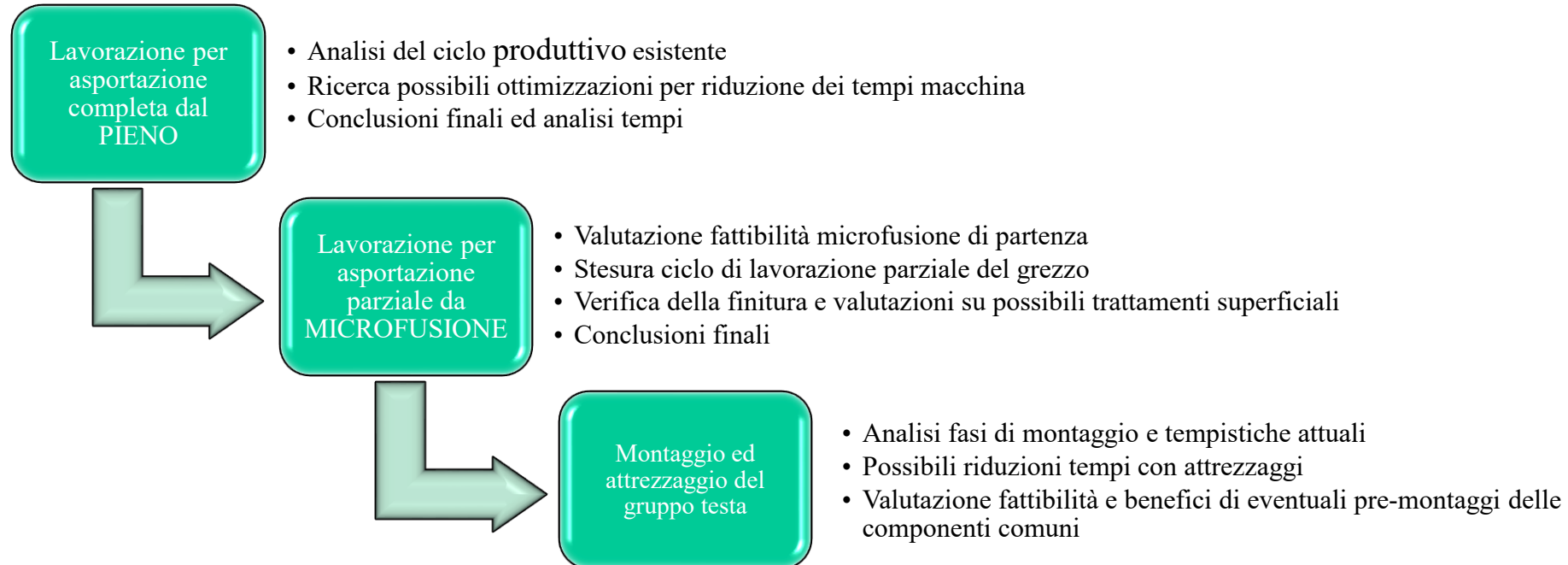
RIEMPITRICI



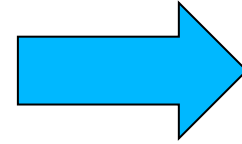
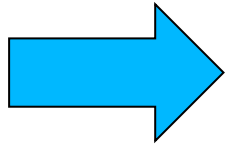
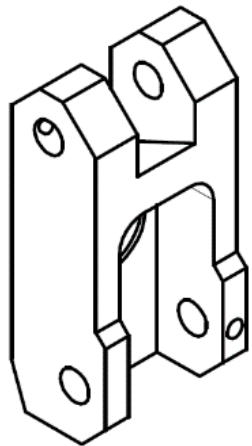
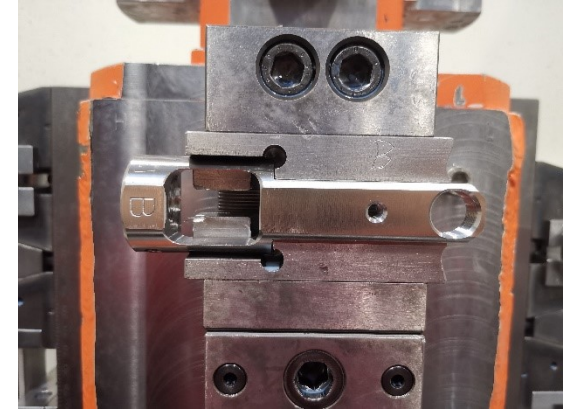
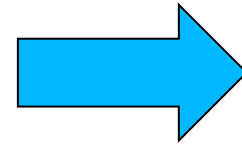
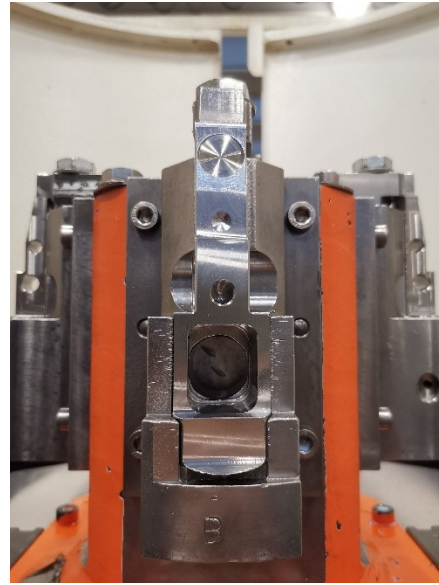
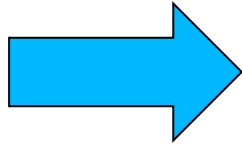
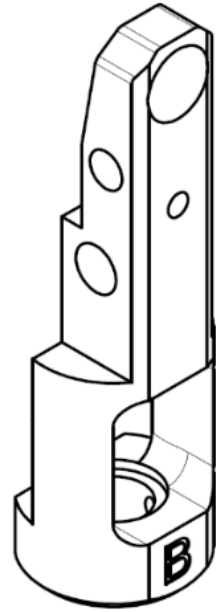
TAPPATORI

