

BI LIU-PS



Status 2017-LS2

Instrumentation covered:

- 1) New Fast Wire-Scanners
- 2) BGI
- 3) BLM IC
- 4) BLM diamond
- 5) Injection SEM grid
- 6) Ring SEM + Turn by Turn
- 7) Injection BTV

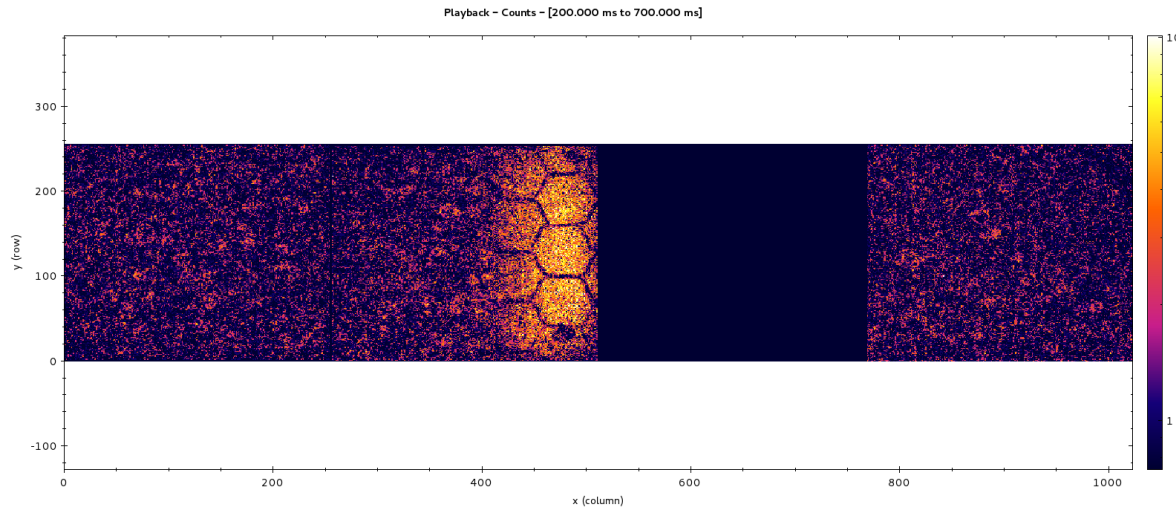
Ana Guerrero
On behalf of the BE/BI Group

Status BGI

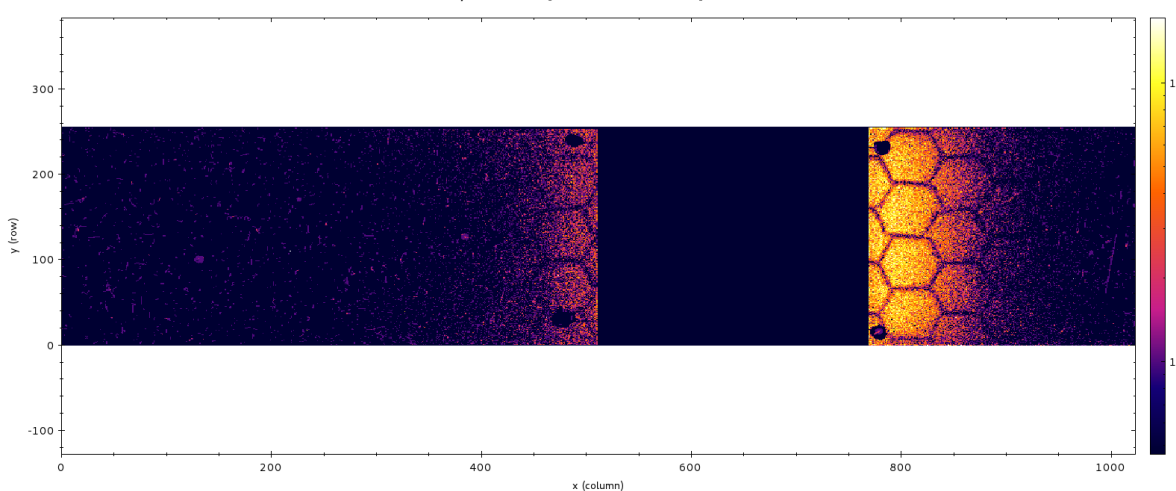
- BGI: H installed
 - V -> not enough budget left for its construction
 - H -> First results obtained
 - Closed orbit distortion due to BGI magnet solved (D. Bodart & PO). Installation of a second power supply to separate main and trim coils
 - Distortion linear with magnet current (+6.25% correction in the trim coils)
 - Commissioning and tests can be done in parallel
- Injection Semgrid: BTP Line in review (W. Bartmann)
 - **decided will be used only with no circulating beam**
 - **W.Bartmann to provide injection line beam envelope**
 - **present design (~finished) should be ok, t.b.c. with latest beam envelopes**
 - **system not in danger when in parking position**
- Semgrid txt:
 - Electronics in test, plans changed (tests by the end of next year)
 - Specifications to be delivered next week (edms)
- Injection BTV MU41: **design finished, in fabrication**
 - **installation during YETS (tbc)**

