



# 项目名称：T3000 Core ASM MU提升

CI 项目编号：

产线/设备名称代码：Recliner T3000 Core ASM

单元/部门：Reclliner/ME

# KEIPER



# 项目定义：Define

Kaizen 项目立项表			KPI指标		
项目名称：Recliner T3000 Core ASM MU提升		项目负责人：邱皓波	KPI	改善前	改善后
<b>商业影响：</b> 1. 通过提升T3000装配线MU，提升装配线产能，将CF手动线生产的T3000 2.5KNM核心件移回T3000装配线； 2. 利用自动线的现有自动焊接设备，检测设备及RFID系统，提升对产品质量的管控； 3. 实现节约CF手动线人员233W。			节拍	15S	0
			人员配置	10人	0
			项目计划		
<b>问题描述：</b> 1. T3000装配线产能不足，需要CF手动线生产T3000 2.5KNM核心件来满足产能； 2. CF手动线整体节拍较慢，人工成本高； 3. CF手动线生产时候，质量无法保证，产品防错及追溯都不完善； 4. 焊接抱箍、功能测试时候需跨线搬运，存在质量风险。			项目计划	计划时间	实际时间
			D	2021/01	2021/01
			M	2021/02	2021/02
项目目标：节省20人		项目范围：T3000 Core	A	2021/02	2021/02
项目投资：5W		项目收益：275W	I	2021/03	2021/03
团队成员	主要职责	贡献比重	C	2021/04	2021/04
邱皓波	工艺工程师				
葛慧铭	工程经理				
马启文	设备工程师				
孙栋翱	质量工程师				

