Business Administration

Lecture No. 3: Case studies on process analysis

1. What is a case study?
2. Organ Needle
3. Iwaya Porcelain

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1.What is a case study?

Research case (part of research, through data collection)

Teaching case (case for teaching material)

Analysis

Action plan

A study about cases is important, but making cases is more studious.

Case 1: Organ Needle
(Ueda city, Nagano prefecture)

From Pamphlet of Organ Needle Co.,Ltd.

Case 1: Organ Needles (1)

A medium-sized firm in Ueda city, Nagano prefecture (approx. 1000 employees)

Originated from a back-street factory making gramophone needles in downtown Tokyo (Taisho Era)

Started manufacturing and sale of sewing machine needles in 1939

Evacuated Tokyo to Ueda city in midst of World War II

Became the world's number one maker of sewing machine needles over 100 million pieces produced in 1960

Held 85% share of the domestic market in 1990s(Production of sewing machine needles, in fact, constitutes a lump of know-how.)

But a demand for sewing-machine needles reached the ceiling. Growth by diversification?

Company overview material of Organ Needle Co., Ltd.

会社概要

名　　称／オルガン針株式会社
所 在 地／長野県上田市大字前山１番地
資 本 金／5億5,200万円
創　　業／大正9年
従業員数／950名
役　　員／代表取締役社長　増島芳美
専務取締役　武田省吾
常務取締役　小泉隆英
取　締　役　大口昭雄
取　締　役　斉藤　晃
取　締　役　増島良介
取　締　役　安保　精
取　締　役　片桐道夫
取　締　役　大原英嗣
取　締　役　高野賢一
監　査　役　村田豊治
監　査　役　雨池　昇

事 業 所／**本社・西塩田工場**
〒386-14 長野県上田市大字前山1番地
TEL.0268-38-3111 FAX.0268-38-5188

中央工場
〒386-11 長野県上田市大字神畑160
TEL.0268-38-3250 FAX.0268-38-7385

中塩田工場
☎386-13 長野県上田市大字五加1214
TEL.0268-38-2361 FAX.0268-38-8547

東塩田工場
〒386-12 長野県上田市大字富士山3313
TEL.0268-38-2365 FAX.0268-38-2365

上田工場
〒386-01 長野県上田市大字蒼久保1160
TEL.0268-36-4310 FAX.0268-36-4220

東京店
〒110 東京都台東区東上野2-20-9オルガンビル
TEL.03-3833-1081 FAX.03-3835-7848

名古屋店
〒467 名古屋市瑞穂区妙音通り2-1
TEL.052-822-1586 FAX.052-824-0184

大阪店
〒540 大阪市中央区谷町1丁目4番2号
TEL.06-941-9735～9 FAX.06-943-6782

九州サービスセンター
〒869-03 熊本県玉名郡玉東町稲佐
TEL.096885-3131 FAX.096885-3559

新潟サービスセンター
〒959-16 新潟県五泉市赤海2丁目1番4号
TEL.0250-42-6690 FAX.0250-42-2677

関連会社

オルガンエレクトロニクス株式会社
〒386-01 長野県上田市大字蒼久保1160
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TEL.096885-3131 FAX.096885-3559

株式会社OSS
〒110 東京都台東区東上野3-16-1第2オルガンビル
TEL.03-831-1618 FAX.03-831-1382

日本プレーティング株式会社
〒386-12 長野県上田市大字常盤城3-4-1
TEL.0268-22-2736 FAX.0268-27-7002

オルガンプラスチック株式会社
〒389-05 長野県小県郡東部町大字和西田
TEL.0268-62-0456 FAX.0268-64-3093

海外関係

台湾風琴針股份有限公司（中華民国）
台湾台北県泰山郷24301明志路2段80号
TEL.02-901-7490/7790 FAX.02-902-9317

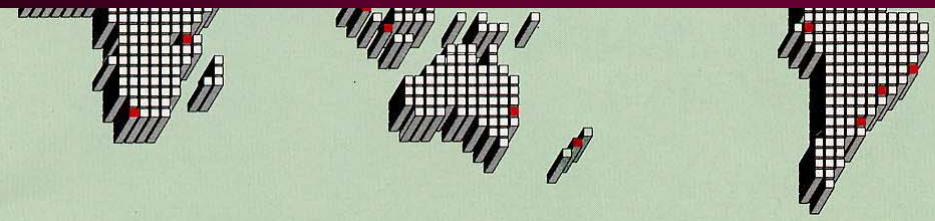
ORGAN NEEDLE CO.,LTD.（香港）
KIN TECK INDUSTRIAL BLD.
15TH FLOOR. 26WONG CHUK HANG
ROAD. ABERDEEN. HONG KONG
TEL.5528262 FAX.8736037

ORGAN NEEDLE(S) CO.PTE.LTD.（シンガポール）
No.190, MIDDLE ROAD #13-04
FORTUNE CENTRE, SINGAPORE 0718
TEL.3393581／3393588 FAX.3395550

O.A.K.株式会社（大韓民国）
大韓民国大邱直轄市壽城区壽城洞4街1020-1
TEL.053-755-8891/7389 FAX.053-755-7910

R+M GMBH（西ドイツ）
JULICHER STRASSE 106a D5100
AACHEN WEST-GERMANY
TEL.0241-153081 FAX.0241-163025

From Pamphlet of Organ Needle Co.,Ltd.



