Wet cast concrete pipe production plant

Introduction

Drachten, The Netherlands

‘BlueTube’ production plan – Kijlstra Drachten

- Wet cast concrete pipe production plant for sale
- Fully automated factory designed and developed by Kijlstra and Consmema/KTB
- Fully complete set of machinery
- In operation since 2016 in The Netherlands
- Capacity up to 300 pipes per day in different sizes: 300-1500mm
- Very distinctive pipes: smoother, lighter and sawable
- For sale because of strategical redirection of selling company

Pipes stand out compared to dry cast pipes

- **Easy to cut** to suit with notches
- Remaining part can be **re-used**, no waste material
- **No butt, spigot or socket pipes** required
- Inside pipe wall is **smooth because of wet instead of dry concrete**: better flow of (waste) water
- More than 20% **lighter** and thinner than regular tubes: less concrete, easier handling and transport advantage
- **Consistent production:** Every pipe has exactly the size, because of wet cast mold production
- **No leakage:** Sealed with rubber tubes

BlueTube pipe production operational since 2016

- **2008:** first plans for new design of a pipe and new production plant at selling company
- **2011:** further developments of new pipes and production process
- **2015:** start construction pipe factory
- **2016:** pipe factory commissioned
- **2022:** strategic decision to stop producing pipes

Very high-end concrete pipe production plant

- Completely new way of manufacturing
- Use of Self-Compacting Concrete (SCC) – wet cast
- High degree of automation
- Good and clean working conditions
- Leading to high quality pipes and unique products
- Well-suited for using different moulds for other products

Process description

- **Automation:** The factory is fully automated. Only 2-3 people needed to run the full operation
- **Reinforcement:** Factory includes a crane for laying in steel reinforcement
- **Capacity:** Up to 120-150 pipes per production shift of eight hours, depending on the diameters produced
- **Production hall:** Size is 40 x 40 x 11 meter
- **Process:** Pipes are produced in a ‘carousel’: concrete is injected into moulds, containing 1-4 cells for pipes, then the moulds are stored for seven-ten ours in the drying warehouse. Transport in and out of drying chamber by fully automated crane. After that, the pipes are taken out of the moulds automatically. Via a crane and a conveyer belt, the pipes are transported automatically out of the factory. The conveyer belt is also a stack for about ten pipes