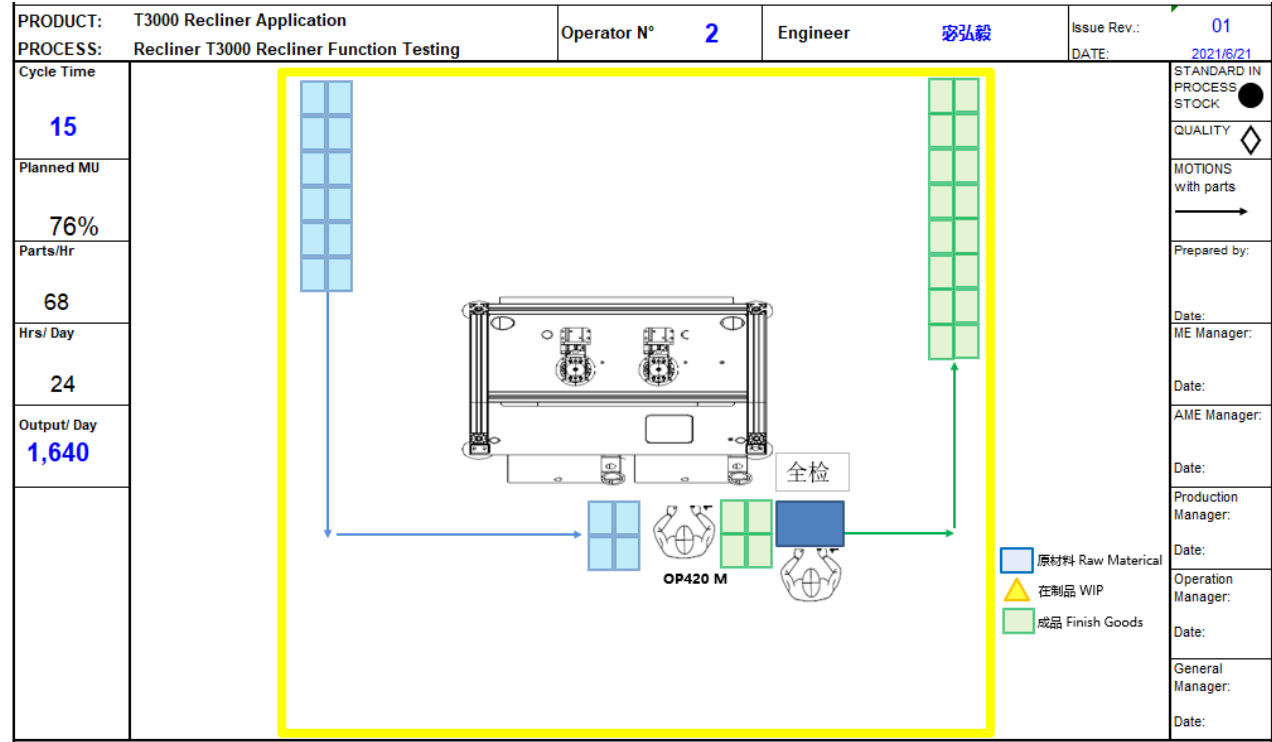
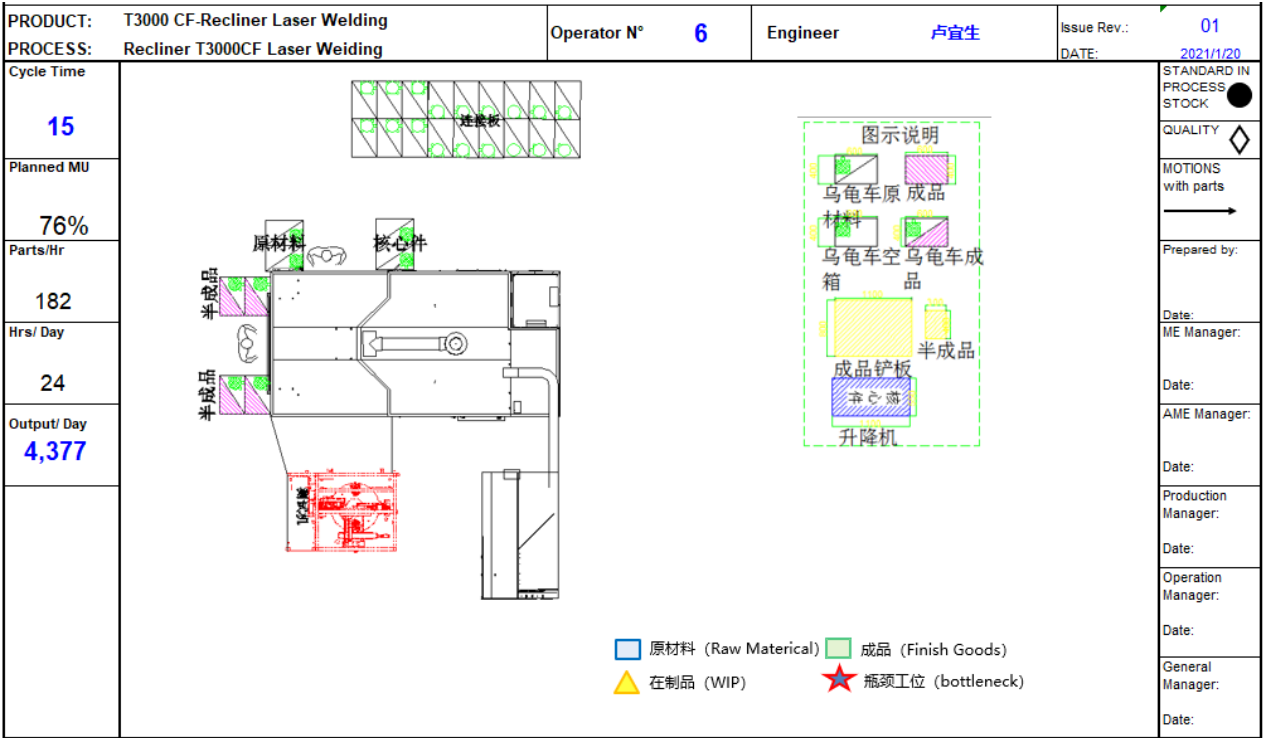
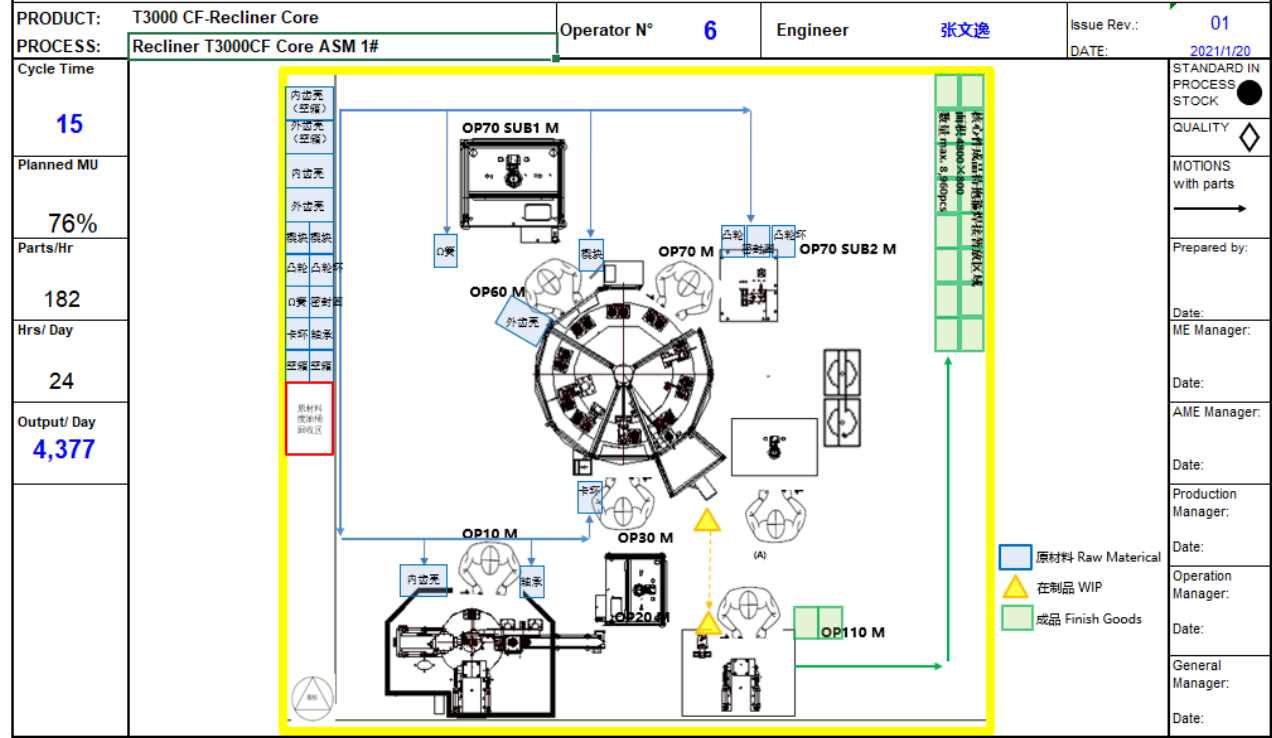
# 项目测量Measure: CAPACITY AND DEMAND

