

Making our world more productive



Inhalationsanæstesi VS TIVA

Hvorfor inhalationsanæstesi?

Eva Sommer
CRNA / Anæstesisygeplejerske
Linde
Eva.sommer@linde.com

Anæstesiens milepæle



- 1806 Morfin syntetiseres
- 1846 Første æter anæstesi
- 1884 Kokain bruges som lokalanæstesi
 - 1899 Første spinalanæstesi
 - Første barbiturat, Veronal syntiseres
- 1912 Reduktionsventilen konstrueres, lagre O₂ og N₂O
- 1915 Anæstesisystem med CO₂ absorber
 - 1920 Første epiduralanæstesi
 - 1926 Waters to-and-fro system
 - 1930 Cyklopropan (smertestillende)
 - 1932 Hexobarbital, første kortvirkende barbiturate
 - 1934 Thiopental syntiseres
- 1940 første speciallæge i anæstesi i Sverige



Anæstesiens milepæle



- 1942 Curare, første muskelrelaksant anvendes
 - 1943 Lidokain opstår
 - 1947 Danmark får sin første anæstesilæge
- 1953 Danmarks første anæstesiafdeling oprettes
- 1957 Halothan, et ikke eksplosivt anæstesigas
 - 1964 Fentanyl
 - 1966 Diazepam
 - 1970 Ketaler
- 1972 Bain coaxial system
 - 1976 Midazolam
 - 1979 Isofluran
 - 1984 Propofol
 - 1995 Desfluran
 - 1996 Sevofluran
 - 1997 Remifentanil



IA - Inhalationsanæstesi



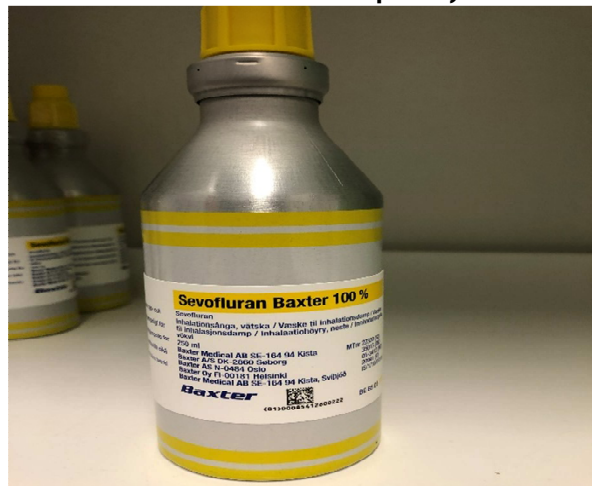
- 1965 – 1990 : Fem nye IA.
- Isofluran, halothan, desfluran, sevofluran og enfluran (Udgået)
- N2O brugt meget som smertelindring. Registreret som drivhusgas. Nye opoider, samt spild på centralanlæg, nye studier om at lattergas er farlig, vandt TIVA fremfor N2O.
- I dag bruges kun Sevoflurane, få steder desflurane.
- Andre IA metaboliseres i leveren og nyrene. (Dødsfald)

	<i>Metabolisering</i>	<i>Risiko</i>
Halothan	20%	1:35.000
Enfluran	3-5%	1:350.000
Isofluran	0,2%	1:3.500.000
Desfluran	0,02%	1:35.000.000

Inhalationsanæstesi VS Intravenøs anæstesi (TIVA)