Components of the factory

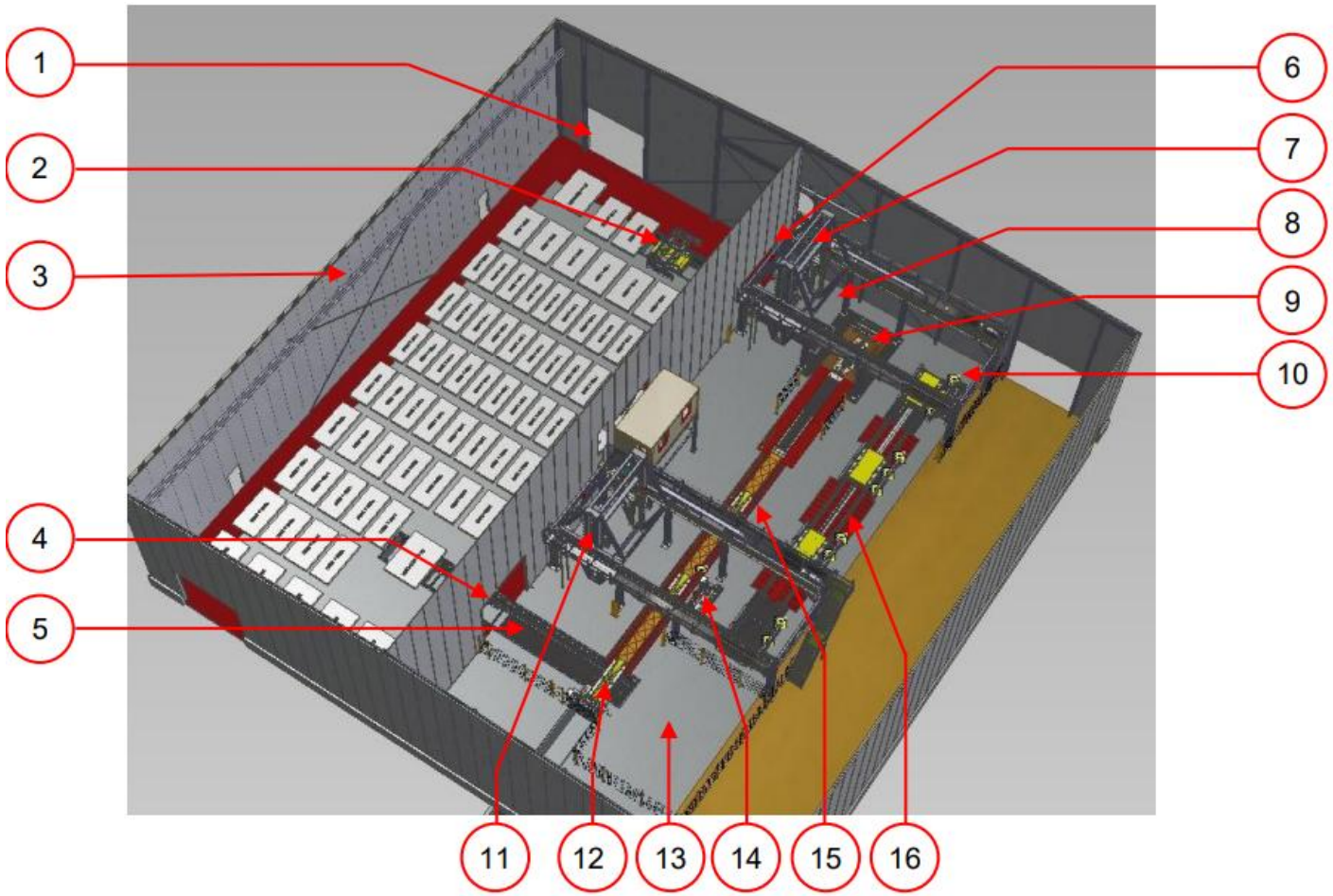
Base factory

- 76 moulds for pipes of different sizes (300 – 1500) with in total 175 cells (pipes)
- Stacking Crane drying hall (Manufacturer: Bijlsma)
- 2 Mould handlers
- 4 Transportation platforms on 3 car tracks
- Pipe lifting crane for unloading pipes from moulds
- Conveyer belt for transporting pipes out of factory
- Pipe discharging unit
- Mould filling unit
- Other installations

Optional

- 3 robots: cleaning moulds and ‘formwork / shuttering oil’
- Concrete pump station (Manufacturer: Staring)
- Concrete mixing plant

Plant overview



1. Overhead door drying chamber
2. Loading position drying chamber
3. Fully automated crane (not on drawing)
4. Entering door molds into drying chamber
5. Car track 2 for molds
6. Exit door molds out of drying chamber
7. Mold handling unit 1
8. Car track 1 for molds
9. Pipe discharging unit
10. Mold opening unit
11. Mold handling unit 2
12. Mould filling unit (top-down)
13. Mould filling unit (bottom-up pumping)
14. Mold closing unit
15. Car track 3 for molds
16. Car track 4 for molds

Installed after drawing:

17. 3 Robots for cleaning and spraying moulds
18. Crane for placing reinforcement
19. Crane for unloading pipes from mould
20. Conveyer belt for transport out of factory

Not on drawing:

21. Hydraulic installations (not on drawing)
22. Electrical installations (not on drawing)
23. Concrete mixing plant (not on drawing, could be included)
24. Concrete pump (not on drawing, could be included)