76%	T3000 1# 2# 3# Core	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Sum of 2021
CT 1.67	Customer Monthly volume	1,232,739	650,872	1,074,471	792,293	910,659	850,501	974,689	1,141,103	1,205,553	1,397,097	1,532,854	1,547,345	13,310,175
	Plan Working Days (5days)	20	20	20	20	20	20	20	20	20	20	20	20	240
	Plan Working Days (6days)	24	24	24	24	24	24	24	24	24	24	24	24	288
	Plan Working Days (7days)	28	28	28	28	28	28	28	28	28	28	28	28	336
	Customer Daily volume (Parts)	56684	36267	58390	42110	39496	36298	34512	33940	31572	34902	35354	26415	0
	Available Hours / shifts	12	12	12	12	12	12	12	12	12	12	12	12	12
	Shifts / Day	2	2	2	2	2	2	2	2	2	2	2	2	2
	Available Hours / Day	24	24	24	24	24	24	24	24	24	24	24	24	24
	Target CT	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67
	MU	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%
	Ideal time by MU per day(s)	32,832	32,832	32,832	32,832	32,832	32,832	32,832	32,832	32,832	32,832	32,832	32,832	32,832
	Actual producing time per month(s)	656,640	656,640	656,640	656,640	656,640	656,640	656,640	656,640	656,640	656,640	656,640	656,640	7,879,680
	Line Volume	1	1	1	1	1	1	1	1	1	1	1	1	1
	Daily output per line (parts)	39320	39320	39320	39320	39320	39320	39320	39320	39320	39320	39320	39320	39320
	Actual workday by Month	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	240.0
	Monthly output per line (parts)(5days)	786395	786395	786395	786395	786395	786395	786395	786395	786395	786395	786395	786395	9436743
	Monthly output per line (parts)(6days)	943674	943674	943674	943674	943674	943674	943674	943674	943674	943674	943674	943674	11324091
	Monthly output per line (parts)(7days)	1100953	1100953	1100953	1100953	1100953	1100953	1100953	1100953	1100953	1100953	1100953	1100953	13211440
	CU(5days)	157%	83%	137%	101%	116%	108%	124%	145%	153%	178%	195%	197%	141%
	CU(6days)	131%	69%	114%	84%	97%	90%	103%	121%	128%	148%	162%	164%	118%
	CU(7days)	112%	59%	98%	72%	83%	77%	89%	104%	110%	127%	139%	141%	101%