Highlights

LHCINDIV with nominal B
($I_{\text{main}}=176\text{A}$, $I_{\text{trim}}=189\text{A}$) in the BGI magnet

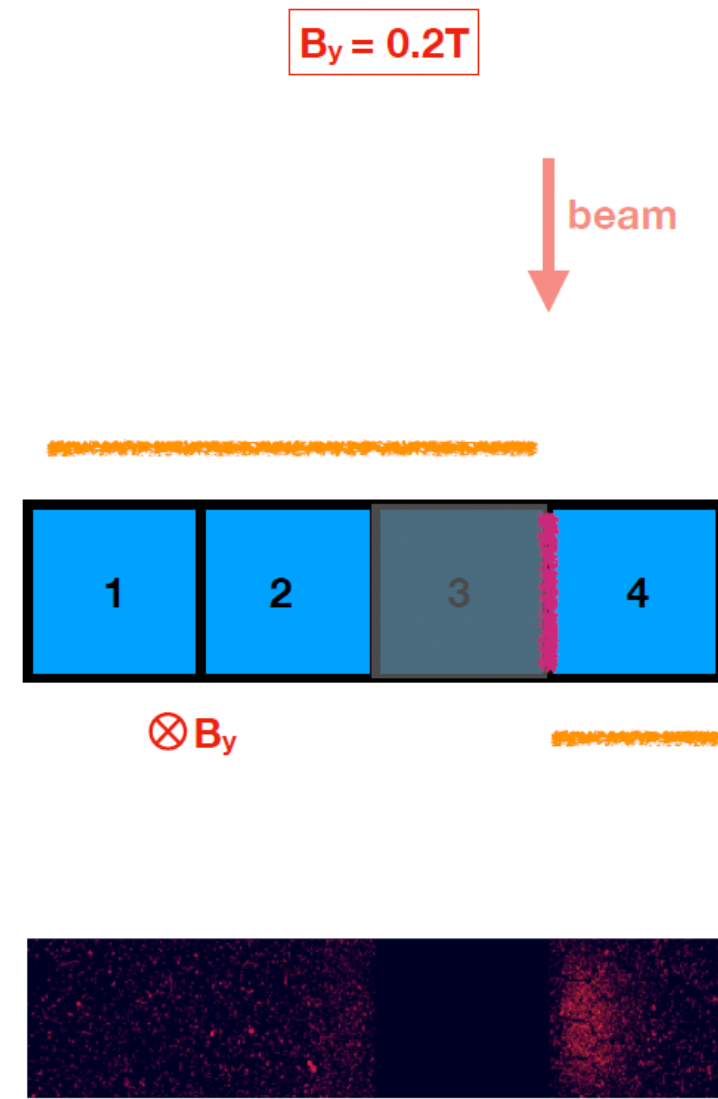
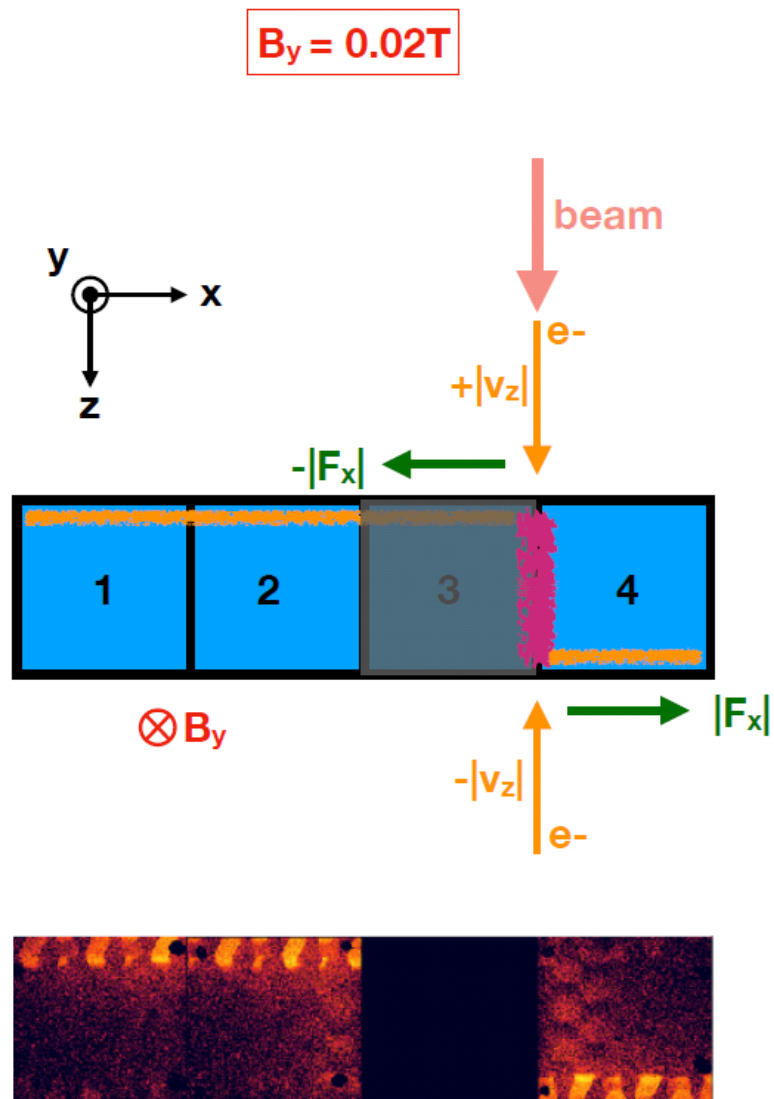