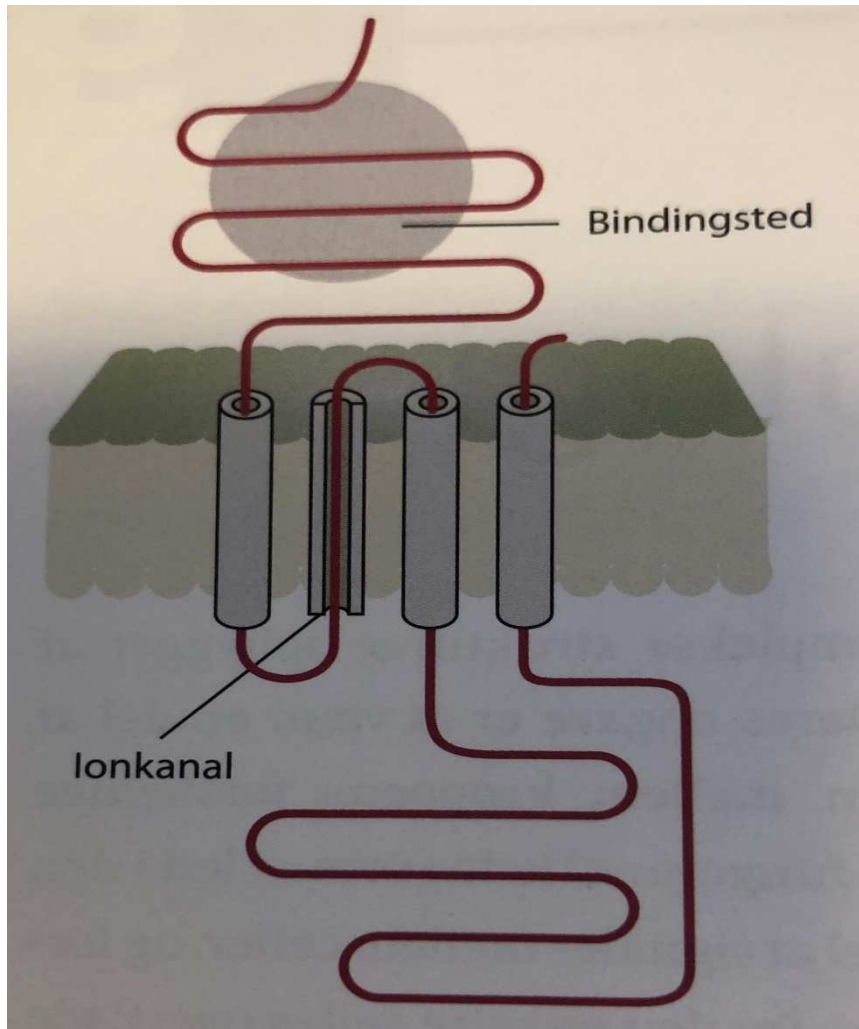


- Lav opløselighed øger styrbarheden
- Bruges til induktion af børn
- Godt til lunge og hjertesygge patienter
- Inaktive metabolitter
- Monitoring af anæstesedybde via end tidal og MAC
- Stabilt og styrbart
- Prækonditionerende på hjertet
- TIVA kan bruges som anæstesiinduktion, samt vedligeholdelse
- Hurtig anslag, hurtig opvågning
- Inaktive metabolitter
- Ikke organtoksisk
- Ingen opvågningsdelir
- Styrbart
- Kontinuerlig infusion



Inhalationsanæstesi farmakokinetik

Læren om lægemidlets optagelse, fordelingen og udskillelse



Virker på nervecellernes cellemembraner. De blokerer ionkanalerne, så ionerne ikke kan passere. Herved hæmmes transmissionen af nerveimpulser.