行标签	Sum of 2021
T3000 2.5KNM	964773
T3000 2KNM	12345402
总计	13310175

根据ABP的产能分析，3条装配线无法满足客户付，所以将T3000 2.5KNM的核心件移至CF手动装配线生产。

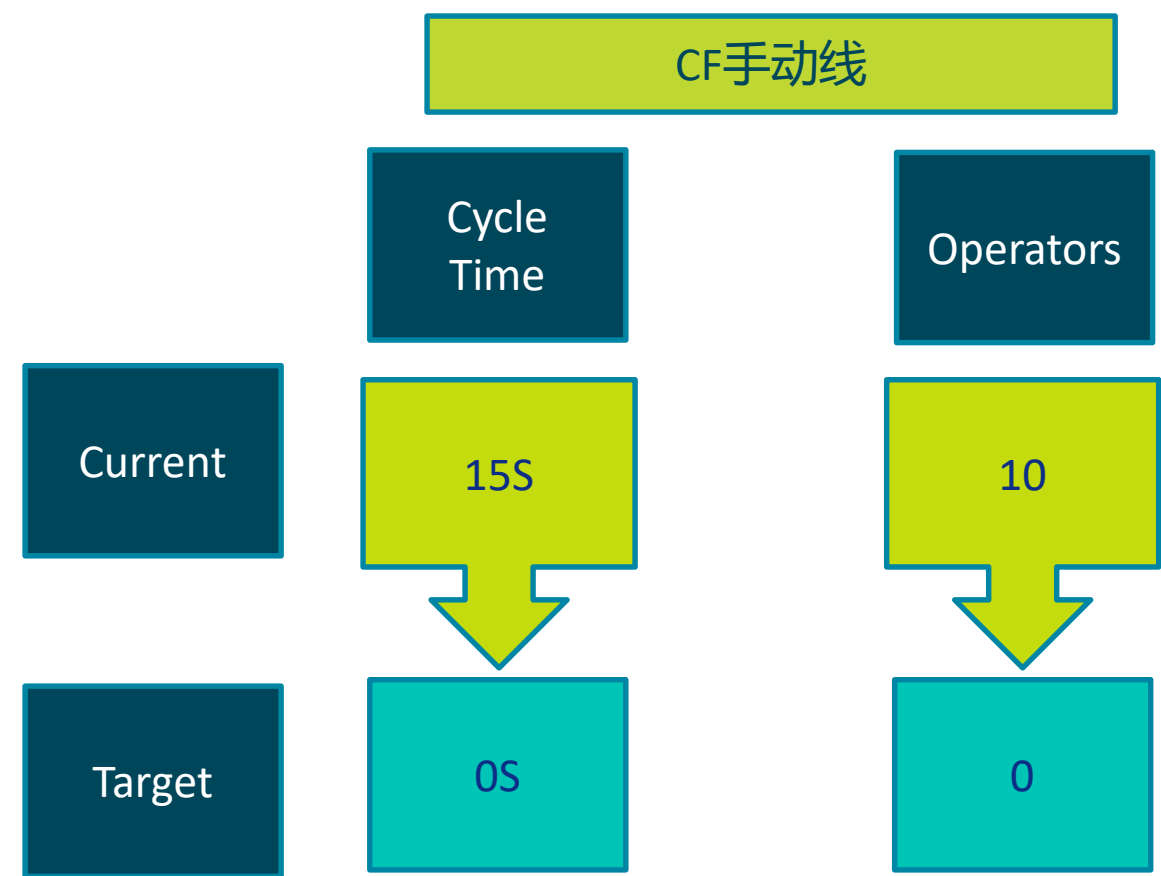
项目分析：Analyze



整条CF手动线依靠人工来完成操作，整线的节拍都较慢，单个产品产出的人工成本较高。（装配6人，焊接2人，测试2人，CT15S）

# 项目改善：Improve

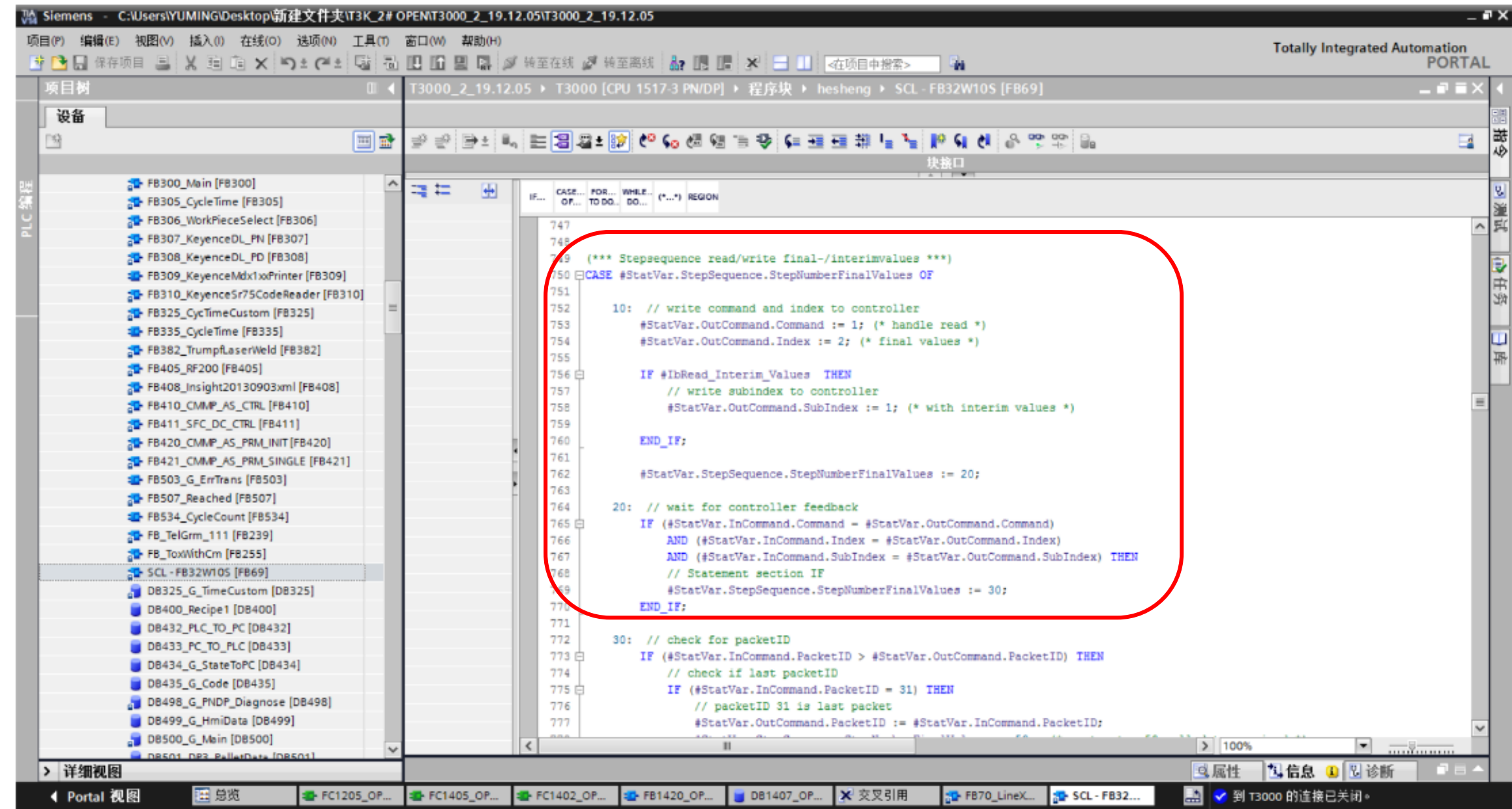
将CF手动线生产的T3000 2.5KNM核心件移回自动装配线，取消CF手动线人员配置。