L'OBIETTIVO DEL LAVORO E' STATO CERCARE UN'OTTIMIZZAZIONE O UN METODO ALTERNATIVO PER LA REALIZZAZIONE DELLE LEVE DI TAPPATURA A VITE PER IMPIANTI AUTOMATICI.

METODOLOGIA DI ANALISI



COME ULTIMO PASSAGGIO SI È CERCATA UNA OTTIMIZZAZIONE DELLA FASE DI MONTAGGIO DEL GRUPPO TESTA.





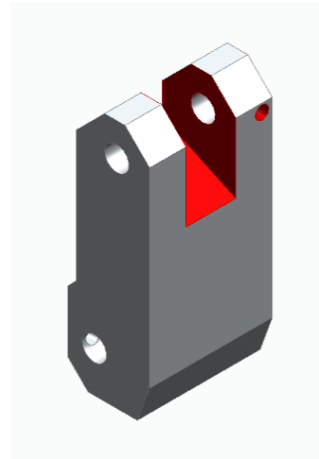
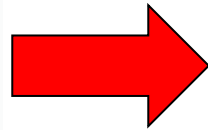
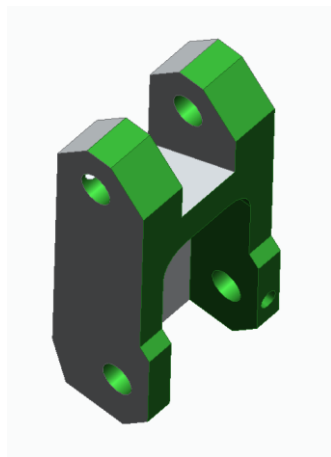
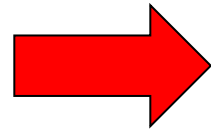
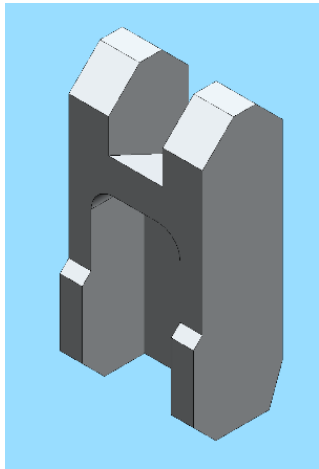
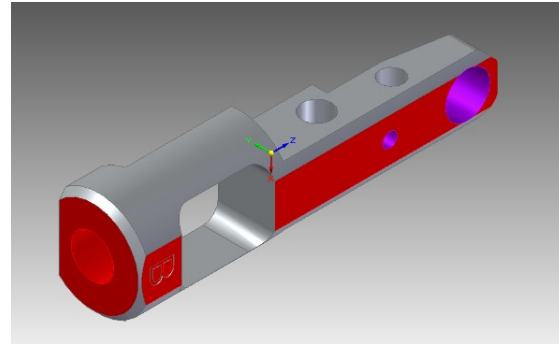
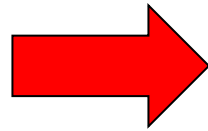
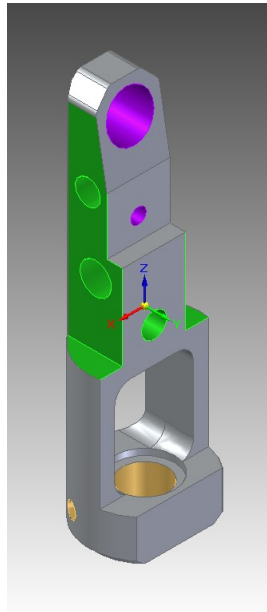
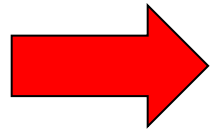
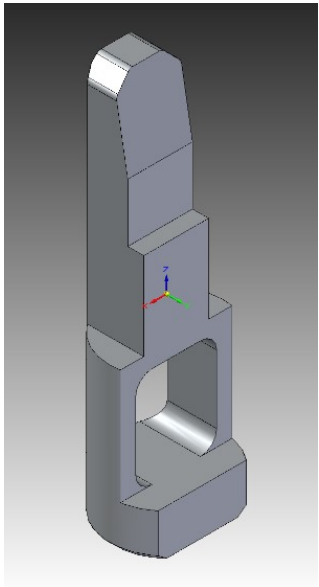
	LEVA 1	LEVA 2
STEP	PROG 114	PROG 110
1	T53	T53
2	T137	T78
3	T133	T4
4	T89	T78
5	T124	T128
6	T134	T90
7	T10	T99
8	T144	T131
9	T58	T18
10	T135	T19
11	T136	T20
12	T39	T20
13	T142	T132
14	T145	T19
15		T23
16		T103

