

## CHANGE ORDER 2

Form: 4-Pr-007-4-Fo-0007

Version: 2

Page 1/3

4-Pr-007-4-Fo-0007/2

Record No. (get from DMS): 4-Pr-007-4-Fo-0007-4-RC-0193

Title: Cancel checking adhesive inside cone of ferrule at ferrule assembly process

Proposed by: ChiNNL

Date: 28 Dec 2023

PIC: ChiNNL (Code: 10864)

## A - CHANGE INFORMATION:

## A.1 Change category:

- ☐ Man
 ☐ Material
 ☒ Method/Document
 ☐ Machine, Tool/Jig  
☐ Process
 ☐ Supplier
 ☐ Factory/Section
 ☐ Others: .....  
 Significant or not? ☐ NO ☐ YES (select below options)

- ☐ Impact criteria/ specification/method that required by Customer or relating Standard(s)  
☐ Impact criteria/ specification or method that agreed with Customer  
☐ Cause risk of quality or operating that impact final customer (user) directly

## A.2 Change description:

Basic process of FA



Currently, Amount of adhesive inside ferrule's cone hole is checked at 3 processes for FA line products

Propose to cancel checking adhesive at ferrule assembly process as table below

Process	Method	View point at process	Checking items	Current	Propose
Ferrule adhesive sucking (A)	Under microscope		Amount of adhesive inside cone hole, Adhesive over flow to body	100%	100%
Ferrule assembly (After curing) (B)	By visual		Amount of adhesive inside cone hole, adhesive is cured, Stycat adhesive not touch fiber	100%	Cancel
App 3 (C.)	Under CCD camera		Amount of adhesive inside cone hole, Adhesive over flow to body, Adhesive is cured, Stycat adhesive not touch fiber	100%	100%

## A.3 Application scope:

Apply for all FA products

## A.4 Change reason:

1. Improve productivity for FA products, reduce duplicated inspection items

Cost saving by reducing duplicate can cover Fi-cost increase when defect flow out to next process. Estimate cost saving: 189\$/month

## a. Improve of productivity

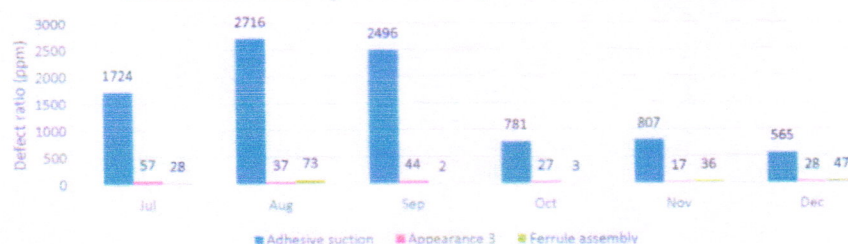
We estimate cycle time at ferrule assembly process can be reduced 5s/ batch 12pcs

Estimate cycle time improved / 1pc (6)	5/12=0.42(s)
PC rate (in Dec 2023) (7)	2.71
Plan/ month (pcs) (4)	600,000
Cost saving/product (8)= (6)*(7)/3600	\$ 0.000316
Cost saving/ month (9)=(8)*(4)	\$ 189.70

## b. Fi-cost:

Trend of defect adhesive over flow/ not enough adhesive inside ferrule cone hole detected at adhesive suction is reduce. Therefore, ability defect flow out from Adhesive suction is also reduced.

Defect ratio base on process found (from Jul-2023 to Dec-2023)



Note: Defect have trend reduce from Sep 23 -&gt; Dec 23, some action was applied:

- + Prepare the jig used to fix ferrule during injection (some jig stucked a little adhesive so affect to ferrule not fix well to jig)
- + Standardize coordinates of needle on semi auto suction machine for each kind of ferrule



## CHANGE ORDER

Form: 4-Pr-007-4-Fo-0007

Version: 2

Page 2/3

Estimate Fi-cost increase after cancel check adhesive at ferrule (defect flow out to Appearance 3)

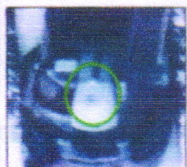

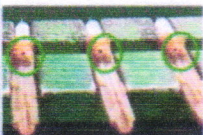
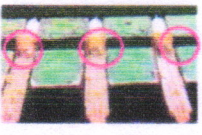


