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Checklist for Factory Planning

Process technology / Automation
AVIS Energy
Date:
tferfyris@avisglobal.eu

Examination of the Area

I. Location

1.	Terrain	Remarks
1.1	Composition a. Foundation b. Ground water level c. Topography	
1.2	Size, shape	
1.3	Price	
1.4	Opening-up costs	
1.5	Possible additional expenses	
1.6	Possible to buy more / option	
1.7	Neighbours - borders	

2.	Transport situation	Remarks
2.1	Road connections a. Motorway b. Major roads c. Secondary roads d. Connection possibilities	
2.2	Railway sidings	
2.3	Waterways	
2.4	Nearest airport / airfield	
2.5	Location regards: a. Raw material suppliers b. Customers	

3.	Population	Remarks
3.1	Number of inhabitants - Immediate area	
3.2	Number of inhabitants - Surrounding area	
3.3	Commuters traveling in / out; Surplus	
3.4	Population development during the last 10 years	
3.5	Short description of each of the communities and the	

	surrounding area	
3.6	Influences from bordering areas	

4.	**Residential building land / apartments**	**Remarks**
4.1	Composition	
4.2	Size	
4.3	Price - sqm	
4.4	Opening-up costs	
4.5	Rental apartments	
4.6	Accommodation for immigrant workers	
4.7	Public subsidies (grants, loans, etc.)	

5.	**Industrial workers, industrial structure, work places**	**Remarks**
5.1	Industrial workers per 1,000 inhabitants	
5.2	The most important resident industrial groups	
5.3	Number of existing companies and workers	
5.4	Number of full-time agricultural workers	
5.5	Workshops	
5.6	The main type of industry in the area, branch, number of employees	
5.7	Wage levels	

6.	**Institutional facilities**	**Remarks**
6.1	Schools	
6.2	Local council offices	
6.3	Social institutions	
6.4	Cultural and social facilities and events	

7.	**Financial support**	**Remarks**
7.1	Loan agreement AVIS Securities amount	
7.2	Curency	
7.3	Term	
7.4	… % interest	
7.5	Opening-up costs paid for by the local JV partner?	

8.	Public utilities	Remarks
8.1	Electricity Voltage level(s): …. V Tolerance +/- …. % Frequency: …. Hz Tolerance +/- …. % Power sources: …. kVA Type of Network: Protection measuere:	
8.2	Gas Pressure: …. bar Quantity: …. Nm³	
8.3	Drinking water a. Connection to local supply b. Own wells, possible purification	
8.4	Non-drinking water and cooling water a. Own wells, capacity b. Analysis c. Purification d. Pressure and amount	
8.5	Steam a. Secondary sources b. Own production c. Thermal-power-coupling	
8.6	Waste water Purification plant a. Which requirements exist? b. Connection to existing purification plant c. Own purification plant d. Simple pretreatment in collection tanks	
8.7	Surface water	
8.8	Buffer tank	
8.9	Special conditions laid down by the authorities	
8.10	Water disposal (disposal site)	

II Planning

1.	General Development	Remarks
1.1	Determination of standard	
1.2	Arrangement of the buildings a. Production b. Support facilities c. Energy production and distribution d. General services and administration	
1.3	Transfer station, outside energy	
1.4	Cable plan	
1.5	Drainage plan, waste water, surface water (separate system)	
1.6	Pipe bridge or all pipes underground	
1.7	Rail plan a. Connection to public rail system or b. Lay railway lines on the factory premises	
1.8	Parking spaces, private cars	
1.9	Trucks - waiting area	
1.10	Factory roads	
1.11	Fencing, gates and reception area, barriers and truck weighing scales	
1.12	Exterior lighting	
1.13	Landscaped areas	

2.	Production buildings	Remarks
2.1	Size measurement from the machine installation plan, production demands, traffic area, material flow (planning “from inside out”)	
2.2	Implementation and construction a. Steel girder construction b. Concrete construction c. Energy canals d. Span e. Support clearance (planning grid f. Binder span (planning grid) g. Clearance to the binder lower edge h. Additional load on supports, binders and purlins i. Will the local government accept a prefabricated modern designed building?	
2.3	Building of the cellar ? (prefabricate no need)	
2.4	Foundation a. Permitted load (ground inspection) b. Foundation type c. Special conditions (ground water, etc.)	