Tempo Operazione (Leva numero 1) = **29'**

Tempo Operazione (Leva numero 8) = **21'**

Costo Macchina = β €/h

$$COSTO LAVORAZIONE \cong \frac{[(29 + 21) \cdot \beta]}{60}$$



-Cicli di Lavorazione-												
CICLO	TIPO_CICLO	NUMERO_CICLO	FASE	TECNOLOGIA	DESC_TECNOLOGIA	CDL	DESC_CDL	TIPO_CENTRO	UM_ATTR	TMP_ATTR	UM_MANODOPERA	TMP_MAN
DPA0052003	P	1	20	4936	FRESARE FORARE	0W4	MAZAK NEXUS 6800	INTERNO	MIN	0 MIN		8,5

-Cicli di Lavorazione-												
CICLO	TIPO_CICLO	NUMERO_CICLO	FASE	TECNOLOGIA	DESC_TECNOLOGIA	CDL	DESC_CDL	TIPO_CENTRO	UM_ATTR	TMP_ATTR	UM_MANODOPERA	TMP_MAN
DPA0052012	P	1	20	4936	FRESARE FORARE	0W4	MAZAK NEXUS 6800	INTERNO	MIN	0 MIN		6,5

Tempo teorico (Leva numero 1) = **8,5'**

Tempo teorico (Leva numero 8) = **6,5'**

Costo Macchina = **β €/h**

$$COSTO LAVORAZIONE \cong \frac{[(8,5 + 6,5) \cdot \beta]}{60}$$

DPA0052007	
DPA0052003	
UTENSILE UTILIZZATO	
FRESA $\varnothing 32$	TOLLERANZA 20 (-0,1;-0,15)
PUNTA $\varnothing 15$	PREFORO M16X1
PUNTA $\varnothing 14,5$	PREFORO M16X1,5
PUNTA $\varnothing 10$ H7	
PUNTA PIANA $\varnothing 8$	
PUNTA $\varnothing 8$ H7	
PUNTA $\varnothing 5$	PREFORO M6
SVASATORE	SMUSSO PER FILETTI
MASCHIO M6	
MASCHIO M16X1	
MASCHIO M16X1,5	

DPA0052012	
FRESA $\varnothing 10$	
PUNTA $\varnothing 3,3$	
PUNTA $\varnothing 6$ G7	
SVASATORE	SMUSSO PER FILETTI
MASCHIO M4	

BURATTATURA A SECCO A DUE FASI:

- Prima fase: burattatura in prismi ceramici
- Seconda fase: burattatura tramite mais