沿革

大正９年／東京市荒川区南千住で蓄音機針製造開始。

昭和５年／東京市荒川区尾久町に蓄音機針工場新設。

昭和６年／RCAビクター会社指定針として、上海・ニューヨークへ初輸出。

昭和11年／合名会社増島製針所設立。ミシン針の研究開発すすむ。

昭和14年／ミシン針製造機械完成。「オルガン印」の商標で製造販売はじめる。

昭和20年／軍当局の命令で疎開、現在地へ工場移設し、生産を再開する。

昭和24年／中塩田工場設置。

昭和25年／株式会社増島製針所設立。ミシン針アメリカへ初輸出。

昭和27年／家庭用ミシン針JIS表示許可工場となる。

昭和28年／長野県発明展覧会で特許庁長官賞受賞。増島良三社長に藍綬褒章授与される。長野県優秀工業製品展示会で、長野県知事賞受賞。

昭和29年／高松宮殿下工場視察。メリヤス針の販売製造開始。

昭和31年／メリヤス針スイスへ初輸出。

昭和34年／東塩田工場設置。

昭和35年／増島良三社長逝去。増島芳美代表取締役社長に就任。ミシン針の年間生産高１億本突破（世界首位）。

昭和36年／メリヤス針(手編機用)JIS表示許可工場となる。

昭和37年／スイスのエリコン社と技術・販売提携を結ぶ。

昭和38年／オルガン針株式会社に社名変更。

昭和39年／上田工場設置。増資－新資本金1億1,200万円。輸出の安定拡大により輸出貢献企業の表彰を受ける。

昭和41年／工業用ミシン針JIS表示許可工場となる。オルガン針販売株式会社設立。

昭和42年／西塩田工業用ミシン針総合工場設置。輸出貢献企業として認定される。台湾に合弁会社台湾風琴針股份有限公司設立。

昭和44年／上田工場にメリヤス針第５工場設置。増資－新資本金1億5,600万円。租税特別措置法に規定する甲種輸出貢献企業として連続６回目の大臣表彰を受ける。

昭和45年／西塩田メリヤス針総合工場設置。熊本県に九州オルガン針株式会社設立。

昭和46年／中央工場設置。

昭和47年／増資―新資本金2億3,520万円。

昭和48年／中央工場にシームレス針・丸編針・両頭針工場設置。

昭和49年／香港に合弁会社香港増島車針有限公司設立。

昭和51年／労働衛生管理活動について労働大臣賞を受賞。生産・販売管理にNEACシステム200を導入。

昭和52年／本社新社屋落成。第10回中小企業研究センター全国賞を受賞。増資―新資本金3億4,200万円。西独R＋M社とヨーロッパ地域総代理店契約結ぶ。

昭和53年／第３製品部発足。

昭和55年／増資―新資本金3億5,000万円。

昭和56年／シンガポールに販売会社ORGAN NEEDLE(S)CO.PTE.LTD.設立。

昭和57年／増資―新資本金4億6,000万円。

昭和60年／ミシン針代理店５社統合、株式会社OSS設立。

昭和61年／オルガン針販売株式会社をオルガンエレクトロニクス株式会社に社名変更。

昭和62年／大韓民国に合弁会社O.A.K.株式会社設立。

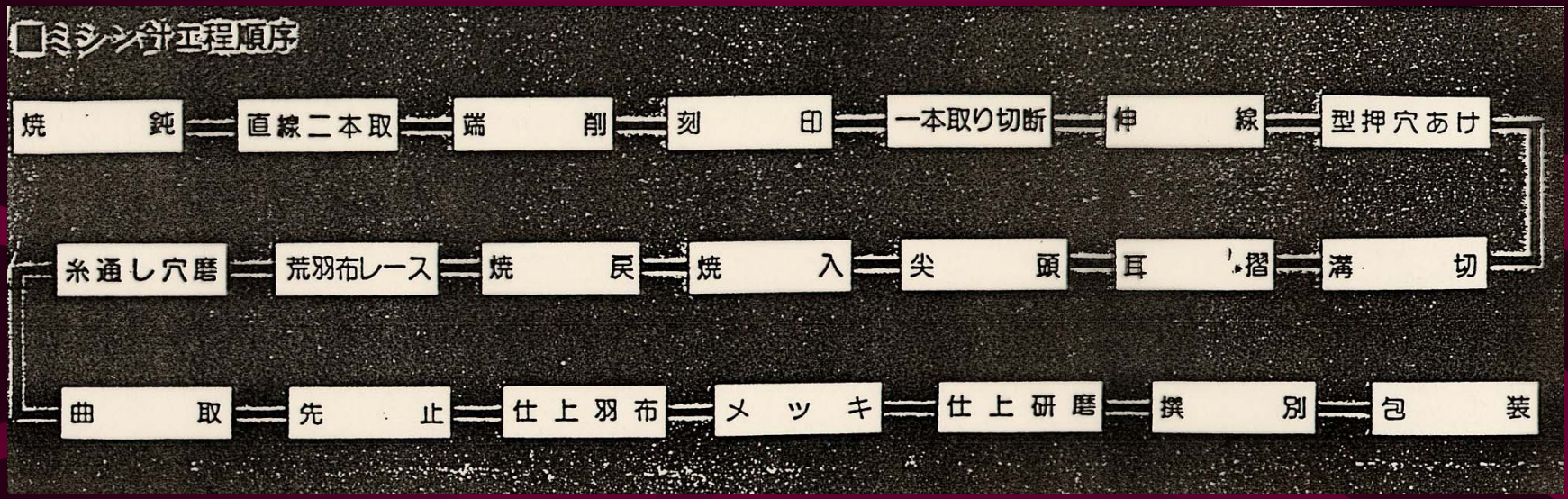
昭和63年／増資―新資本金5億5,200万円。

平成１年／中央工場に第９工場を設置、メリヤス針部門を統合。

平成２年／上田工場に第三事業部電子･OA部門とフェルト針部門を移転。

From Pamphlet of Organ Needle Co.,Ltd.

Production Process



From Pamphlet of Organ Needle Co.,Ltd.

<Manufacturing Process of Sewing Machine Needles at Organ Needle, Co.,Ltd.>

（材料） ： 鉄線をコイル状にしたもの

① 焼鈍 ： 材料を電気炉で焼くことによって内部のゆがみを除去する(焼きなまし)

② 直線 ： コイルを伸ばして直線状にし、一定の長さに切断する

③ 端削 ： 線の両端を削って滑らかにする（この部分が針の先端となる)

④ 切断 ： 線を半分に切る（つまり②では2本分をまとめて切断している)

⑤ 伸線 ： 線を引っ張り出す

⑥ 刻印 ： コード番号･社名等の刻印

⑦ 曲取 ： 曲がりを直す

⑧ プレス ： プレスにより線をほぼ針の形にし、同時に張り穴をあける

⑨ 溝切 ： 針に溝を切って糸の通り道をつくる

⑩ 耳摺 ： プレスのときにできたバリ(耳)を取る

⑪ 尖頭 ： 針の先端をとがらす（ここでほぼ完全な針の形状になる)

⑫ 熱処理 ： 「焼き入れ→曲直→冷却→再加熱」というプロセスによって針の強度を増す

⑬ 曲直 ： 針の曲がりをハンマーで叩いて直す

⑭ 針揃 ：

⑮ 仕上研磨 ： メッキ前の研磨

⑯ メッキ ： 主にクロームメッキ（この工程は別会社で行っている)

⑰ メッキ後研磨：

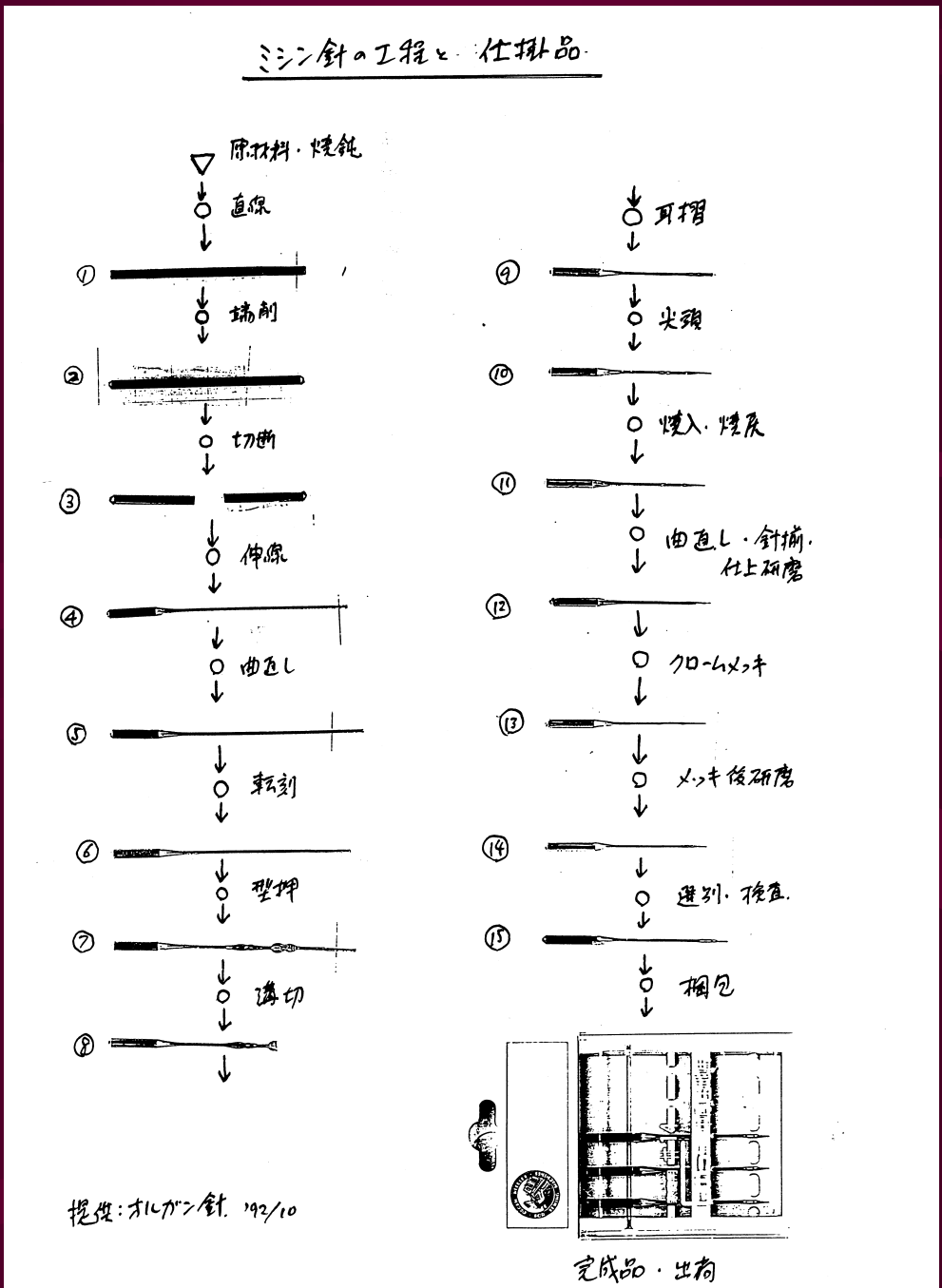
⑱ センサー選別 ：センサーにより「曲がり」「穴無し」等の不要品を取り除く（不良品は前工程に戻す)

⑲ 検査 ： センサーでは発見できない不良をヒトの目で検査

⑳ 梱包 ：

（出荷）

ミシン針の工程


ミシン針の工程と仕掛品
原材料・焼鈍
直線
①
端削
②
切断
③
伸線
④
曲直し
⑤
転刻
⑥
型押
⑦
溝切
⑧
耳摺
⑨
尖頭
⑩
焼入・焼戻
⑪
曲直し・針摘・仕上研磨
⑫
クロームメッキ
⑬
メッキ後研磨
⑭
選別・検査
⑮
梱包
完成品・出荷
提供：オルガン針 '92/10