TOF with 1/2 B
($I_{\text{main}}=88\text{A}$, $I_{\text{trim}}=93.5\text{A}$) in the BGI magnet



- Operation is not affected anymore by the switching ON/OFF of the magnet
- The cathode needs to be set over 18KV to provide enough energy for the ionisation e^- , produced by the beam passage, to be detected
- The B field directs as expected the ionisation e^- to the detector: thin honeycombe shadow
- Working on optimising the settings to reduce the integration times

Cartoon picture of first and second electron populations at low and high magnetic fields



Status BLM

- BLM IC: Installed
 - Commissioning common effort OP-ABP-BI until end of 2018
 - Acquisition possible in CCC using expert application
- BLM diamond: Installed
 - All OASIS channels with attenuators installed
 - Used already for MTE shadowing and to check losses in the injection region
 - Not all 18 commissioned yet

Status SEMGRID & BTV

- Injection Semgrid: BTP Line in review (W. Bartmann)
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- Semgrid txt:
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CET (Spent + Committed)

(kCHF)	64030	64031	64032	64033	64034	64035	Budget
TT2 BPM	0.9	0					0.9 (0)
BxB WS68	8.1			0			10 (-1.9)
WCM	95	0					130.5 (-35.5)
WB PU	42	3.2					71 (-25.8)
BLM (All)	189					827.2	872 + 30 (+114.2)
BGI	200				351.7		540.5 (+11.2)
BTV+TxT+SEM42	0		27				245 ... ongoing
Digitizers GUZIG	72.5						0

Budget

- Budget from 64032 (BTV, Semgrid 42, Turn by turn electronics) will be hardly spent this year. Dates to be adjusted in EVM.
- Wide band PU finished 45k from a total budget of 71k (42k from 64030, 3k from 64031). EVM does not reflect at all the status of this project, baseline modified by Sylvie but I have no explanation for the changes
 - WCM shares code -> 95k spent from 64030 out of 130k baseline
- BGI has spent 200k from 64030 and 351k in 64034. Again EVM does not reflect the status.
- BLM, spending as foreseen up to now, however budget has to be clarified.
 - Orders have to be split among PS LIU, PSB LIU and TT2 consolidation.