DOPO MICROFUSIONE E LUCIDATURA ELETTROLITICA



DOPO PRIMA FASE CON PRISMI CERAMICI



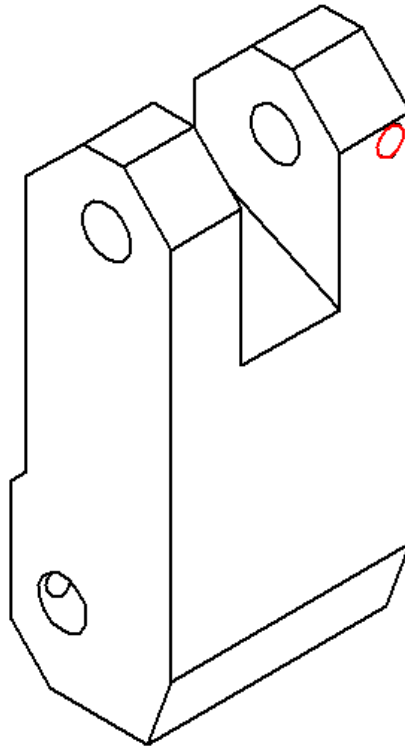
DOPO SECONDA FASE:

Finitura a specchio gradevole alla vista e utile a mantenere pulita la superficie durante l' utilizzo quotidiano.

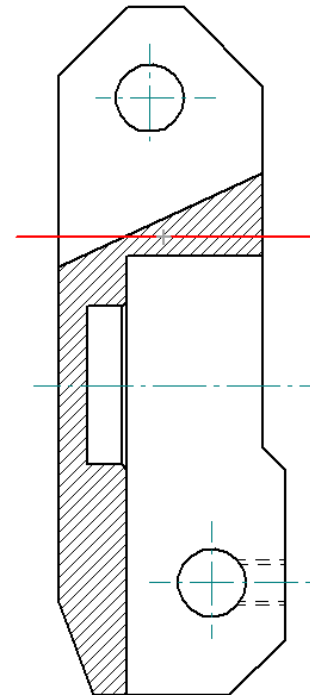


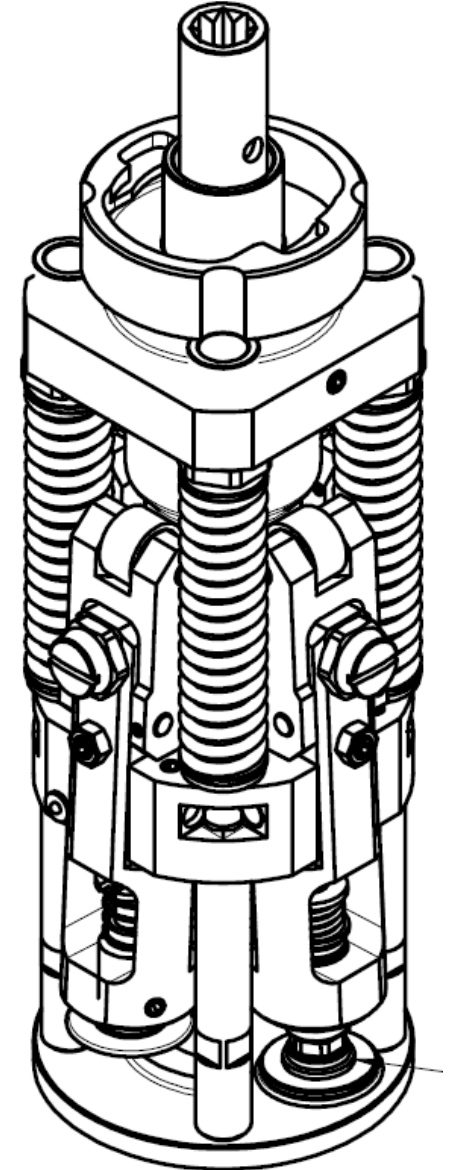
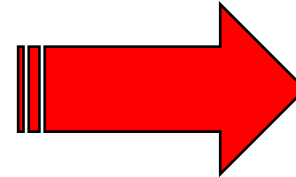
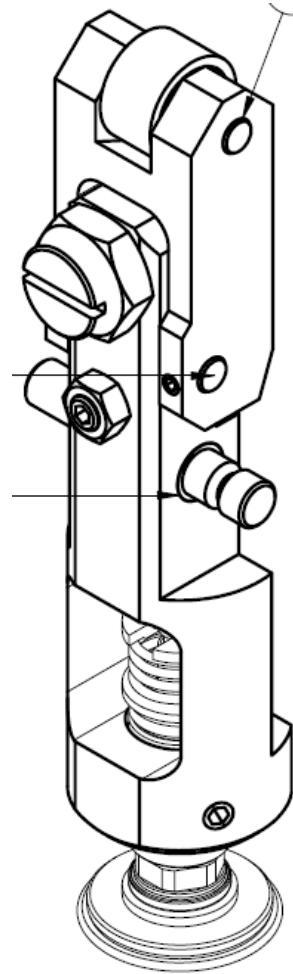
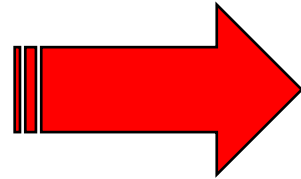
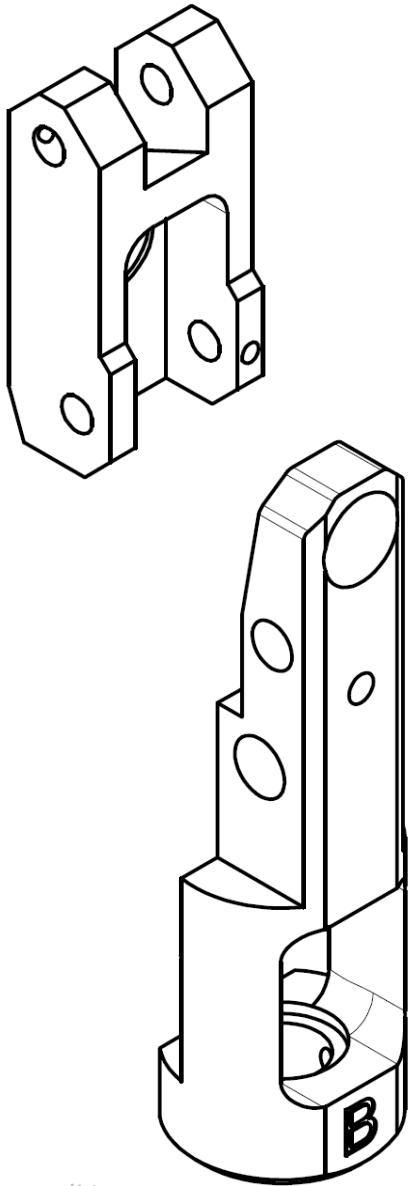