2.5	Facades a. Brick lining, finished elements b. Façade layout (type of exterior wall element) c. Allow for the possibility of an extension (build-on) d. Parapets e. Special tinted glass face – prefabricated hull dessing	
2.6	Rows of lights	
2.7	Roof lights	
2.8	Skylights, smoke flaps	
2.9	Roof construction	
2.10	Roof insulation	
2.11	Floor load	
2.12	Flooring gaps, foundations	
2.13	Ventilation	
2.14	Heating a. Warm water b. Air c. Electric	
2.15	Heat insulation	
2.16	Lighting a. Establishing the level of lighting b. General lighting c. Workplace lighting d. Store rooms	
2.17	Energy installation	
2.18	Energy distribution	
2.19	Drainage a. Waste water, faeces b. Clean water (cooling water) c. Neutralization tanks or pre-preparation	
2.20	Doors a. Plastic swing gates (fork-lift truck traffic) b. Wind catchers c. Rolling gates d. Airlocks	
2.21	Windows, frames a. Wood b. Steel c. Aluminium d. Combination	
2.22	Fire isolation	
2.23	Sprinkler system	
2.24	CO_2 system	
2.25	Wall hydrants	
2.26	Special door locks which open in the case of an emergency	
2.27	Fire alarm	
2.28	Emergency lighting	

2.29	Emergency exits	
2.30	Emergency reporting system	
2.31	Explosive-proof rooms	
2.32	Explosive-proof zones	
2.33	Store for highly inflammable goods	
2.34	Cold storage rooms	
2.35	Chain conveyor and gravity roller conveyor	
2.36	Built-in platforms	
2.37	Toilets, refreshment rooms (“Islands”)	
2.38	Offices for the foreman and the master craftsmen (“Islands”)	
2.39	Hydraulic system	
2.40	Compressed air system	
2.41	Lifts	
2.42	Electric jacks or others	
2.43	Exhaust air a. Machine-related offtake b. General hall ventilation c. Afterburning d. Chimney	

3.	**Support buildings (included in the prefabricated hull dessing)**	**Remarks**
3.1	Built onto the production buildings	
3.2	Separate from the production buildings	
3.3	Loading bay	
3.4	Compressors	
3.5	Hydraulic station a. Central hydraulic b. Group hydraulic	
3.6	Workshop for craftsmen	
3.7	Central preparation and supply facility for chemical production and auxiliary materials (e.g. solvents, binders, etc.); tank depot	
3.8	Repair and maintenance of production aids - e.g. press, injection and casting tools	
3.9	Special constructions for the jacks in rooms 3.6 and 3.8	
3.10	Store room, interim store room	

4.	**Recreation and office buildings (included in the prefabricated hull design)**	**Remarks**
4.1	As a build-on to the production buildings	
4.2	Detached buildings	
4.3	Single storey	
4.4	Multiple storey	
4.5	Included in the halls	
4.6	Location of the social rooms a. Washrooms (proportion men / women) b. Changing rooms (proportion men / women) c. Day room and dining room	
4.7	Location of the offices (in relation to the company)	
4.8	Wall units or fitted cupboards in the offices	
4.9	Store room / equipment room for the cleaners	
4.10	Lift, stairwells, entry only through the recreation building?	
4.11	Fire escape and emergency exits	
4.12	Connection to the production buildings	
4.13	Protection against the sun	