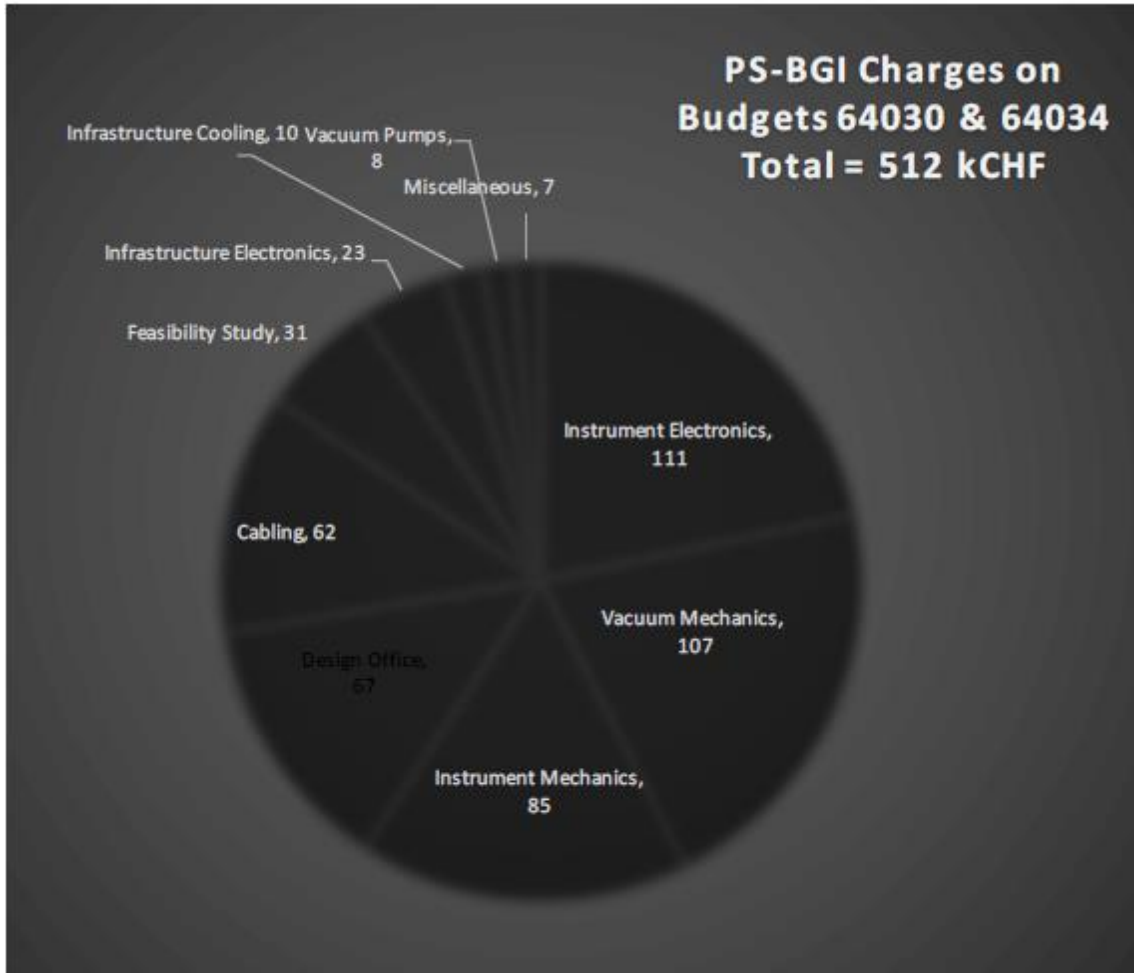
BGI cost overrun



Predicted & actual EVM costs.