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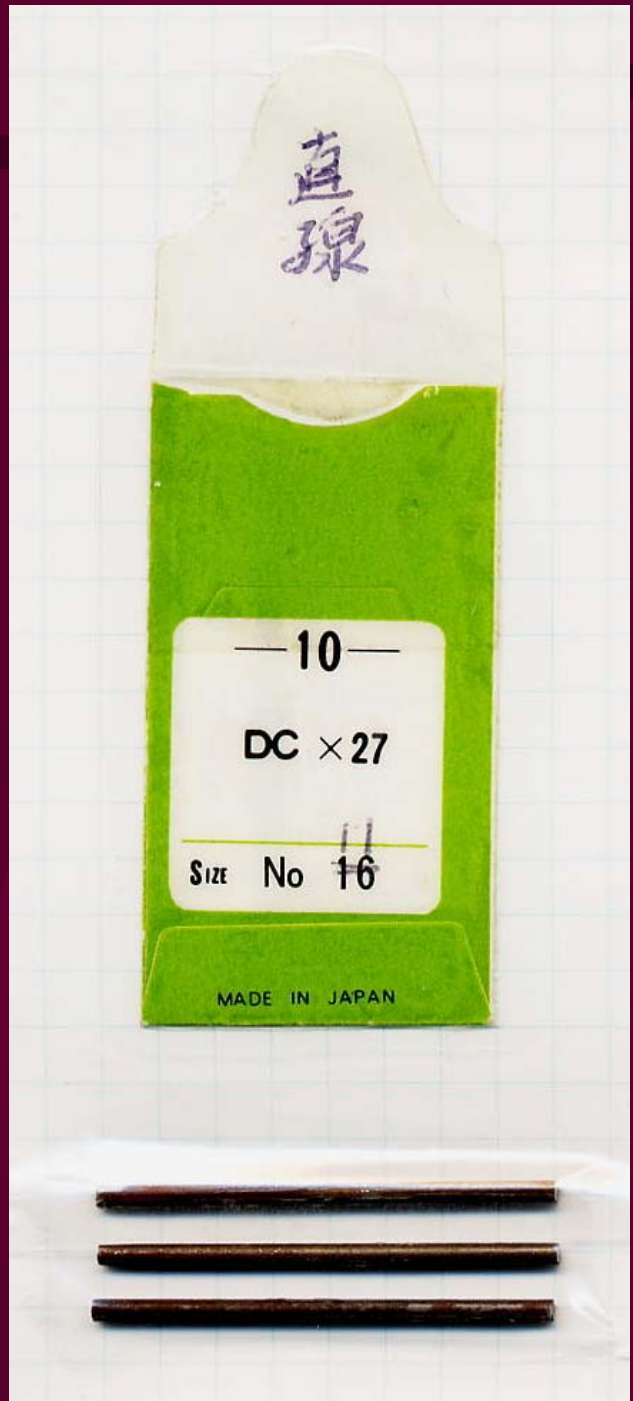

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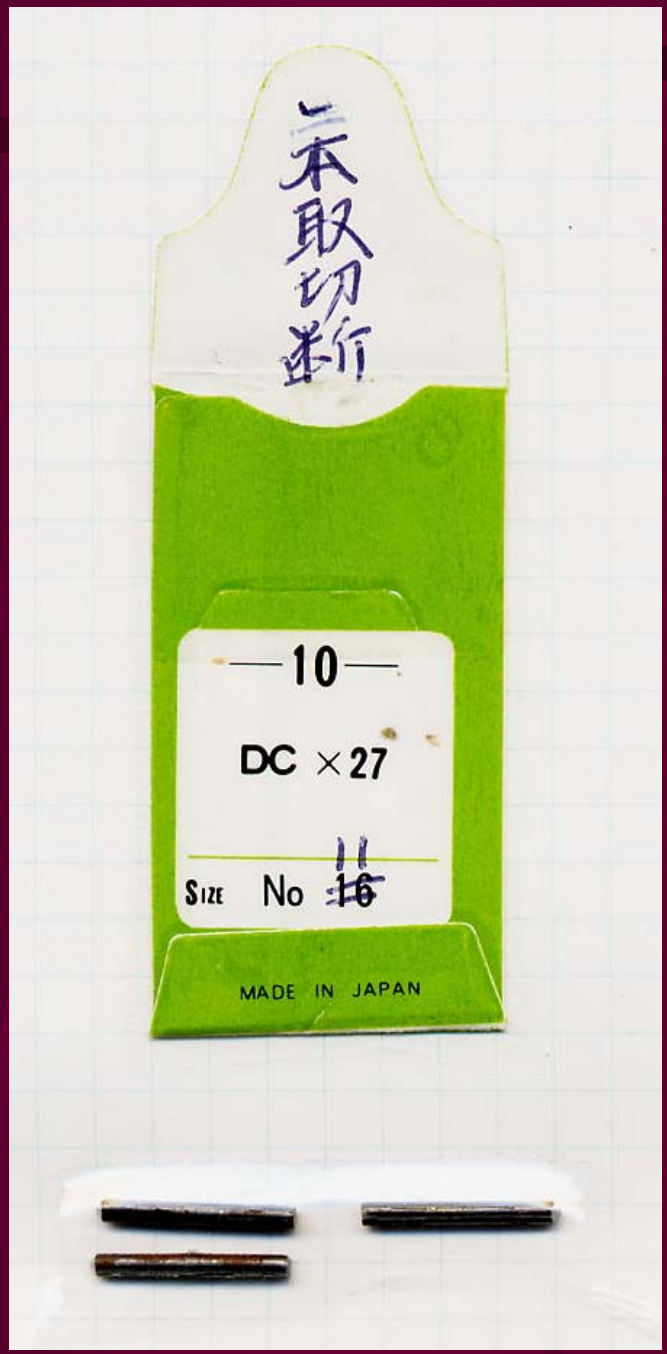

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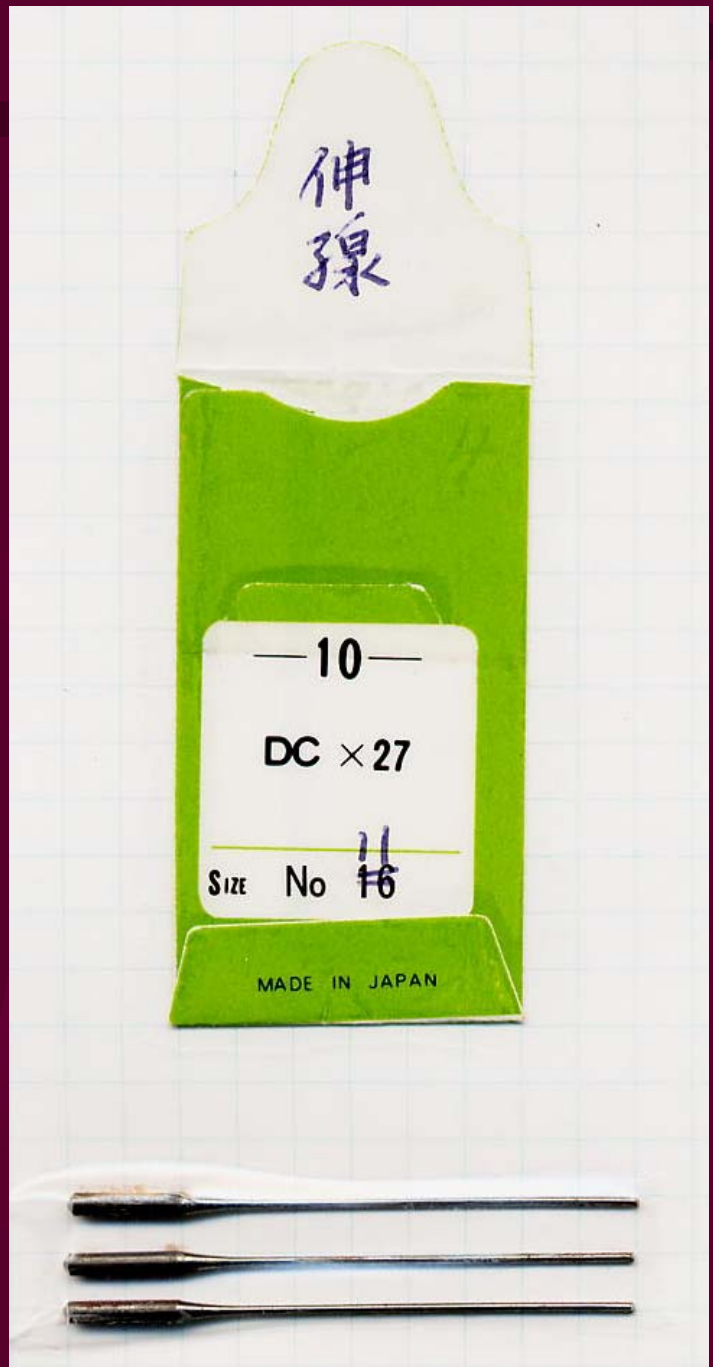