行动计划表

步骤	行动计划内容	负责人	预计完成日期	状态
1	讨论方案	邱皓波	2021/01	完成
2	确定周期及计划	邱皓波	2021/02	完成
3	现场改造	供应商	2021/02	完成
4	现场验证	邱皓波、马启文、孙栋翱、王之林	2021/03	完成
5	项目完成	邱皓波、马启文、孙栋翱、王之林	2021/04	完成

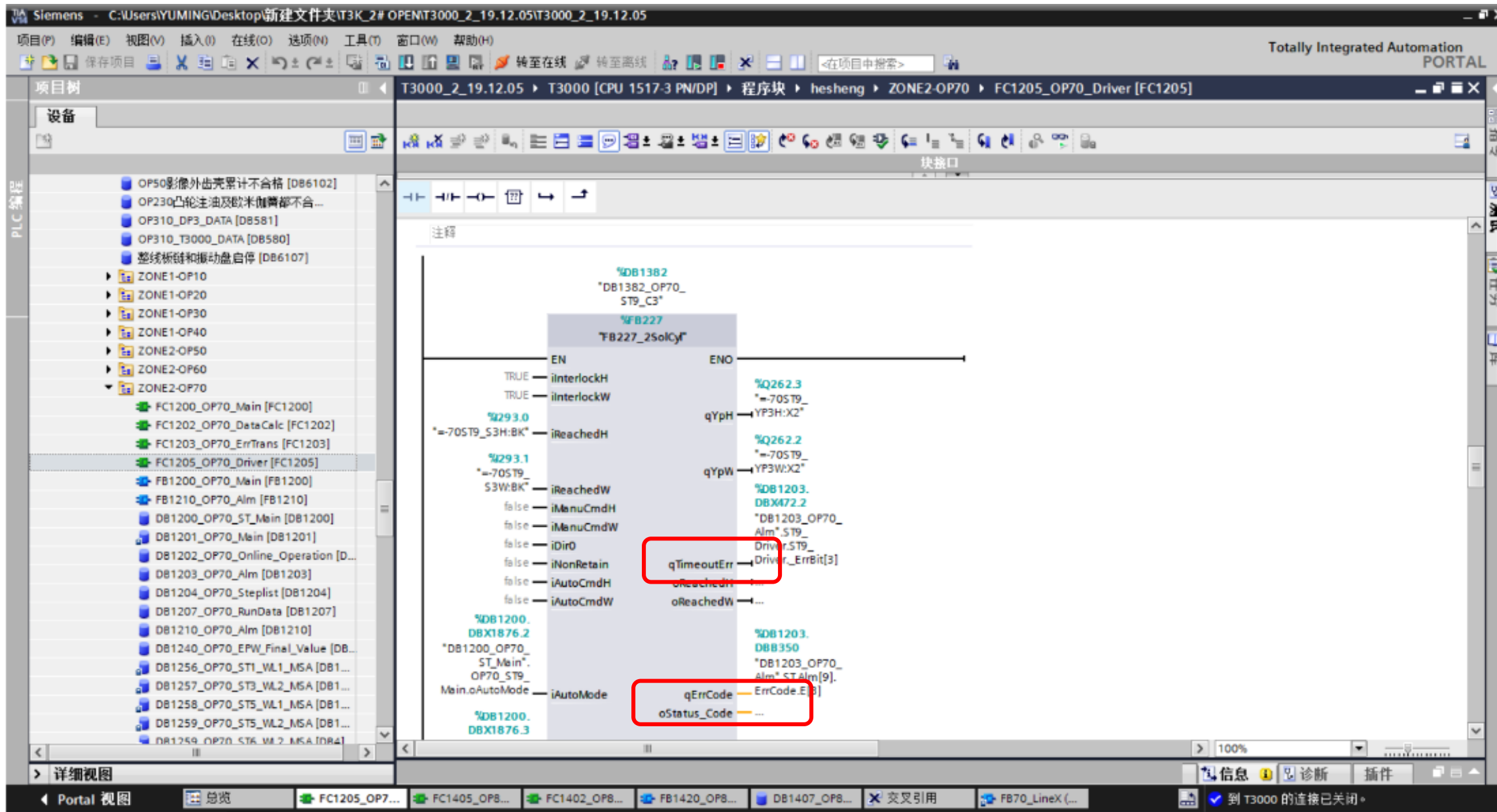
# 项目改善:



抱箍整形的电子压机写入RFID信息的时序调整，提高CT约0.4S。

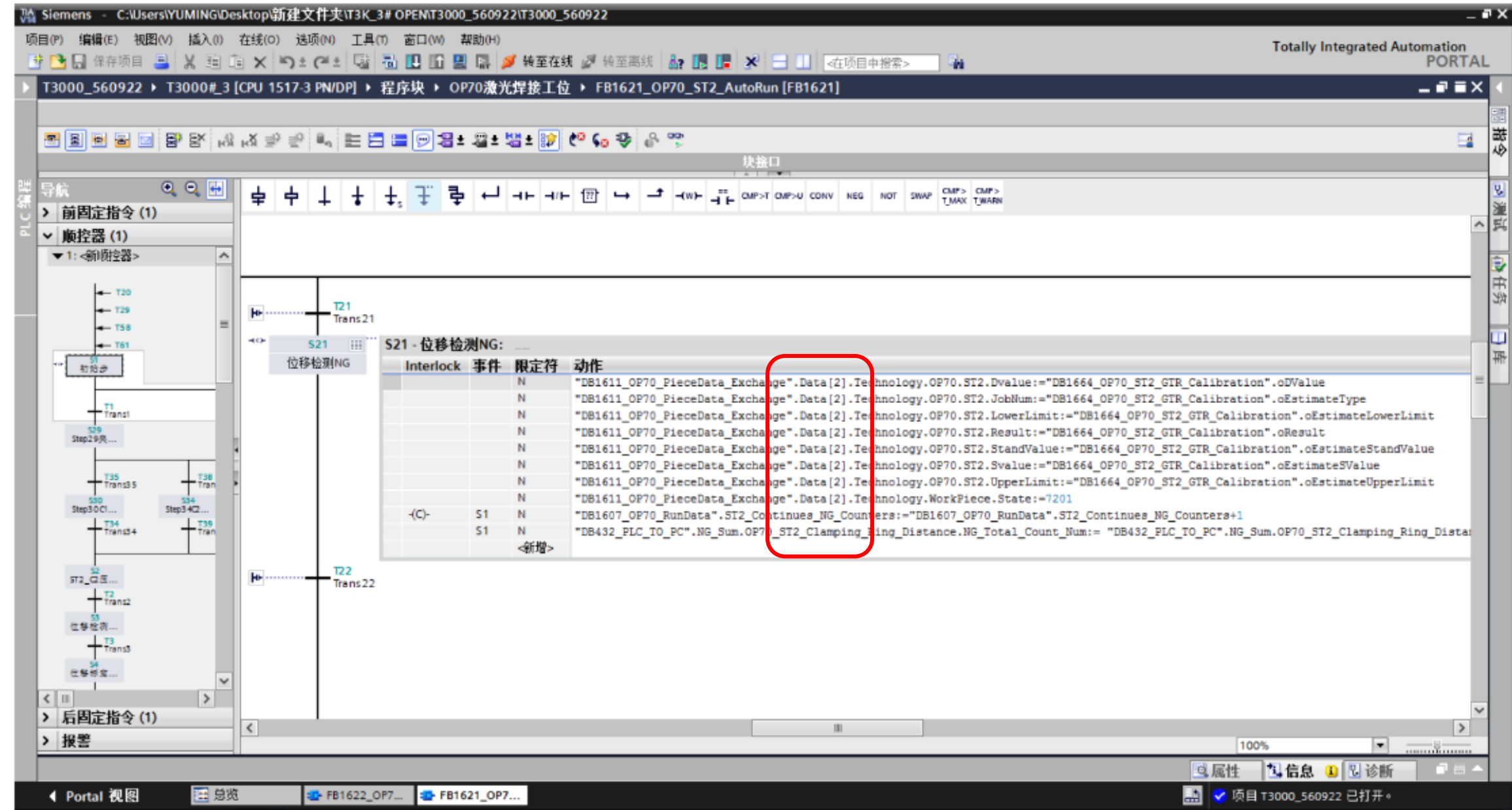


## 项目改善：



根据现场观察，优化了FB功能块的一些基本延时，达到最优的CT。

# 项目改善:



程序增加间接指针的寻址方式，提高CPU处理速度，降低资源占用。



项目改善:

Ops Rpt - Month Multi Cell All		Recliner							2021 / 01							ver 21.0.10							KEIPER				
3330	RC-AS-T3000	Shift Hr	Output						Direct Labour Hr							MU								80%	CU		
	Recliner Assy T3000	Shift Hr	Plan Qty	MES Qty	MDA Qty	TL Booked Qty	Fulfilled Rate	NFTR	Std (C) Hrs	Std CI	Booked Std Hr	Booked O/S	Eff %	Sec / Part	Crew	Ct	BD	CO	OM	PS	AR	PR	RB	MU	5x24		
164	Recliner T3000 Core ASM #01	604	245,300	365,110	335,841	337,023	32%	0.5%	1,512	0.0%	1,783	6	85%	19	3.0	5.0	3%	0%	0%	2%	95%	88%	93%	77%	116%		
	Recliner Assv T3000 ( 1 )	604	245.300	365.110	335.841	337.023			1.512	0.0%	1.783	6	85%		7.0	Based on 256 Std Hrs						95%	88%	93%	77%	116%	
	Recliner								Hrs @ Current Standard	1.512	0.0%	1.783	6	85%	7.0												
									Hrs @ Standard	1.512																	
									CI Saving	0 Hrs	0 FTE	FTE = 256 Hrs															
									CI Saving WRMB	0																	
2021年7月19日																											
Page 1 of 1														ObjectName: rpt_Operation_Auto - Recordsource: qry_rpt_Operation_Auto													

改善前：2021年1月平均MU为77%



3330	RC-AS-T3000	Shift Hr	Output						Direct Labour Hr						MU								80%	CU 5x24	
	Recliner Assy T3000	Shift Hr	Plan Qty	MES Qty	MDA Qty	TL Booked Qty	Fulfilled Rate	NFTR	Std (C) Hrs	Std CI	Booked Std Hr	Booked O/S	Eff %	Sec / Part	Crew	Ct	BD	CO	OM	PS	AR	PR	RB		MU
<a href="#">164</a>	Recliner T3000 Core ASM #01	437	264,800	254,683	258,870	260,989	92%	0.3%	1,133	0.0%	1,254	32	90%	18	2.9	5.0	0%	0%	0%	1%	98%	92%	93%	83%	90%
<a href="#">358</a>	Recliner T3000 Core ASM #02	513	306,800	292,237	295,337	298,126	67%	1.0%	1,305	0.0%	1,484	5	88%	18	2.9	5.0	1%	0%	0%	1%	97%	91%	92%	81%	103%
<a href="#">471</a>	Recliner T3000 Core ASM #03	324	201,800	201,977	191,145	191,199	47%	1.3%	646	30.0%	719	4	90%	14	2.2	5.0	2%	0%	0%	1%	97%	93%	92%	82%	66%