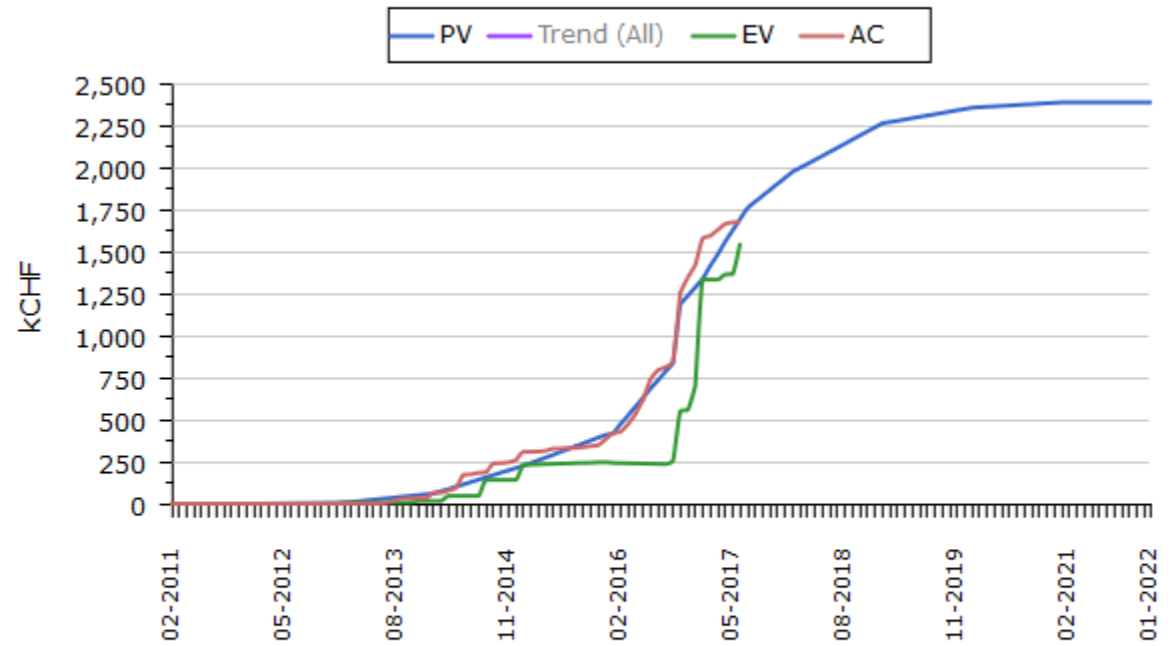
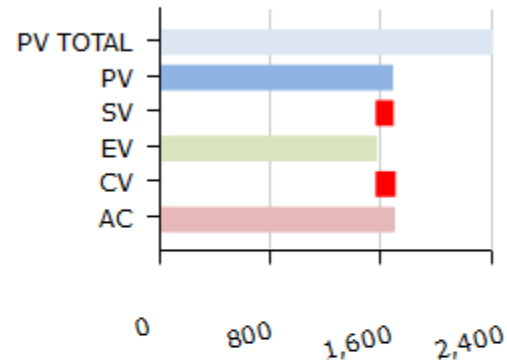
EVM Category	Predicted EVM Cost (kCHF)	Actual EVM Cost (kCHF)
Feasibility study	21	31
Lab equipment	25	7
Demonstrator	24	35
Technical design	31	67
Prototype	230	332
Instruments	210	39
Total	541	512

EVM originally costed assuming same design of horizontal and vertical instrument → would have allowed horizontal spare to be used for vertical.



LIU-PS EVM Curves

LIU-PS - LIU-PS



[Download Chart Data](#)

Metrics on the 17-May-2017

PV (kCHF)	EV (kCHF)	AC (kCHF)	PV Total (kCHF)	Trend (All) (kCHF)	SV (kCHF)	SPI (%)	CV (kCHF)	CPI (%)	SV(t) (months)
1,662	1,551	1,674	2,386	1,693	-111	↑ 93	-123	↑ 93	↑ -1.61

LIU-PS EVM Metrics from Project Start to Date





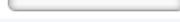

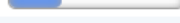
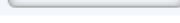
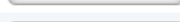
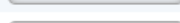

	From Project Start To Date					Total
	Cost Variance	Schedule Variance	Planned Value	Earned Value	Actual Cost	Planned Value
64030 - LIU-PS Beam Instrumentation	-17,323	0	590,000	590,000	607,323	590,000
64031 - LIU-PS BPM Upgrades (BPM & WCM)	2,147	0	5,400	5,400	3,253	5,400
64032 - LIU-PS Profile Measurement Upgrades (SEM & BTM)	-10,411	-107,852	116,852	9,000	19,411	245,000
64033 - LIU-PS Wirescanner Upgrade	-36,374	-28,358	38,358	10,000	46,374	488,500
64034 - LIU-PS Ionisation Profile Monitor	5,621	45,215	284,785	330,000	324,379	330,000
64035 - LIU-PS BLM Upgrades (ring & diamond)	-66,298	-20,034	626,854	606,820	673,118	727,000
Grand Total	-122,639	-111,029	1,662,249	1,551,220	1,673,859	2,385,900