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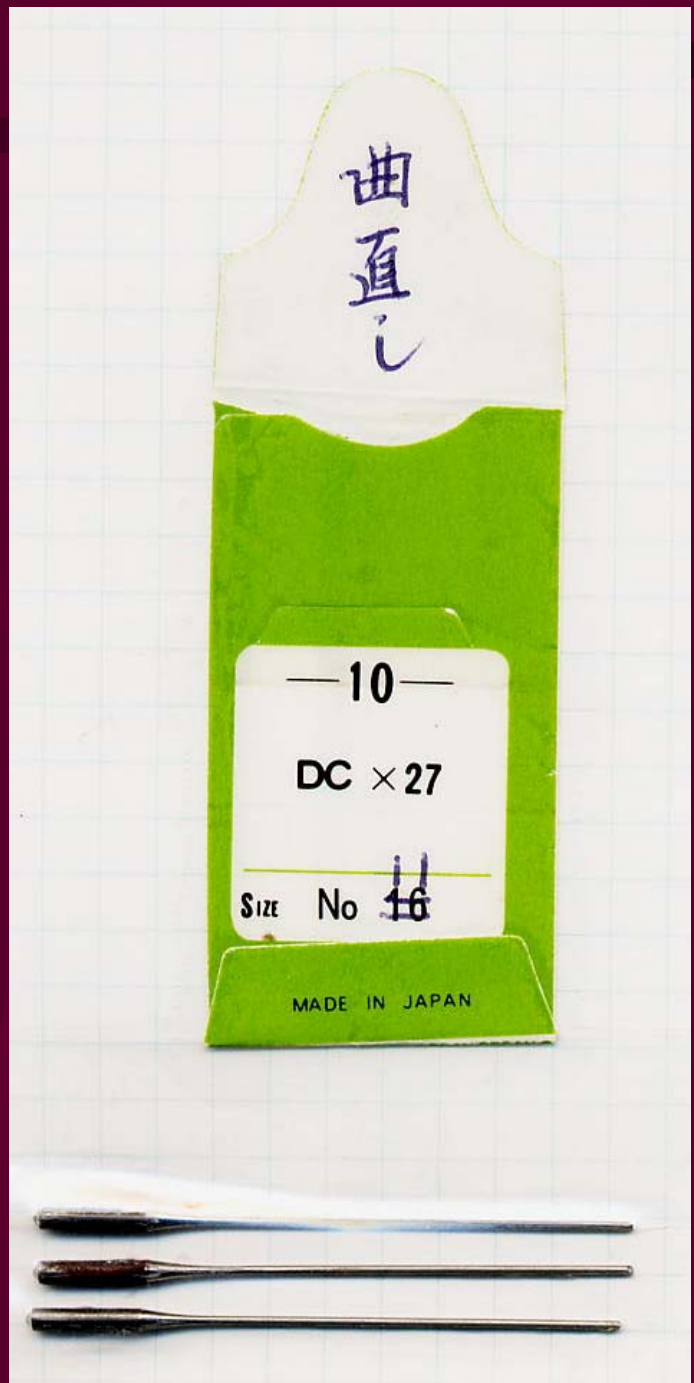

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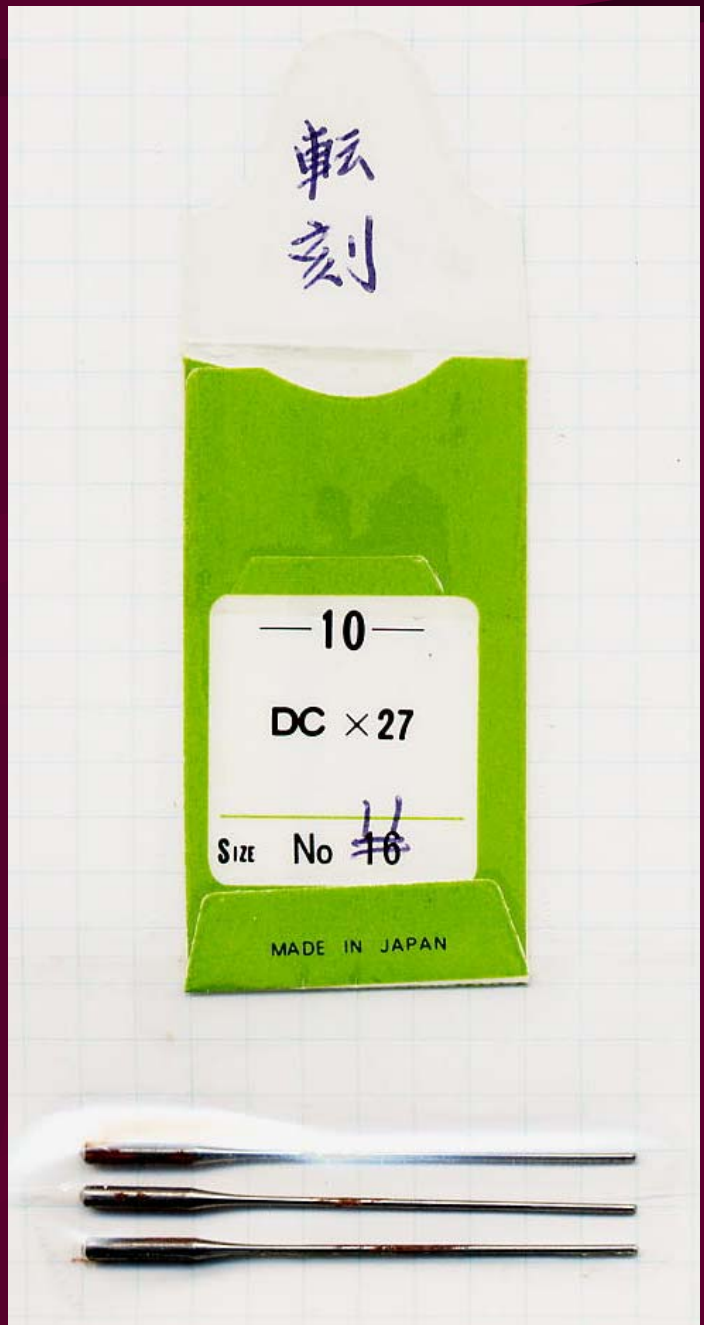

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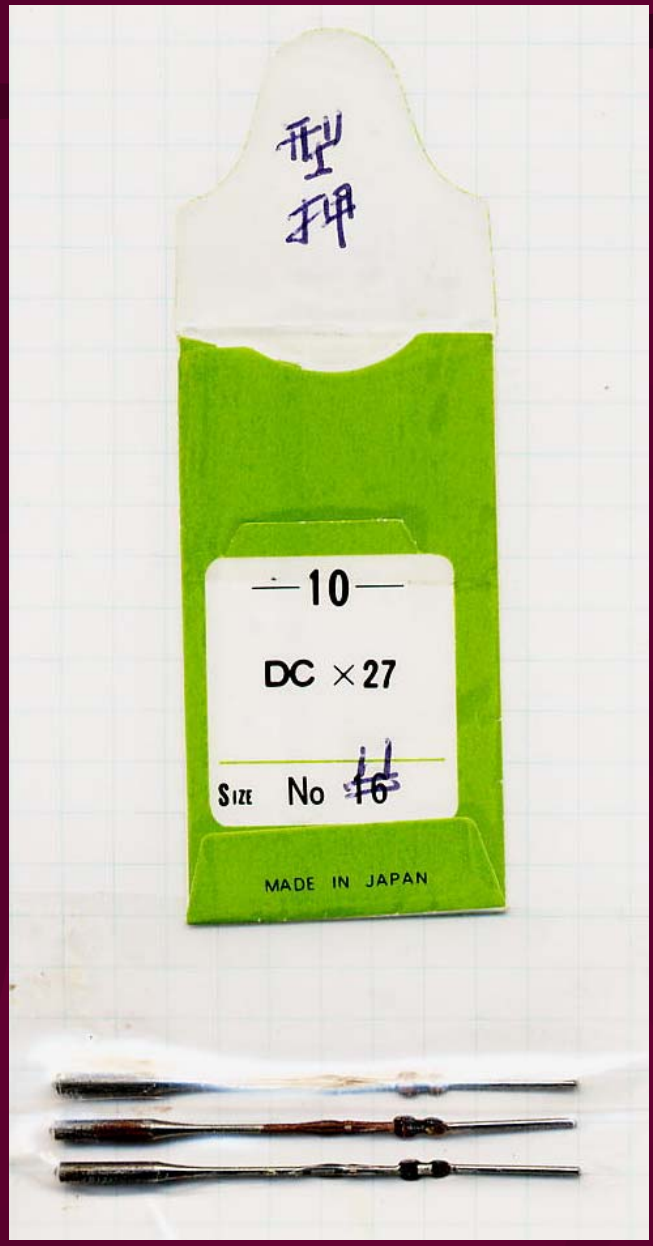