Process found	Ficost/case (1)	Defect ratio current (ppm) (2)	Defect ratio if cancel check at Ferrule (ppm) (2')	Ficost/month (current) (3)=(1)*(2)*Plan 600,000pcs	Ficost/month (after cancel check at Ferrule) (3')=(1)*(2')*Plan 600,000pcs
Ferrule assembly	0.26	33	0	\$ 5.15	\$ -
Appearance 3	0.29	32	65	\$ 5.57	\$ 11.31
Total Fi-cost/ month				\$ 10.72	\$ 11.31
Ficost increase if defect "Not enough adhesive inside cone" flow out to Appearance 3 after cancel check ferrule cone at ferrule process / month (5)=total(3')-total(3)					\$ 0.59

## c. Cost saving

Calculate cost saving if cancel check adhesive at ferrule assembly process. Cost saving by reducing duplicate can cover Fi-cost increase when defect flow out to next process

Cost saving/month =(9)-(5) \$ 189.110

2. Because View point of checking adhesive at appearance 3 process is more clear than checking at ferrule assembly process. NG product at ferrule assembly process flow out, it can be detected at appearance 3 process.

Process	Good sample at process	NG sample at process	Proposal
Adhesive suction			No change
Ferrule assembly			Cancel
Appearance 3			No change

## B - CHANGE CONTROL:

2

## B.1 Risk assessment:

\* Changes concerning to manufacturing process:

☐ FMEA review

☒ No need FMEA review, reason: Just reduce duplicated inspection from 500% to 200%

No.	FMEA record No. & current version	FMEA name	Review result (fill in 'not update', or 'new version' if need update)
1			

\* Other changes:

No.	Risk	Action to control risk
1		
2		
3		
4		

## B.2 Design review:

☐ REQUIRED

☐ DR0, ☐ DR1, ☐ DR2, ☐ DR3

☒ NOT REQUIRED, reason: Just reduce duplicated inspection from 500% to 200%

Plan No. for Test Run: .....

Result of Trial Run/Validation: refer to attached Technical report No.: .....



## CHANGE ORDER

Form: 4-Pr-007-4-Fo-0007

Version: 2

Page 3/3

B.3 Review and update document ☒ YES☐ NO, reason: .....

(List out documents need to be updated/new-issued, confirm revising completed after change order is approved )

No.	Document No. & existing version	Document name	New version	Actual completion date
1	001-4-PS-061-0019	Appearance 3 - (Body rời +Body IM)	6	2/20/2024
2	4-OP-0162-4-PS-010-0003	FA - Ferrule assembly - Sản phẩm SC- Fiber cắt phẳng	15	2/20/2024
3	001-4-PS-061-0020	Appearance 3 - LC	6	2/20/2024
4	4-OP-0162-4-PS-010-0008	Ferrule assembly - Sản phẩm LC - Fiber cắt phẳng	5	2/20/2024
5	4-OP-0162-4-PS-010-0002	FA - Ferrule assembly - Sản phẩm SC, LC - Fiber cắt góc	10	2/20/2024
6				
7				

## C - CHANGE APPROVAL (All above items):

2

## C.1 Manager's approval:

Signature: [Signature]Date: 3/Jan/2024☐ Need customer's approval☐ Need to inform customer☒ No need customer's approval/information to customer

Comment: .....

## C.2 Dept Manager upwards' approval: (if significant change)

Signature: .....

Date: .....

Comment: .....

## C.3 Customer's approval: (if any)

Signature: N.SasanoDate: 19-Feb-2024

Comment: .....



## D - CHANGE IMPLEMENTATION:

## D.1 Initial control:

☐ REQUIRED

NOT REQUIRED

Initial control plan No.: .....

Initial control completion report No.: .....

## D.2 Training requirement:

Re-instruct, no need update qualification record

☐ NO☒ YES

Re-train, update qualification record

☒ NO☐ YES. Training record No./Meeting minutes: .....

## D.3 Confirm implementation completed &amp; closing:

Change already applied from (date or ID# or PO#): 2/20/2024

Manager confirm:

All required actions are completed

Signature: [Signature]Date: 20/Feb/2024

Comment: .....