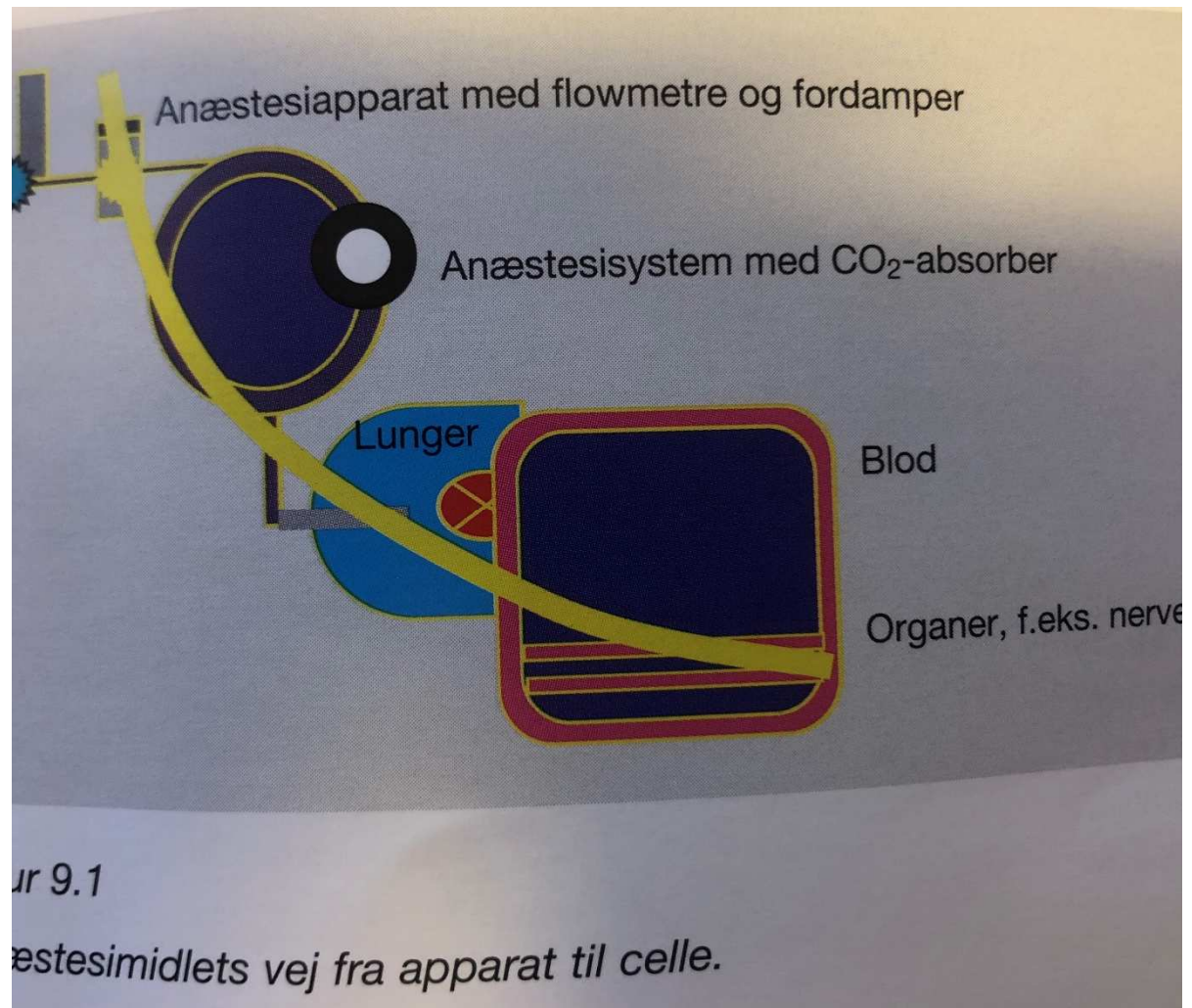
- Gas som bruges er N₂O – Lattergas

- Halogenerende anæstesi-gasser er: Sevofluran, Desfluran og Isofluran

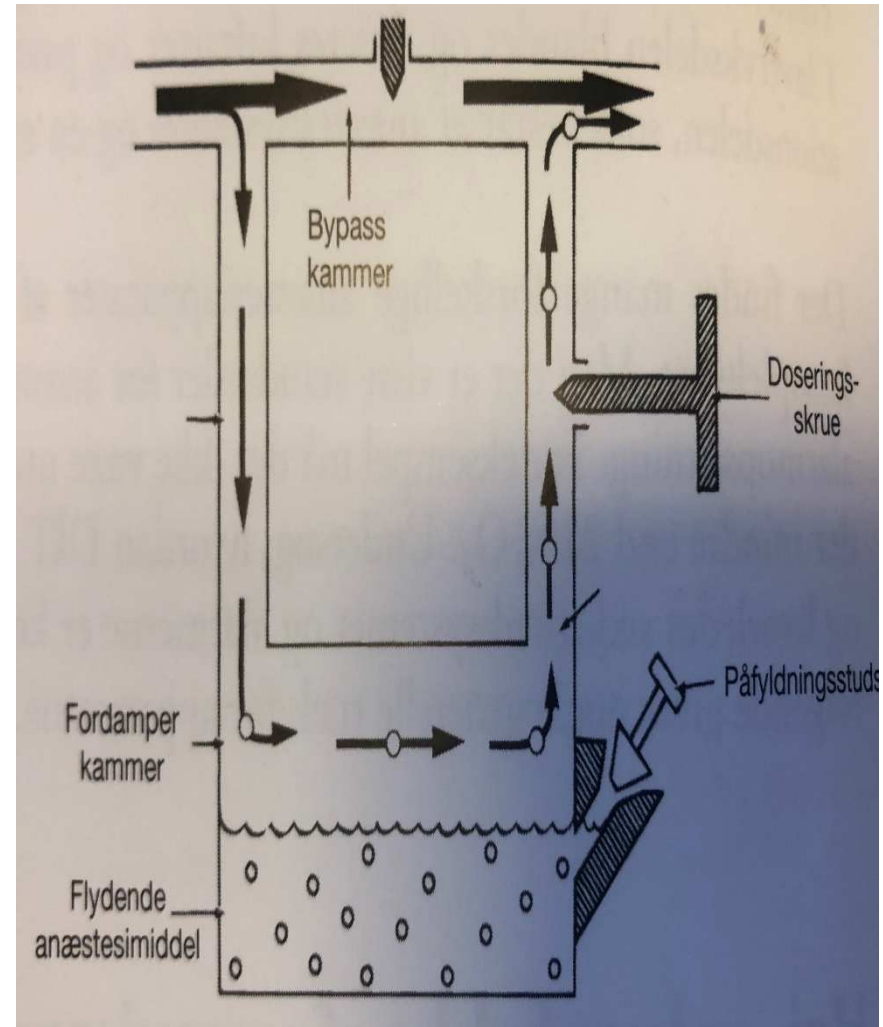
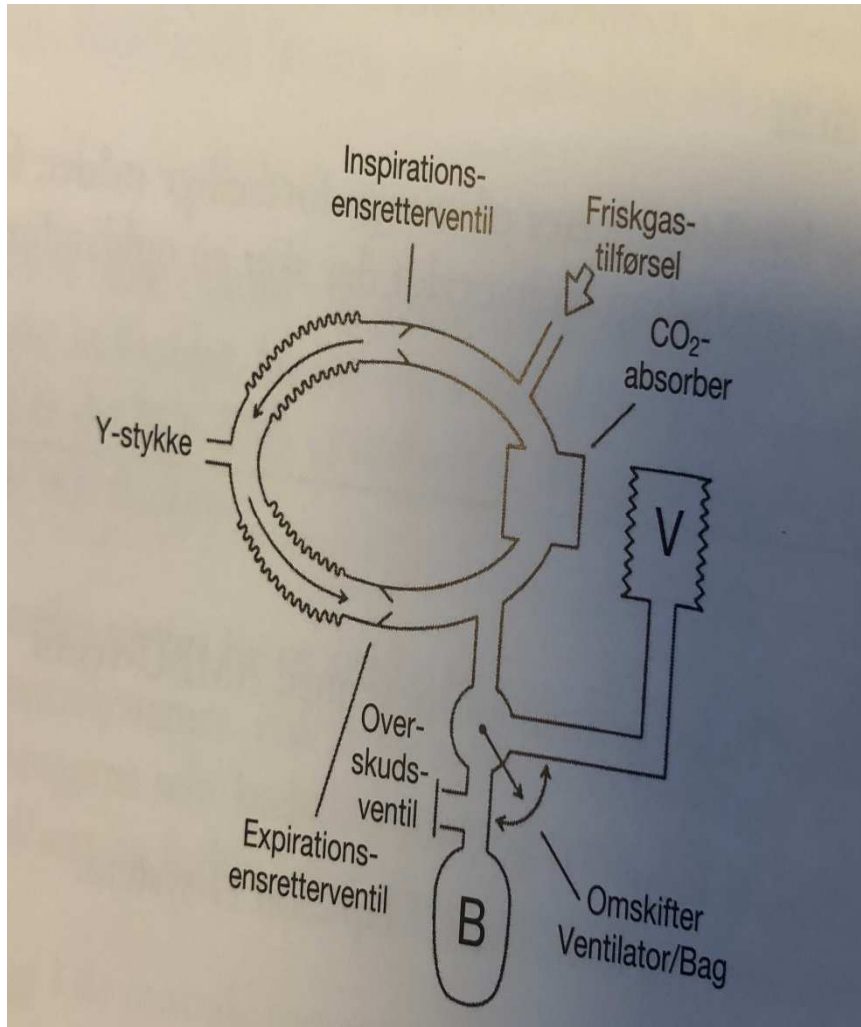
IA vej til apparat til celle



- Sevofluran, Desofluran og Isofluran tilføres som væsker til en fordamper.
- Dvs de tilføres bæregasser såsom O₂, N₂O atmosfærisk luft
- Fra anæstesiapparat til anæsteticirkel strømmer en blanding bæregasser og IA
- Dette kaldes friskgasflow.
- Kommer ind i pt lunger via en tube og diffunderer over i blodet og videre op til hjernen