5.	**Energy supply - energy production**	**Remarks**
5.1	Decision: Energy center	
5.2	Steam production a. Pressure ….. bar, Pressure stops b. Boiler capacity …. Reserve supply? c. Thermal-power-coupling i.e. own electricity production. Economy? d. Heating: Oil, gas, coal, etc.? Cut-off production?	
5.3	In the case of own electricity production a. Capacity ….. kW b. Generator voltage (fuel cell battery unit) c. Connection to local power station (contract)	
5.4	Water preparation	
5.5	Chimney (Special BSI conditions)	
5.6	Warm water production for heating	
5.7	Warm water for social amenities	
5.8	Emergency power units	
5.9	Central compressed air production	
5.10	Central cold storage area	
5.11	Automated energy center for weekend and holiday work	
5.12	Expansion possibilities	
5.13	Separate energy-transfer building for outside energy a. Gas	

	b. Water c. Electricity	
5.14	Own water supply a. Water table b. Productivity c. Analysis d. Concession (Geological regional authority and water management authority) e. Pump type and capacity f. Pressure g. Pressurized air tank h. When there is a sprinkler supply a storage tank capacity of …. m³ i. Water purificat6ion (filter, preparation) j. Cooling water k. No connection to the drinking water supply allowed	

6.	**Energy production - energy distribution**	**Remarks**
6.1	Lay down duct routes for pipes and cables	
6.2	Type of laying a. Pipe bridges b. Pipe ditches c. Underground, possibly in canals	
6.3	Installation at the buildings	
6.4	Transformer substation a. Capacity …. kW b. Positioned outside of the work buildings c. Main station in the company	
6.5	Energy routes in the production buildings a. Raised channels b. Under floor channels c. Pipe channels hanging free from the binders or ceilings	
6.6	Header or underground channels fro the connections to the machines	
6.7	Measurements facilities a. Company b. Cost center	

7.	Additional facilities	Remarks
7.1	Telephone system a. Number of extensions? (Expansions?) b. Number of outside lines (Expansions?) c. Direct dialing d. Rented lines to the main plant or main offices	
7.2	Telefax	
7.3	Pneumatic dispatch system	
7.4	Calling system a. Wireless (Beeper) b. Alert tableau	
7.5	Fire reporting and alarm system	
7.6	Remote transfer of technical data to the central offices	
7.7	Data collection and evaluation	
7.8	Evaluation of working hours (time-clock)	
7.9	Control system for security personnel	

8.	Waste disposal	Remarks
8.1	Public disposal site available / concessioned?	
8.2	Can / must an own disposal site be set up?	
8.3	Differentiation of the waste into a. Fluids b. Paste c. Solids	
8.4	Qualitative differentiation of the waste a. Danger to the ground water b. Inert	
8.5	Own or other waste incinerating plant	
8.6	Transport of all waste by haulage company (price per ton or m^3 paid by the municipality)	
8.7	Special conditions laid down by the licensing authorities	
8.8	Company representative as a contact person for the authorities	

9.	Waste water	Remarks
9.1	Communal purification plant available?	
9.2	Possible introduction of the company waste water a. Sufficient capacity b. Connection makes technical and economical sense c. Conditions which forbid a connection d. Type of present purification plant (mechanical, biological step?)	
9.3	If introduction to the communal (or special purpose association) purification plant is possible a. Hydraulic amount now and later b. Max. amount of solids allowed (“Freight”) c. Specifications of the type of waste allowed with maximum limits; now and later d. Details of the costs per m³ of water introduced. How are the amounts determined? e. Is there a one-off building cost subsidy?	
9.4	Own purification plant a. Hydraulic dimensioning b. Purification-technical and chemical dimensioning c. Buffer tanks; special considerations? d. Relation to the company in relation to the general building and more economical waste water canalization; as well as an odor problem. e. What pretreatment of the waste water might possibly be demanded of the individual companies (also valid for 9.3)	
9.5	Company representative as a contact person for the authorities	

10.	Surface water	Remarks
10.1	Collection of all waters capable of direct introduction into the buffer tanks a. Surface water including roof drainage water b. Cooling water c. Other unpolluted waste water	
10.2	Nature of the buffer tank	
10.3	Physical design according to local meteorological data	