

Confidential

Distribution destination

Dear Production Management
Department Manager

Dear Product Manager

Product Development Plan

Create date November 15, 2020

1. Development Theme

「 Development of GX-2012 Mark 2 」

2. Development Management Number

「 7 7 P P 3 7 8 P P 2 」

└───┘ └──┘

*1 *2

*1. Project number

*2. Product development phase

(1: Primary prototype; 2: Secondary prototype; 9: Mass production prototype)

3. Project team members

Product manager: Kitamura Project manager: Nishimiya

Project members:

Mechanism: Gogami	Electrical: Furudate
Software: Ikarashi	Production engineering: Yanagisawa Research Ogawa, Mizutani

Assistants: _____

4. Related documents

Information report :	Information report JH- 8027	/Product Proposal EK- 8027
----------------------	-----------------------------	----------------------------

5. Article

- Developed GX-2012 Mark 2. Combustible VOL% and ppm measurements are not considered.
- For development with top priority on cost, it will be a machine dedicated to rechargeable batteries.
- Even if some maintainability is sacrificed, cost is prioritized.

6. Target specification

(1) Shape

Portable

(2) Appearance (material, color etc)

Equivalent to or less than GX-2012

(3) Dimensions, Weight

Equivalent to or less than GX-2012

(4) Power

Li-ion bat

(5) Display

Digital

Segment LCD

(6) Features

Up to 4 components (oxygen, combustible, CO, H₂S), suction type (low flow rate alarm is clogging de
Data logger, snap logger, peak value, combustible gas conversion

(7) Performance

Equivalent to IP67, 3m drop durability, Suction flow rate Approx. 350mL/min, 30m suction po

(8) Operating temperature range

-20 °C % ~ 50 °C (Short time -40 to 60° C...Depends on the pump)

(9) Operating humidity range

0 %RH ~ 95 %RH (Depends on the sensor)

(10) Explosion proof structure

Pressure resistance, Ex da ia IIC T4 Ga(Combustible Yes)、Ex ia IIC T4 Ga(Combustible None)
Intrinsically safe

(11) Approval

ATEX、IECEX、JPEX、INMETRO、CSA、

JIS T8206(Combustible), JIS T8201(O₂), JIS T8205(H₂S) 、EN60079-29-1、EN50104

(12) Standard accessories

Packing box only(EX・RKI)

(For domestic use, separate discussions will be held.)

(13) Special accessories

Taper nozzle, strap, belt clip, charging AC adapter, USB cable

Data logger software, various suction probes, leather cases, various replacement filter sets

(14) Target cost

500 units lot, ¥20,151 specification: 4 components, for EX・RK

(15) Other

Main market: America, Asia, Europe, Domestic

Gas, petrochemical, manhole, etc.

7. Planned development time · Budget 【Details】

(1) Planned development time (Unit: time)

	Primary prototype		Secondary prototype		Mass production prototype		Subtotal	
	design	verification	design	verification	design	verification	design	verification
Electricity (design and verification)	135	0	175	180	185	125	495	305
Mechanism (design and verification)			400	170	205	180	605	350
Software (design and verification)			1000	400	200	600	1200	1000
Quality check (including, quality experiment section)					820		820	
Test (Experiment / Document)					580		580	
Pilot test					100		100	
Other (Material creation and others)					150		550	
Proposed instruction manual					100			
Work standard document					150			
Maintenance materials					150			
Total							6,005 H	

$$6005 \quad H \quad \times \text{¥}6,000 = \text{¥}36,030,000 \text{ ①}$$

(2) Prototype material cost

Primary	<u>¥250,000</u>	(5 units)		
Secondary	<u>¥5,000,000</u>	(20 units)	Total =	<u>¥7,950,000②</u>
Mass production	<u>¥2,700,000</u>	(40 units, pilot: 50 units)		

(3) Outsourced design cost

Electrical	<u>¥5,000,000</u>	(PCB(200),BATP(300))	Total =	<u>¥10,600,000③</u>
Mechanism		()		
Software	<u>¥5,000,000</u>	(PC software)		
Design	<u>¥600,000</u>	()	Subtotal①+②+③ =	<u>¥54,580,000⑧</u>

(4) Die cost

P.C.B	<u>¥4,800,000</u>	(3rd edition+ cutting die(400))		
Molding	<u>¥32,400,000</u>	(Plastic(2480)、Rubber(760))		
Sheet metal	<u>¥800,000</u>	(Belt clip)	Total =	<u>¥38,800,000④</u>
Plate cost, other	<u>¥800,000</u>	(Nameplates, leather cases)		
LCD		()		

(5) Development tool cost ()

⑤ ()

(6) Examination fee (EN(1900)、EMC(100)、ATEX(600)、JPEX(200)、INMETRO(120)、RE Direct(130)、IP(30)、Battery safety(200))

¥32,800,000⑥ ()

(7) Other ()

⑦ ()

$$\text{Subtotal④+⑤+⑥+⑦} = \text{¥}71,600,000 \text{ ⑨}$$

(8) Total development expenses Total⑧+⑨ = ¥126,180,000

8. Development schedule

Days Contents		2020										2021										2022										Remarks
		11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10							
Design	Electrical	↔		↔				↔		↔																						
	Mechanical	↔		↔				↔		↔																						
	Software	↔		↔				↔		↔																						
Parts arrangement	Electrical	↔		↔				↔		↔							↔															
	Mechanical		↔						↔		↔						↔															
Type								↔		↔																						
Trial production	Primary	↔																														
	Secondary			↔																												
	Mass production										↔							↔														
	Jig								↔		↔																					
Performance test					↔							↔						↔														
Review									★											★					Planning and development committee							
Quality evaluation test																↔																
Pilot test																			↔													
Confirm cost									★											★					Cost Management Committee							
Validation of design																				★					Quality control committee							
Verification													↔ ATEX				↔ JPE			↔ CSA-EN												
Report on termination																						★										
Other (Document preparation)																																
Proposed instruction manual													↔																			
Work standard document																	↔															
Maintenance materials																			↔													

↔ Primary prototype
 ↔ Secondary prototype
 ↔ mass production prototype
 ↔ Pilot line (Sales Sample)

Scheduled product shipment date: July 31, 2022

Other

• EN application July 2022, expected acquisition April 2023 (9 months)

• Overseas certification is acquired at an overseas agency. (China Ex, ITRI(Taiwan), EAC(Russia), KCs(Korea), PESO(India))

The company expects to use 7 million yen for gas testing equipment as manufacturing facilities.