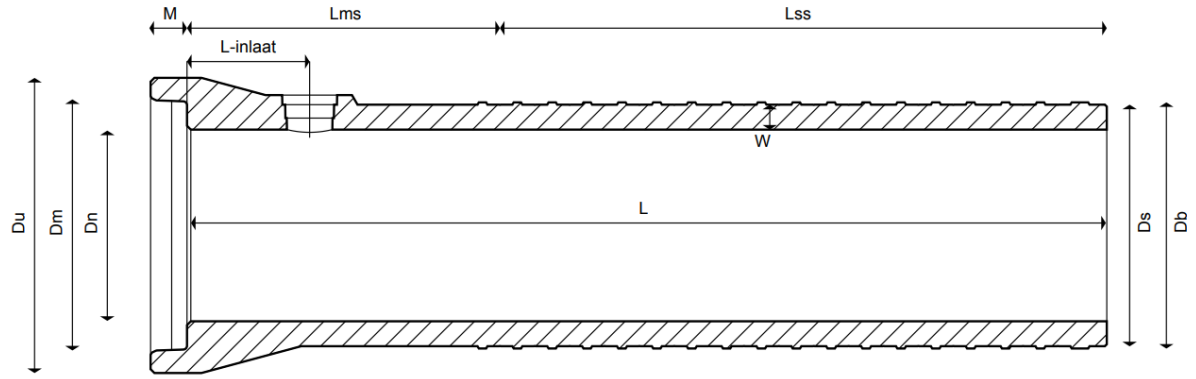
Reference projects

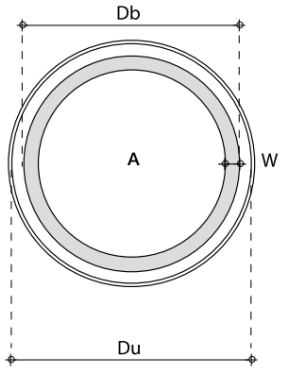


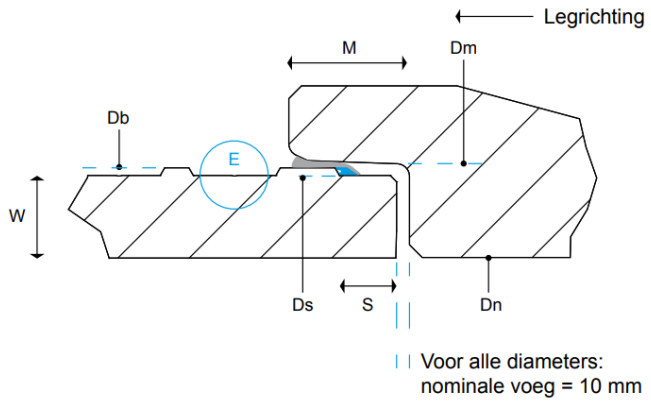



Pipe details

BlueTube buizen ø300 t/m ø1500







Voor alle diameters:
nominale voeg = 10 mm

- 300-1500mm diameter range
- Length: 2400mm all diameters

Pipe details

Diameter inside	Diameter outside spigot	Diameter outside socket	Length	Wall thickness	Weight KG	A in M^2
300	412	507	2400	50	375	0,070
400	522	627	2400	55	529	0,125
500	642	770	2400	65	766	0,196
600	762	910	2400	75	1063	0,282
700	872	1020	2400	80	1289	0,384
800	992	1155	2400	90	1654	0,502
900	1122	1285	2400	105	2219	0,635
1000	1242	1415	2400	115	2590	0,785
1250	1522	1695	2400	130	3568	1,226
1500	1822	1995	2400	155	5041	1,766

- Wet cast pipes are very consistent in dimensions
- Up to 20% lighter than dry cast pipes

Want more information?

Two main sale options:

1. Production assets only:
   - Concrete plant and/or concrete pump optional
   - Original machine producer Consmema/KTB can take lead in:
     - Disassembling
     - Transport
     - Assembling
     - Starting up production
   - As seller we can support in disassembling and starting up production
2. Production including building, grounds & concrete plant and pump:
   - Future production on current site in Drachten, the Netherlands
   - As seller we can support production

We can share more details:

- Production data
- Technical data
- Production movies

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Component details

3. Mould set with fully automated crane

- Fully automated crane for drying chamber
- Mould set with 76 moulds:

Diameter	# mouldsets	# tubes per mouldset	# indivual moulds
300	8	4	32
400	12	3	36
500	14	3	42
600	11	2	22
700	5	2	10
800	7	2	14
900	3	1	3
1000	8	1	8
1250	5	1	5
1500	3	1	3
Total	**76**	-	**175**

5. Car track 2 for moulds

- Transports complete just filled moulds from pipe filling unit to drying chamber