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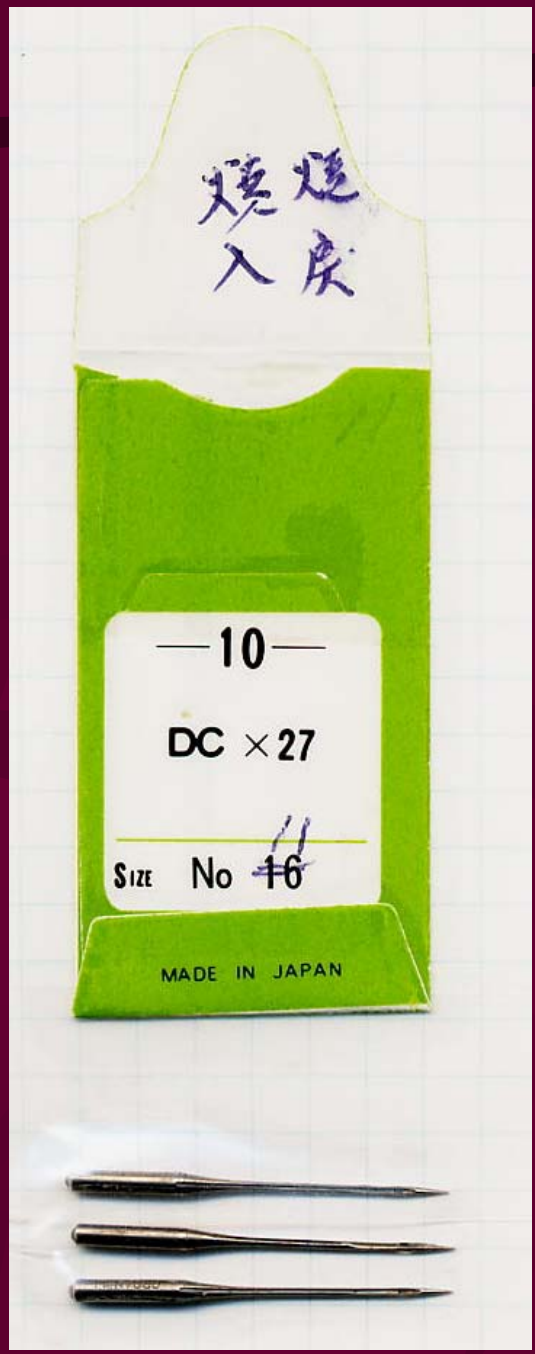

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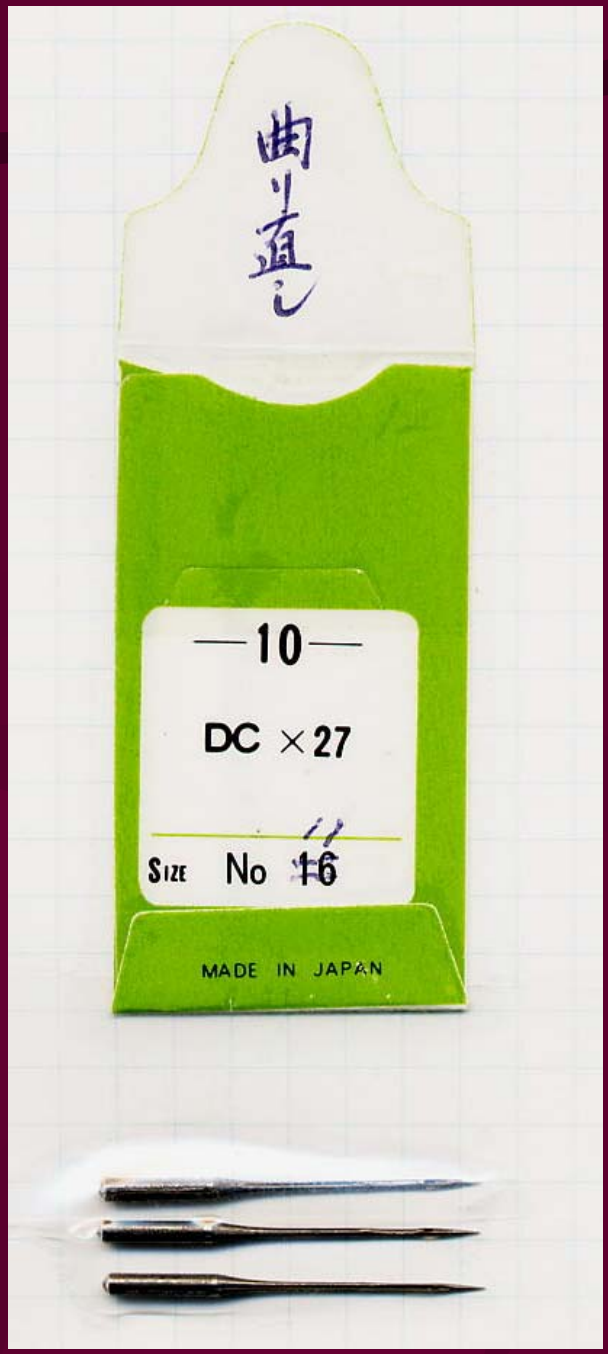

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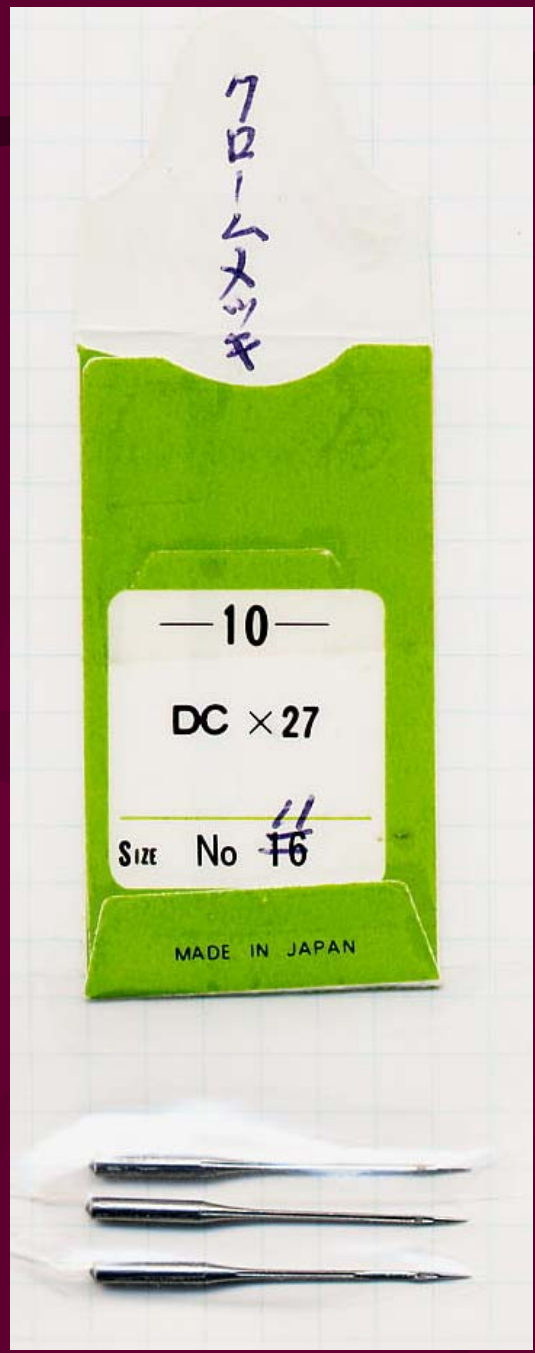