	Budget Code Description	Department	Group	PPA Sub-Unit	Charged to Budget Code (CHF)	Annual Commitment (CHF)	Payment Budget (CHF)
64030	LIU-PS Beam Instrumentation	BE	BI	PSU-PRJ	0.00	0.00	-18,000.00
64031	LIU-PS BPM Upgrades (BPM & WCM)	BE	BI	PSU-PRJ	0.00	0.00	2,000.00
64032	LIU-PS Profile Measurement Upgrades (SEM & BTM)	BE	BI	PSU-PRJ	9,530.04	16,948.20	225,000.00
64033	LIU-PS Wirescanner Upgrade	BE	BI	PSU-PRJ	12,457.14	44,215.19	52,000.00
64034	LIU-PS Ionisation Profile Monitor	BE	BI	PSU-PRJ	27,360.85	54,538.90	33,000.00
64035	LIU-PS BLM Upgrades (ring & diamond)	BE	BI	PSU-PRJ	46,335.37	199,518.27	101,000.00
Grand Total:					95,683.40	315,220.56	395,000.00

LIU-PS Active Workunits

▲ ID		Completion	Status	LOE	Description	WBS	Holder	Start Date	Finish Date	PV Total(kCHF)	EV (kCHF)	SV (kCHF)	SV (Months)
104280	☰			No	New SEM Grid (transfer line PSB-PS)	LIU-PS 6.2	Federico Roncarolo (BE-BI)	01-Jan-2016	31-Dec-2019	100	9	-53	-14.09
104281	☰			No	BWS upgrade	LIU-PS 6.1	Raymond Veness (BE-BI)	01-Jan-2017	31-Dec-2020	478	0	-28	-4.52
128002	☰			No	SEM Turn by Turn in the ring	LIU-PS 6	Federico Roncarolo (BE-BI)	01-Jan-2016	31-Dec-2017	100	0	-38	-4.52
135794	☰			No	BLM ring	LIU-PS 6.7	Christos Zamantzas (BE-BI)	01-Jan-2016	31-Dec-2017	590	470	-20	-1.47
162238	☰			No	BTV (PSB-PS : 41)	LIU-PS 6	Federico Roncarolo (BE-BI)	01-Jun-2016	31-Dec-2017	45	0	-17	-6.52
174900	☰			Yes	Accounting adjustment workunit budget code	LIU-PS 6.6	Lars Soby (BE-BI)	01-Jan-2016	31-Dec-2016	-113	-113	0	0

LIU-PS Active Deliverables

▲ Workunit ID	Workunit desc.	Deliverable desc.	Completion (%)	PV (CHF)	EV (CHF)	Start date	Finish date	Last progress
104280	New SEM Grid (transfer line PSB-PS)	SEM design & procurement		90,000	9,000	01-Jan-2016	31-Dec-2017	01-Dec-2016
104281	BWS upgrade	Electronics design		12,592	0	01-Jan-2017	31-Dec-2017	28-Sep-2016
104281	BWS upgrade	Mechanics design and integration		62,961	0	01-Jan-2017	31-Dec-2017	28-Sep-2016
128002	SEM Turn by Turn in the ring	Fesability study		0	0	01-Jan-2016	31-Dec-2016	01-Dec-2016
128002	SEM Turn by Turn in the ring	Procurement + installation		100,000	0	01-Jan-2017	31-Dec-2017	01-Dec-2016
135794	BLM ring	Electronics		261,000	161,820	01-Jan-2016	31-Dec-2017	20-Mar-2017
135794	BLM ring	Russian team 2017		30,000	9,000	01-Jan-2017	31-Dec-2017	20-Mar-2017
135794	BLM ring	Cables + pulling		0	0	01-Jan-2017	31-Dec-2017	20-Mar-2017
162238	BTV (PSB-PS : 41)	Installation		17,689	0	01-Jan-2017	31-Dec-2017	
162238	BTV (PSB-PS : 41)	Mechanical production		17,689	0	01-Jan-2017	31-Dec-2017	
162238	BTV (PSB-PS : 41)	Mechanical design		9,623	0	29-Nov-2016	31-Dec-2017	