7. Mould handling unit 1

- Mould handling unit process:
  - Takes mould off car track 2
  - Pushes mould with dried concrete pipes from core
  - Places mould horizontally on car track 4
  - Opens mould with mould opening unit
  - Takes off top half off mould and places vertically on car track 3
- Could be used for other types of moulds

8. Car track 1 for moulds

- Transports moulds from drying chamber to mould handling unit for pipe discharging

10. Mold opening unit

- Opens moulds together with mould handling unit 1

11. Mold handling unit 2

- Mould handling unit process:
  - Takes vertical mould part from car track 3
  - Closes (‘assembles’) mould horizontally on car track 4 together with mould closing unit
  - Places mould vertically over mould core
- Could be used for other types of moulds

12-13. Mould filling units

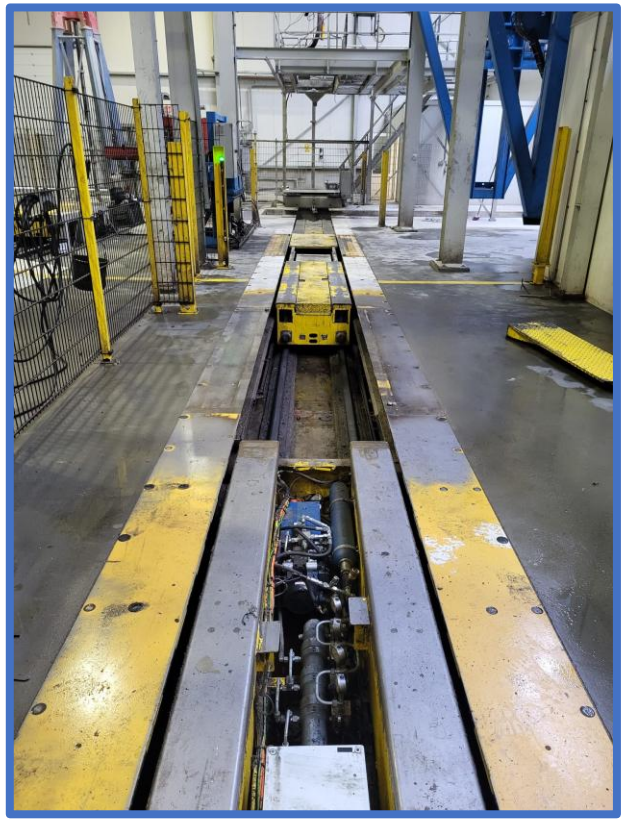
12. Top-down filling unit

13. Bottom-up pumping filling unit

14. Mold closing unit

- Closes moulds together with mould handling unit 2

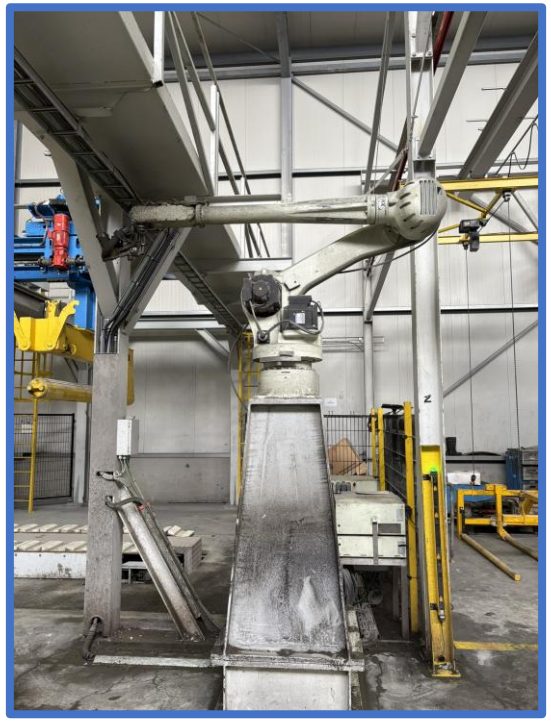
15-16. Car tracks



15. Car track 3 for vertical mould part and mould core

16. Car track 4 for horizontal mould part

17. Robots



- 3 robots included in factory for:
  - Cleaning moulds after discharging
  - Spraying ‘shuttering oil’