	Recliner Assv T3000 ( 3 )	1,274	773.400	748.897	745.352	750.314			3.084	8.2%	3,456	41	89%		13.5	Based on 256 Std Hrs					98%	92%	92%	82%	86%
3330	RC-AS-T3000	Shift Hr	Output						Direct Labour Hr						MU								80%	CU 5x24	
	Recliner Assy T3000	Shift Hr	Plan Qty	MES Qty	MDA Qty	TL Booked Qty	Fulfilled Rate	NFTR	Std (C) Hrs	Std CI	Booked Std Hr	Booked O/S	Eff %	Sec / Part	Crew	Ct	BD	CO	OM	PS	AR	PR	RB		MU
<a href="#">164</a>	Recliner T3000 Core ASM #01	494	291,600	297,074	280,937	284,711	88%	0.7%	1,236	0.0%	1,419	21	87%	18	2.9	5.0	3%	0%	0%	1%	95%	92%	93%	80%	98%
<a href="#">358</a>	Recliner T3000 Core ASM #02	528	312,600	300,289	298,763	301,533	94%	0.7%	1,309	0.0%	1,514	16	86%	18	2.9	5.0	4%	0%	0%	1%	95%	91%	93%	79%	104%
<a href="#">471</a>	Recliner T3000 Core ASM #03	431	252,000	249,599	253,053	253,845	67%	0.9%	826	30.8%	928	15	89%	13	2.2	5.0	1%	0%	0%	1%	97%	92%	93%	82%	87%
	Recliner Assv T3000 ( 3 )	1,452	856.200	846.962	832.753	840.089			3.372	9.8%	3,861	52	87%		15.1	Based on 256 Std Hrs					96%	92%	93%	80%	96%
3330	RC-AS-T3000	Shift Hr	Output						Direct Labour Hr						MU								80%	CU 5x24	
	Recliner Assy T3000	Shift Hr	Plan Qty	MES Qty	MDA Qty	TL Booked Qty	Fulfilled Rate	NFTR	Std (C) Hrs	Std CI	Booked Std Hr	Booked O/S	Eff %	Sec / Part	Crew	Ct	BD	CO	OM	PS	AR	PR	RB		MU
<a href="#">164</a>	Recliner T3000 Core ASM #01	431	264,800	248,894	245,176	252,273	83%	0.6%	1,095	0.0%	1,236	5	89%	18	2.9	5.0	3%	0%	0%	1%	95%	93%	93%	81%	87%
<a href="#">358</a>	Recliner T3000 Core ASM #02	596	325,400	334,220	350,367	350,898	88%	0.6%	1,543	0.0%	1,738	0	89%	18	2.9	5.0	2%	0%	0%	1%	97%	92%	93%	82%	121%
<a href="#">471</a>	Recliner T3000 Core ASM #03	437	243,800	261,276	260,031	261,917	83%	0.6%	990	27.7%	1,088	32	91%	15	2.6	5.0	0%	0%	0%	1%	98%	92%	93%	83%	90%
	Recliner Assv T3000 ( 3 )	1,463	834.000	844.390	855.574	865.088			3.629	9.5%	4,062	37	89%		15.9	Based on 256 Std Hrs					97%	92%	93%	82%	99%