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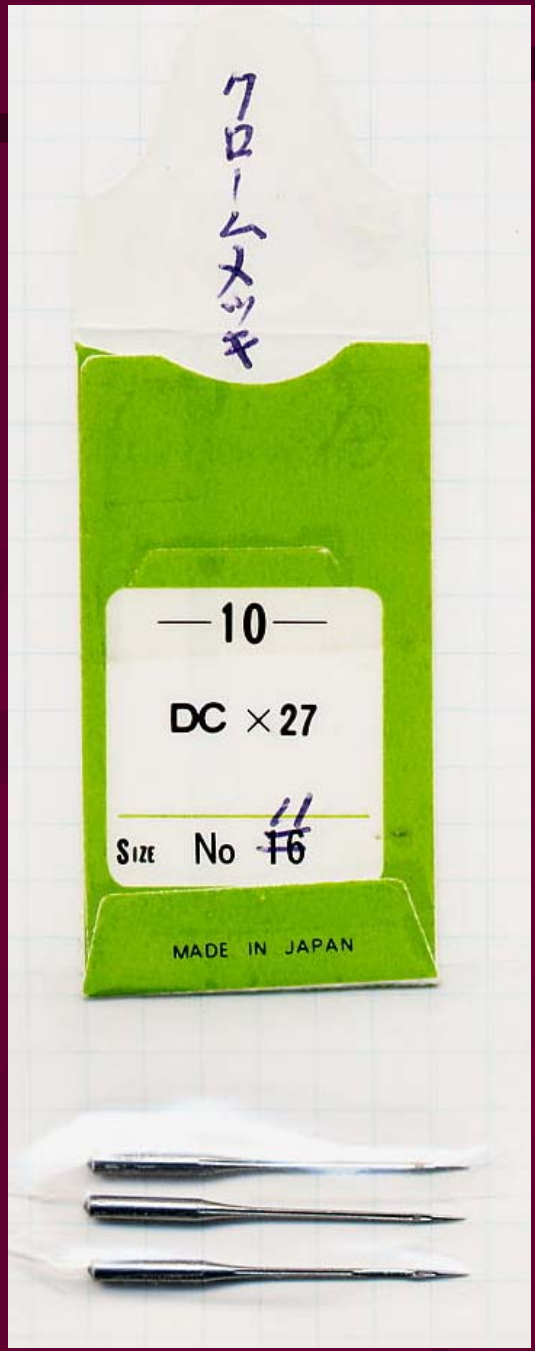
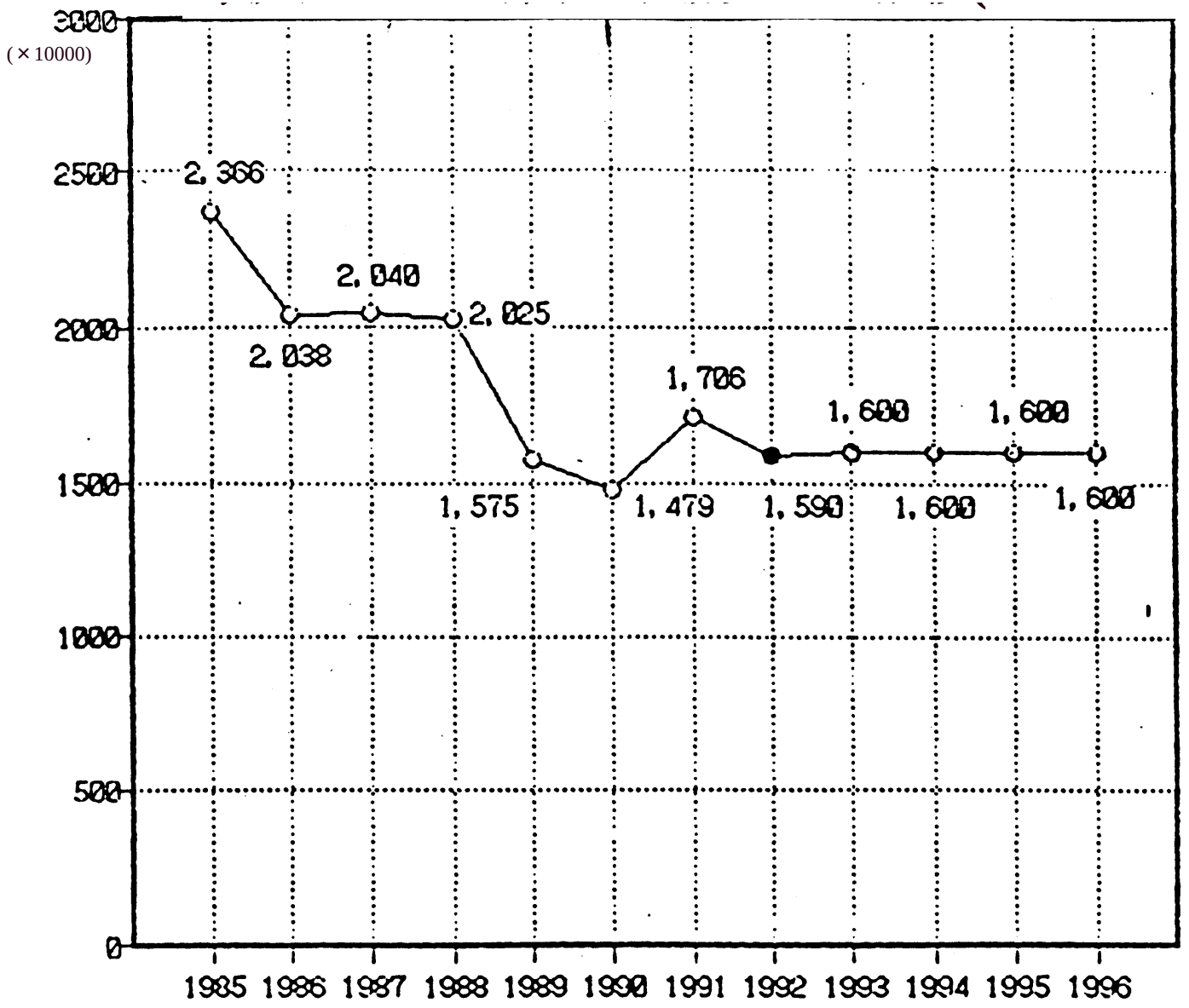


15.

Transition of domestic sewing machine needle domestic market sales (1985-1996)



From Pamphlet of Organ Needle Co.,Ltd.

Case 1: Organ Needles (2)

Courses of Diversification and Organization

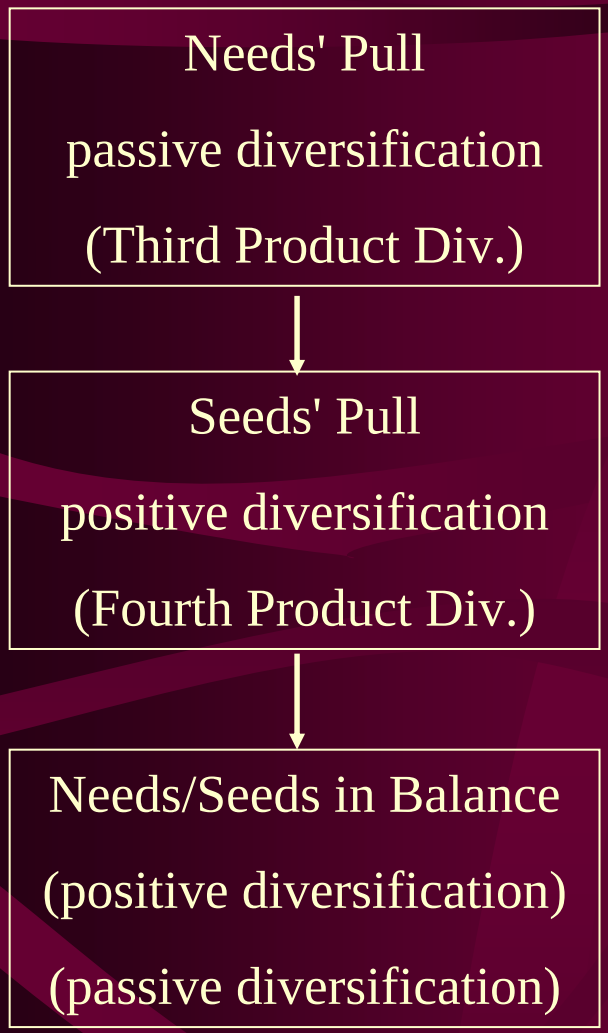
First Product Division: Sewing machine needles (1954)

Second Product Division: Stocking needles for knitting machines

Third Product Division: Contact probes for continuity inspection of semiconductor, dot-wires for
dot- printer heads, etc. --- all products in needle shape (1978)
Dealt based on customers' request (needs' pull)

Forth Product Division: Precision parts. Application of ultraprecision processing technology
cultivated in manufacturing of needles (technology push) (1980s)

First Product Div.	Manufactures sewing machine needles, the firm's main product line, having approx. 50% share of total sales. Relatively stablemarket and high profit rate. " Cash caw" division.
Second Product Div.	Manufactures stocking needles for kniting machines
Third Product Div.	Manufactures electronics equipment parts. Main products being contact probes for continuity inspecion of semiconductor basis,etc., and dot wires of printer heads for dot printers. Pillar of diversification with 20% share of tatal sales.
Fourth Product Div.	Manufactures precision parts. Developed to date embrocation pins and coil nozzles, etc.Straives to apply/exploit ultraprecision process technologies accumulated by manufacturing needles.



- ○ Clear-cut needs, little risk
- ● Fierce market competition, requiring mobility and stamina

- ○ Maximize own technological advantage
  Strong products possibly fostered
- ● Big risk. If no needs, no success in the end.

- ◎ Leverage strengths of both Needs/Seeds models

Case 2: Iwaya Porcelain (1)

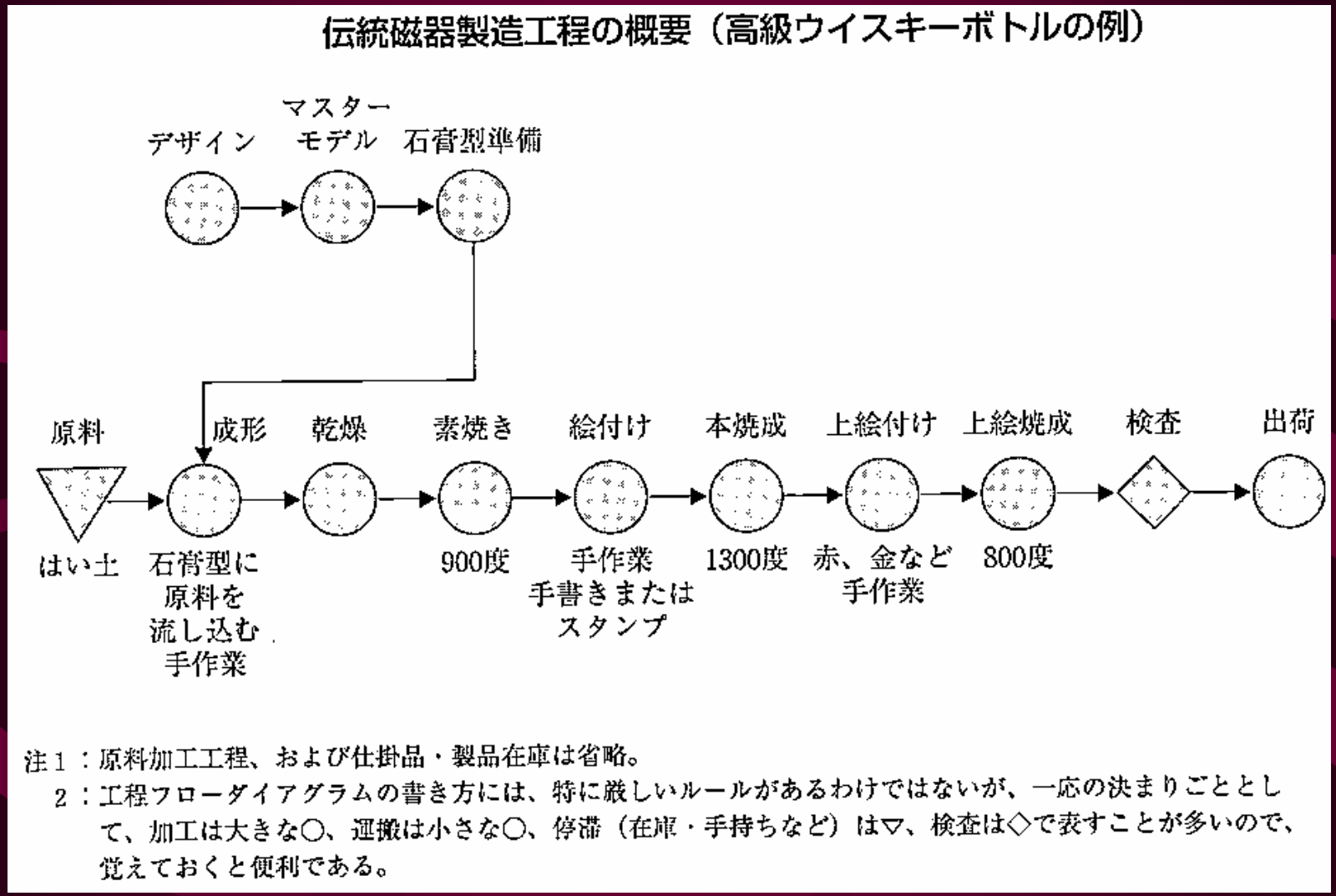
Large pottery of Arita Wares in Arita machi, Saga prefecture (15 generations over 270 yrs)