18. Crane for placing reinforcement

- Separate crane for placing steel reinforcements in moulds before closing

19. Crane for unloading pipes from mould

- Heavy-duty crane for unloading pipes from mould and placing them on conveyer belt for transport out of factory

20. Conveyer belt for transport out of factory

- Belt runs from inside factory to stockyard
- Capacity to stack up to ten large diameter pipes so no bottleneck with transportation to stockyard
- Pipes can be picked up from belt by forklift truck or crane

Control panel

- Modern and fully equipped control panel
- Potential malfunctions detected and identified immediately
- All data recorded and stored in detail

21. Concrete plant (optional)

- Concrete mixing plant
- Recently renewed mixer and control panel

22. Concrete pump (optional)

- Double pump for pumping wet concrete from concrete plant to mould filling unit

Pipe details – complete (Dutch)

BlueTube buizen ø300 t/m ø1500

Dn	Db	Du	L	Lms	Lss	L-inlaat	M	W	S	Dm	Ds	Gewicht p/st in kg	A in m^2
300	412	507	2400	830	1570	170	90	50	40	417	400	375	0,070
400	522	627	2400	830	1570	325	90	55	40	527	510	529	0,125
500	642	770	2400	825	1575	320	95	65	45	649,6	630	766	0,196
600	762	910	2400	825	1575	385	95	75	45	769,6	750	1063	0,282
700	872	1020	2400	825	1575	405	95	80	45	879,6	860	1289	0,384
800	992	1155	2400	815	1585	580	105	90	50	1004,6	980	1654	0,502
900	1122	1285	2400	815	1585	580	105	105	50	1134,6	1110	2119	0,635
1000	1242	1415	2400	815	1585	580	105	115	50	1254,6	1230	2590	0,785
1250	1522	1695	2400	810	1590	575	110	130	50	1534,6	1510	3568	1,226
1500	1822	1995	2400	810	1590	575	110	155	50	1834,6	1810	5041	1,766

BlueTube 1000 t/m 1500 zijn voorzien van hijsankers

Buis type	Hijsanker
1000	MP 2,5
1250	MP 5,0
1500	MP 5,0

Afmetingen in mm.
W = Wanddikte zonder ribbel.

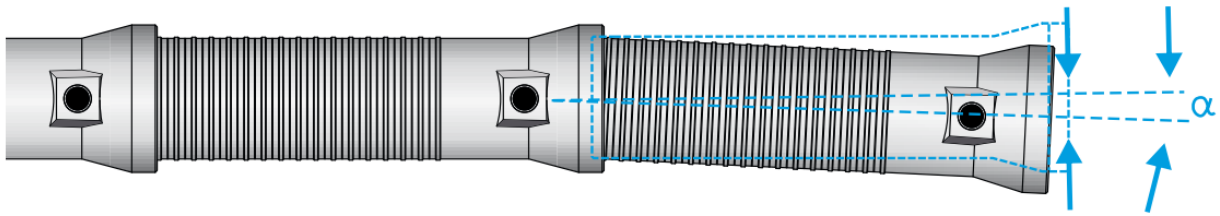
De gewapende BlueTube buizen worden uitgevoerd met korfwapening.

Pipe details – complete (Dutch)

Hoekverdraaiingen

Bij het maken van de verbindingen dienen de buizen in elkaars verlengde te liggen. De verbinding is echter zo gedimensioneerd dat hier kleine afwijkingen mogelijk zijn zonder dat de dichtheid van de verbinding in gevaar komt. In de praktijk kan daarvan gebruik worden gemaakt indien men een streng buizen met een grote kromtestraal wil leggen, zonder daar bochten voor te moeten gebruiken. De maximale hoekverdraaiing is afhankelijk van de buis (NEN-EN 1916).

ø buis (mm)	Maximale hoek α	Afwijking t.o.v. rechtstand (mm/m)
300	2.4°	42
400	1.8°	31
500	1.4°	25
600	1.2°	21
700	1.0°	18
800	0.9°	16
900	0.8°	14
1000	0.7°	13
1250	0.6°	10
1500	0.5°	8



Pipes can be connected in minor angles without leakage