改善后：2021年4，5，6月平均MU为81%，平均每班提升4%MU

# 项目改善：Improve

80%	T3000 1# 2# 3# Core	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Sum of 2021
	Customer Monthly volume	1,232,739	650,872	1,074,471	792,293	910,659	850,501	974,689	1,141,103	1,205,553	1,397,097	1,532,854	1,547,345	13,310,175
CT 1.67	Plan Working Days (5days)	20	20	20	20	20	20	20	20	20	20	20	20	240
	Plan Working Days (6days)	24	24	24	24	24	24	24	24	24	24	24	24	288
	Plan Working Days (7days)	28	28	28	28	28	28	28	28	28	28	28	28	336
	Customer Daily volume (Parts)	56684	36267	58390	42110	39496	36298	34512	33940	31572	34902	35354	26415	0
	Available Hours / shifts	12	12	12	12	12	12	12	12	12	12	12	12	12
	Shifts / Day	2	2	2	2	2	2	2	2	2	2	2	2	2
	Available Hours / Day	24	24	24	24	24	24	24	24	24	24	24	24	24
	Target CT	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67
	MU	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
	Ideal time by MU per day(s)	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560
	Actual producing time per month(s)	691,200	691,200	691,200	691,200	691,200	691,200	691,200	691,200	691,200	691,200	691,200	691,200	8,294,400
	Line Volume	1	1	1	1	1	1	1	1	1	1	1	1	1
	Daily output per line (parts)	41389	41389	41389	41389	41389	41389	41389	41389	41389	41389	41389	41389	41389
	Actual workday by Month	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	240.0
	Monthly output per line (parts)(5days)	827784	827784	827784	827784	827784	827784	827784	827784	827784	827784	827784	827784	9933413
	Monthly output per line (parts)(6days)	993341	993341	993341	993341	993341	993341	993341	993341	993341	993341	993341	993341	11920096
	Monthly output per line (parts)(7days)	1158898	1158898	1158898	1158898	1158898	1158898	1158898	1158898	1158898	1158898	1158898	1158898	13906778
	CU(5days)	149%	79%	130%	96%	110%	103%	118%	138%	146%	169%	185%	187%	134%
	CU(6days)	124%	66%	108%	80%	92%	86%	98%	115%	121%	141%	154%	156%	112%
	CU(7days)	106%	56%	93%	68%	79%	73%	84%	98%	104%	121%	132%	134%	96%

3条装配线MU达到80%后， 可以将CF手动线的T3000 2.5KNM核心件移回装配线，节省CF手动线的开班人员。



# 项目改善：Improve

改善后项目节约金额计算：

取消CF手动线生产T3000 2.5KNM核心件964773件（根据2021ABP），节约节拍15S，人员配置10人，手动线平均MU76%，小时工48元/小时，每年减少人工成本238万RMB。  
改造费用：5万RMB。  
年节约费用：238-5=233万RMB



谢谢观赏  
Thanks!

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