Medium-size company with 600 employees and ¥10 billion in revenue

Diversified porcelain products, and a few factories in vicinity
(1) Relief (single piece, customization, atelier style)
(2) Vesela (large porcelain products, small-batch production)
(3) Traditional porcelain (medium-batch production)
(4) Tiles for buildings (large batch, tunnel oven)

Taking time to diversify gradually (acid-resistant porcelain→tile→relief)

Production Process: Traditional Porcelain (teacups, etc.)



Case 2: Iwaya Porcelain (2)

Competitiveness of Iwaya Porcelain products: Arita Wares' brand power, quality

Conventionally, mass-produced acid-resistant porcelains were the moneymaker (monopoly of material)

But, the profitability of Tile Business, the largest (50%) in the firm, has been sluggish for a long time.

Inferior to Seto and Tajimi in terms of scale, cost, transportation cost, etc.

Hence a strategy for 1990s-----"General Special Order Porcelain Maker"

Slogan: "from receiving orders to creating orders"

Can the Tile sector reproduce the Relief Business's precedent of increasing its profit?

Analysis: Big sectors are Tile and Acid-resistant Porcelain (chemical).
Growing sectors are Vesela, Traditional Porcelain, Tile.
Profitable sectors are Relief, Vesela, and Acid-resistant Porcelain (chemical)

Comparison of Major Businesses (2) : General Indicators

	Relief	Vesela	Traditional Porcelain	Tile	Chemical-industry related
Revenue (1980) (¥million)	304	300	717	2800	2200
Revenue (1990) (¥million)	450	500	1670	4800	2700
Growth in revenue (1990/1980)	+48%	+57%	+133%	+71%	+23%
Operating margin (1980)	−10%		2%	3%	6%*
Operating margin (1990)	11%	11%	7%	7%	9%**
No. of employees (1990)	38	50	60	270	116

Notes: * Includes FRP and Construction sectors (both in deficit)

** Excludes FRP and Construction sectors (both in deficit)

Tile business sector is big.

Table 1 Transition of Revenue and Number of Employees of Ｉ Company

Fiscal Year (April-March)		1983	1984	1985	1986	1987	1988	1989	1990
Revenue (in ¥000million)		75	74	74	74	71	69	83	97
Revenue composition (%)	Chemical-industry related (acid-resistant)	47%	42%	32%	36%	30%	27%	25%	28%
	FRP (fiber reinforced plastic)							3%	3%
	Construction (engineering)			10%	9%	9%	8%	10%	11%
	Tiles for building exterior	43%	50%	49%	46%	52%	54%	52%	49%
	Relief (wall painting) + Vesela (outdoor objet d'art)	9%	8%	9%	10%	10%	11%	10%	9%
Number of employees (head count)		575	562	571	597	592	581	581	626
Average age (yr. of age)		41	41	42	41	42	42	42	41
Average years of sevice (yr.)		15	16	15	14	15	15	15	14

Information: Company's sales report

Comparison of Major Business Sectors (1-1): Product, Market, Competitiveness--- Tile business is not strong

	Relief	Vesela	Traditional Porcelain	Tile	Chemical-industry related
Time of business commencement	1960s	1970s	18th century	1950s	1920s
Product outline	Interior of public buildings Porcelain for wall decoration Wall painting of tiles (average size at 3x7m)	Umbrella stands Ash tray stands Chairs Flowerpots, etc. Outdoor objects d'art of porcelain	Porcelain vases Dishes Whiskey bottles Accessories, etc.	Porcelain tiles for outdoor decoration of commercial bldg (including construction)	Acid-resistant porcelain bricks, balls, saddles, etc. Filers for chemical plants, etc.
Major customers	Public offices Design offices	Furniture retailers Furniture whole sellers Design offices Department stores	Individuals Public offices Liquor makers, etc.	Public offices Bldg owners Design offices	Chemical makers Filature makers Iron makers Power companies
Major attributes required for products	Artistic quality Weather resistance	Aesthetic Weather resistance	Aesthetic	Aesthetic Precision Durability Weather resistance	Corrosion resistance Thermal insulation Abrasion resistance
Price elasticity	Low	Low	Low	Medium	High
I Co.'s share of domestic porcelain products' market	80%	80%	0. 1%	2% (tile market) 10% (commercial bldg market only)	80%
Major competitors in domestic porcelain products' market	OT Co. Individuals	Shigarakiyaki makers	Many	IX Co. (tile sales at ¥72bill. in 1985) DT Co. (tile sales at ¥17bill. in 1985)	NG Co. (Japan) DW Co. (USA) ST Co. (Germany)

Comparison of Major Business Sectors (1-2): Product, Market, Competitiveness: Ｉ Co's tiles are customized-orders, but costs are high.

Ｉ Co's strength v.s. competitors	Past actual results　Color Carving technology	Technology in large porcelain Manufacturing technology	Technology in large porcelain	Special-order items Texture Durability	Capability in material procuremet　Engineering capability in heat-resistant system
Ｉ Co's weakness v.s. competitors	Handling of segementing to large number oftiles	Heavy weight Fragility	High colst	High cost	High cost (compared to foreign products)
Main competitive substitutes	No wall decoration	Porcelain Water Plastics	Porcelain	Porcelain tiles Stone Metal	FRP (fiber reinforced plastics)　Metal (titanium, etc.)
Share of porcelain products' in toal market including substitues	10%	15%	n.a.	60%	50%
Strength of porcelain products v.s. substitues	Durability　Attractiveness Superior color	Weather resistance Attractiveness Superior color	Durability	Weather resitance Durability	Corrosion resistance Thermo resistance Abrasion resistance Inexpensive (v.s. titanium)
Weakness of porcelain products v.s. substitues	Handling of segementing to large number of tiles	Heavy in weight Fragility	nothing particular	High cost	Heavy in weight Fragility Inexpensive (v.s. titanium)

With a brand as customized-order products, can I Co. compete against Seto and Tajimi?

Comparison of Major Businesses (4): Devlopment and Sales

	Relief	Vesela	Traditional Porcelain	Tile	Chemical-related products
No. of product engineers	0	0	n.a.	4	7
No. of indutrial designers	6	5	n.a.	3	0
No. of production engineers	1	1	6	0	10
Lead time for trial manufacturing	15 days	15-30 days	30 days	20 days	7-90 days
In-house producton rate of facility tools	90%	50%	30%	0%	10%
No. of personnel for sales	8	16	9	25	12
Main sales methods	Order entry thru word of mouth Direct mails	Route sales via wholesalers Presentation of customized orders	In stores Direct mails	Special orders as per customers' specifications	Joint development with customers Direct mails
Sales personnel's' level on product technology (self evaluation) (target = 100%)	80	70	100	50	80
Share of customized orders (new design)	100%	Low (30%)	High (80%)	High	n.a.

But the company is not profitable at all.