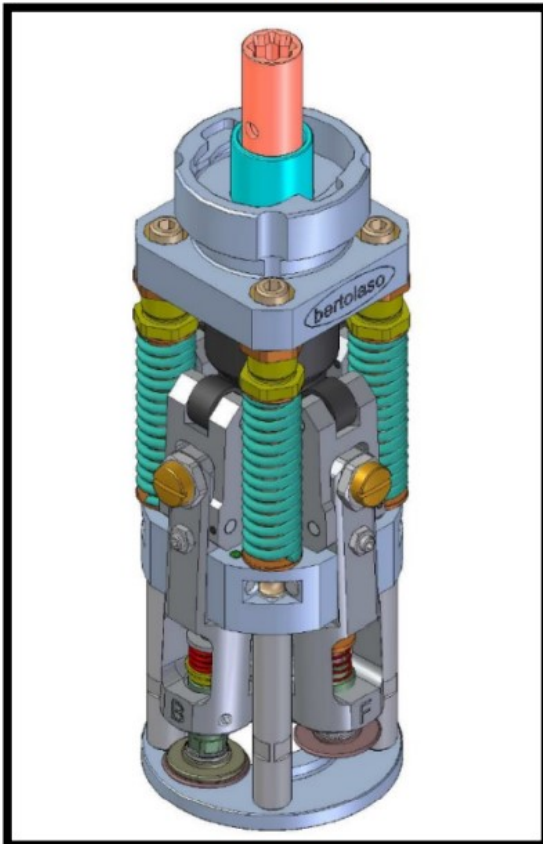
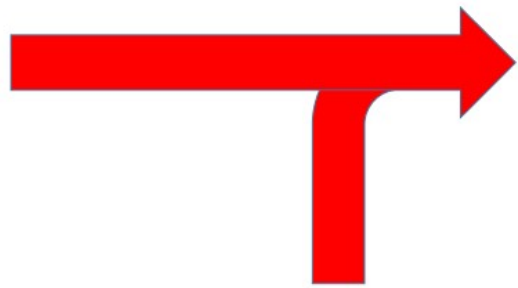
MODIFICA 1:



MODIFICA 2:







CONCLUSIONI FINALI:

1. Notevole riduzione dei tempi macchina per le lavorazioni tramite microfusione.
2. Pre-montaggi efficaci almeno per le componenti comuni quali: leve B&F, corpo testa, mozzo.
3. Generazione testa ibrida TF100→TF08/4.