Respirator cirkel og fordamper



MAC-begrebet – End tidal



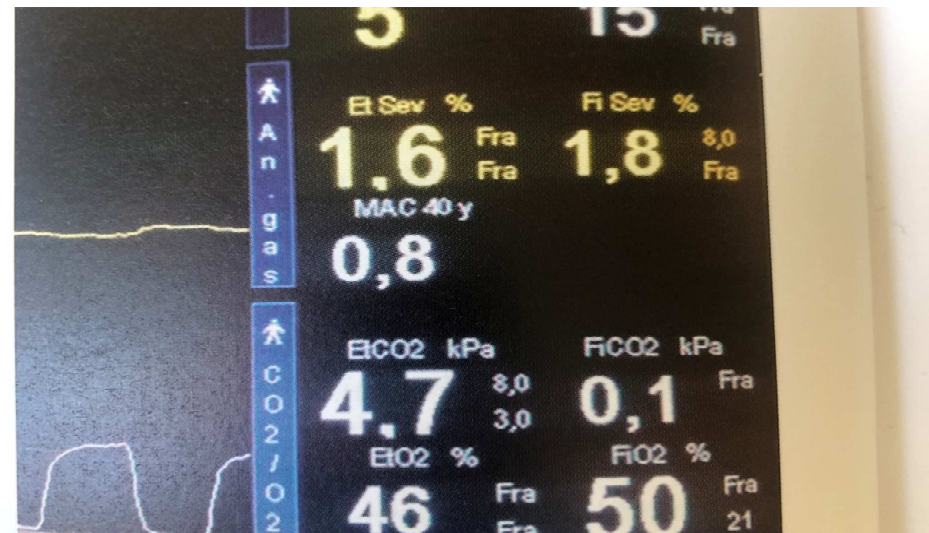
Anæstesiens potens er MAC værdien.

MAC-værdi: Minimum alveolar koncentration.

Forskellig MAC værdi på IA

Et- Sev: Endtidal sevo: Vigtig observation

Optimalt at kunne måle anæstesidybde.



Sevoflurane udskilles til lungerne og ud igennem respiratoren, gennem CO-absorberen og recirkuleres



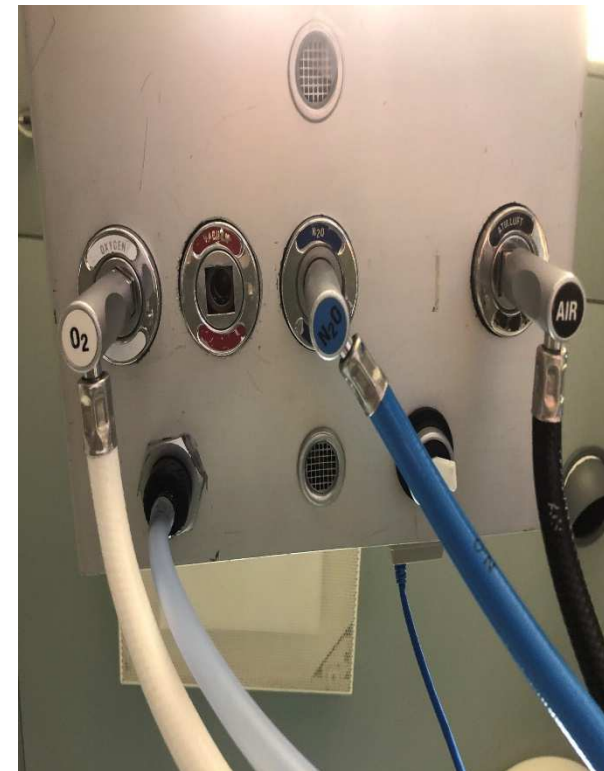
Arbejds miljø



Maskeinduktion, giver størst eksposition. Under anæstesen er der lave værdier, især med cuffed tuber og low flow anæstesi.

Punktudsug på anæstesiapparatet reducerer ekspositionen med 80 %.

Nærugsug / Snabel som trækkes ned til patienten, varierer med en sugekraft på 35m³ til 140m³/timen



Arbejds miljø for sundhedsfaglige



- Arbejdsskader for anæstesipersonale med IA, dårlig hukommelse, hovedpine, kronisk prikken i fingre mm.
- Bedre udsug, low flow anæstesi, punkt sug med stor sugekapaцитet.
- Nye målinger viser at grænseværdier kan overholdes med nye tiltag.



Da Lattergas mistede sin uskyld



- Polioepidemien opstod i 50`erne – Sedation af polio pt i mere end 72 timer kunne føre til knoglemarvsdepression og agranulocytose, hæmmer DNA syntesten. Livstruende anæmi.
- I dag, maks 24 timers tilførsel af lattergas.
- Tandlæger udsættes for høje sekvenser, kan medføre anæmi og neuropati, pga B12 mangel.