表２　Ｉ社の主要財務指標の推移

会計年度（3月末決算）	売上高（億円）	原価／売上比率	販売管理費／売上比率	営業利益率	支払利息／売上比率	経常利益率	税引前当期利益率	総資産（億円）	流動資産（億円）	固定資産（億円）	うち有形固定資産	負債（億円）	うち流動負債	資本（億円）
1969	24	66％	26％	8.6％	8.0％	2.8％	1.3％	28	20	8	6	25	16	29
1970	30	65％	26％	8.6％	6.8％	3.3％	1.8％	31	22	9	7	28	19	34
1971	33	66％	26％	8.2％	7.0％	2.9％	1.0％	36	27	9	7	33	24	35
1972	33	65％	28％	7.1％	8.3％	0.5％	0.3％	-	-	-	-	-	-	-
1973	36	64％	28％	8.6％	7.2％	2.9％	0.9％	41	30	10	7	37	28	36
1974	42	63％	28％	8.2％	7.0％	3.0％	1.0％	47	36	11	8	43	33	38
1975	52	65％	26％	8.3％	7.3％	2.6％	0.8％	48	37	11	8	45	35	39
1976	45	64％	29％	7.4％	9.3％	0.7％	0.7％	56	44	12	8	52	38	40
1977	49	66％	28％	6.0％	8.7％	-0.8％	0.0％	58	45	13	9	54	41	38
1978	54	68％	26％	5.6％	7.7％	0.3％	0.1％	57	45	12	8	53	41	38
1979	59	72％	23％	4.7％	5.6％	0.5％	0.1％	59	48	11	8	55	43	39
1980	59	70％	24％	5.2％	5.8％	1.0％	0.4％	57	45	11	8	53	40	41
1981	68	70％	24％	6.4％	6.8％	1.4％	0.4％	61	49	12	9	57	42	42
1982	74	69％	25％	5.6％	6.5％	0.8％	0.4％	62	48	14	11	58	41	42
1983	75	68％	26％	5.7％	6.8％	0.9％	0.1％	70	51	19	15	65	42	42
1984	74	68％	26％	5.6％	7.1％	0.7％	0.0％	75	52	23	19	71	49	43
1985	74	66％	28％	6.4％	7.6％	1.2％	0.0％	77	53	24	20	73	47	43
1986	74	67％	26％	6.9％	7.1％	1.2％	0.0％	82	52	30	25	77	48	43
1987	71	67％	27％	5.7％	7.2％	1.0％	0.0％	80	52	28	24	75	48	43
1988	69	69％	28％	2.9％	6.4％	-1.6％	-2.1％	79	53	26	22	77	48	29
1989	83	66％	26％	7.5％	4.9％	3.7％	0.2％	79	52	26	22	76	51	30
1990	97	65％	26％	8.3％	4.0％	5.3％	0.4％	84	57	27	23	81	58	34
1991	103＊													

＊は速報値。　"-"は、不明。

資料：Ｉ社営業報告書。

Case 2: Iwaya Porcelain (4)

New management team wants to concentrate on customized products of added value initiated from proposition-oriented business.

But there still exists within the firm a strong “belief in standardized products under mass production” derived from the past successful experiences in the acid-resistant porcelains (standardized/average products of mass production).

Such an idea exists at the factory’s floor in the form of a “belief in the tunnel pot”.

There is a gap between the top management’s strategy on customized products and the production floor’s orientation to mass production.

Strategic framework needs to be established after incorporating Mono-Zukuri sites.

Case 2: Iwaya Porcelain (4)

What is a reformation of Mono-Zukuri sites which is linked to the customized-product strategy?

Improvement on a layout change of the tunnel pot? --- limited

Computer-controlled flexible automation? ---questionable return on investment

Switch from the tunnel pot over to the shuttle pot? --- its pros and cons?

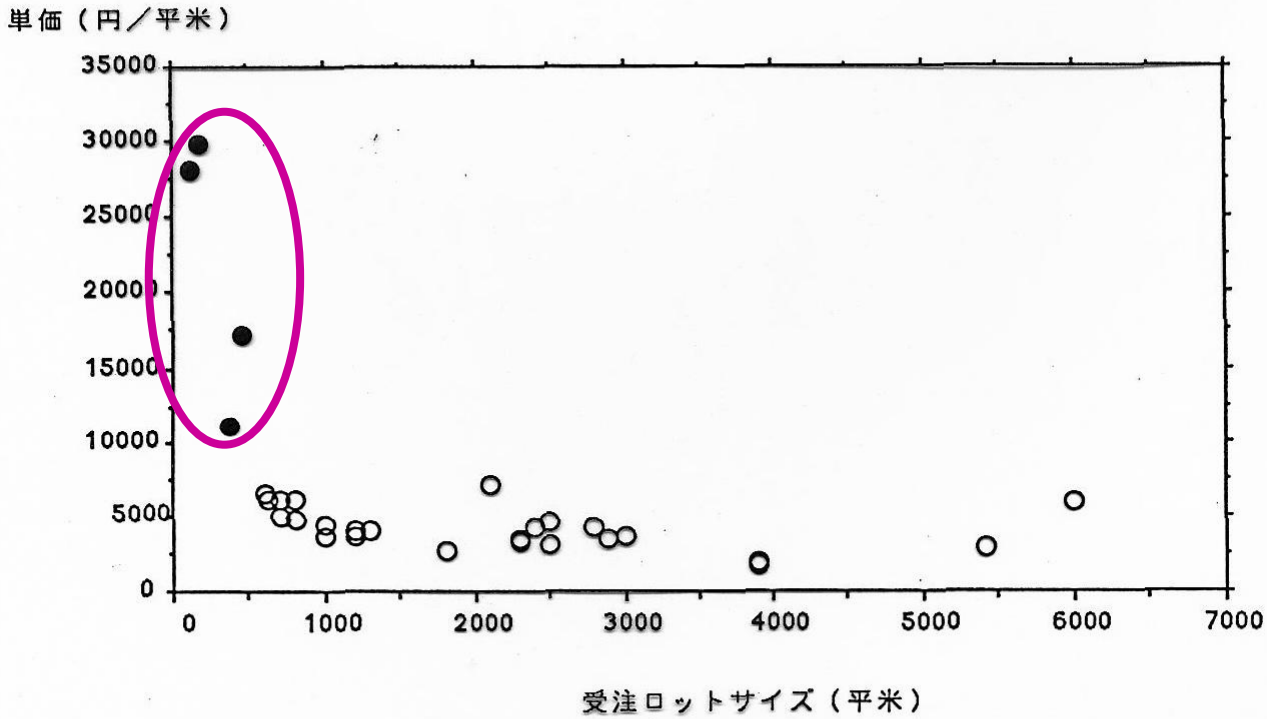
Establish a line exclusive to trial products? --- (problem of postponing trials)

How can the factory-network structure become stronger?

Should designers and engineers be dispersed in factories/branches?

More like, products deserving high prices potentially exist in a small-lot-order zone?

Order lot size and unit price of tile



注： ● ： Tile of special shape

○ ： Tile of standard type

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SWOT Analysis (by Business Sector) Tile's Characteristics?

	Strength	Weakness	Function	Issue
Relief	technology of 3-D Relief 80% share	slow progress in prodution tech. labor-intensive business	diversification/ gentrification in line with top's policy	linckage with other sectors
Low effct of business cycle	proprietry genre		in line with top's policy	efficiency of sales personnel low increase in prroductivity
Vesela	80% share know-how of large-size production first entry in inland			
Traditional porcelain	new design concept production technology for large-size porcelain leadership by VP high morale of sales force	many competitors high cost (remote areas) seasonal fluctuation/ high effct of busi-ness cycle	gentrification (lifestyle)	fostering future craftmen
Tile	revived quality responsive to client	high cost low share inadeqate sorting sytem cost accounting to match small-lot production	high-grade orien-taion	resistance to responding to small-lot/-quanity production no production engineer in deficit-inclination high effect of business cycle
Chemical-industry related				

Action Plan (Company Strategies/Policies)

1.Concentrate on production of customized orders < General Special Order Porcelain Maker>
2.Transform from receiving orders to creating orders (to Proposition-Oriented Business)

<Prioritize Customer Satisfaction>

Action Plan (Factory Structure)

	T Pot	Arita Head Office Factory	Kami Arita factory	Nishi Arita factory	Imari Factory	Yamanouchi 1st Factory	Yamanouchi 2nd Factory	Yamanouchi 3rd Factory	Bu-kanren Factory
Tile		larg-size tile				small-size tile			standardized tile
Chemical-indus-related		○		○		○		○	
Traditional porcelain	○								
Vesela							○		
Relief			○						
FRP		○			○				
		material							
Tunnel		shintai*				○			
Shuttle		○	1	4		○	○	○	

*shintai: an object of worship housed in a Shinto shrine and believed to contain the spirit of a deity.

Action Plan (Factory Structure)

1.Set up a structure for trial productions (R&D)

Currently, trial items are being produced in a regular production line, thus delayed.

→ Introduce facilities for an exclusive use of trials (Shuttle) for development research

→ Experiment on the shuttle at the chemical-related business sector

2.Full-fledged production structure (consolidation of factories)

Scattered Chemical-related business →Integrate at the head office (goshintai)

Large-size Tile business at head office → Yamanouchi 1st Factory

Discontinue FRP and sell out factory → FRP tank maker

Sell out Kami Arita Relief factory → Transfer to Yamanouchi 1st (Shuttle)

Add new Shuttle pot(s)

Action Plan (Reorganization)