The Association of Shift Work and Nitrous Oxide Exposure in Pregnancy with Birth Weight and Gestational Age

Lennart Bodin,¹ Gösta Axelsson,² and Gunnar Ahlborg, Jr.¹

We examined the relation between shift work and occupational nitrous oxide exposure in the second trimester of pregnancy and birth weight and gestational age at delivery among the members of the Swedish Midwives Association. Eighty-four per cent of members who were registered in 1989 responded to a postal questionnaire concerning occupational exposures, including work schedule and the use of nitrous oxide, in relation to each of their pregnancies. We obtained information on births from the Swedish Medical Birth Register. We used models with allowance for dependence between births for the same woman and found that night work was

associated with preterm birth (<37 weeks) [odds ratio (OR) = 5.6; 95% confidence limits (CL) = 1.9, 16.4] and to a lesser extent with low birth weight [OR = 1.9 (95% CL = 0.6, 5.8)]. Three-shift work schedule (day, evening, and night rotation) showed a possible association with preterm birth [OR = 2.3 (95% CL = 0.7, 7.3)]. Exposure to nitrous oxide use was associated with reduced birth weight (-77 gm; 95% CL = -129, -24) and an increase in the odds of infants being small for gestational age (\leq 10th percentile of weight for gestational week) (OR = 1.8; 95% CL = 1.1, 2.8). (Epidemiology 1999; 10:429-436)

Keywords: shift work, nitrous oxide, midwife, pregnancy dependence, birth weight, gestational age, preterm birth.

Arbejds miljø I dag



- Gravid Sundhedspersonale (kvinder) blev bange for spontan abort, for tidlig fødsel, lav fødselsvægt.

NYT studie

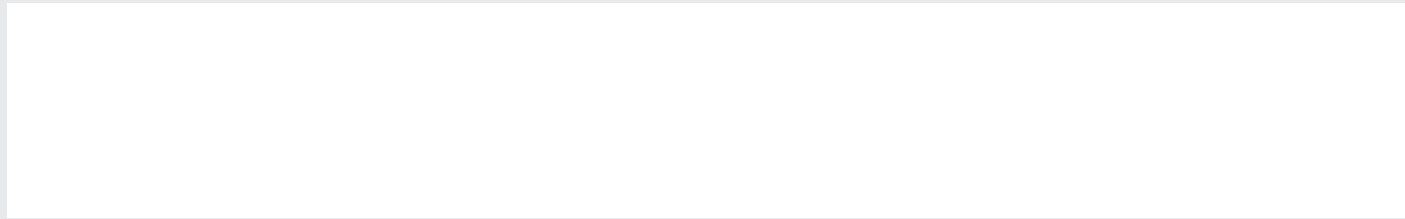
- Årsagen er treholdsskift, alt sundhedspersonale har samme risiko.
 - Nattevagter har en direkte sammenhæng med tidlig abort
 - DSR anbefaler ingen nattevagter som gravid
 - Arbejdsskadestyrelsen har 0 indberetninger.
- Nyt udstyr og opdateret viden hos sundhedspersonalet er vigtigt om anvendelsen.

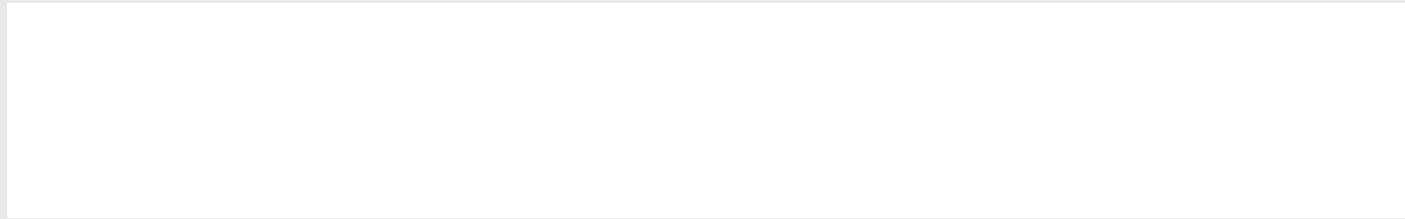
Sammenfatning



- Husk at vejlede om korrekt udstyr
- Opdateret viden hos medarbejder der arbejder med gas
- Sørg for god undervisning af personalet
- Sørg for at være opdateret
- Sig fra hvis du er tilskuer til uacceptabel adfærd som sætter sundhedspersonalet sundhed i fare
- Ansæt sundhedsfaglige der har viden om specialet





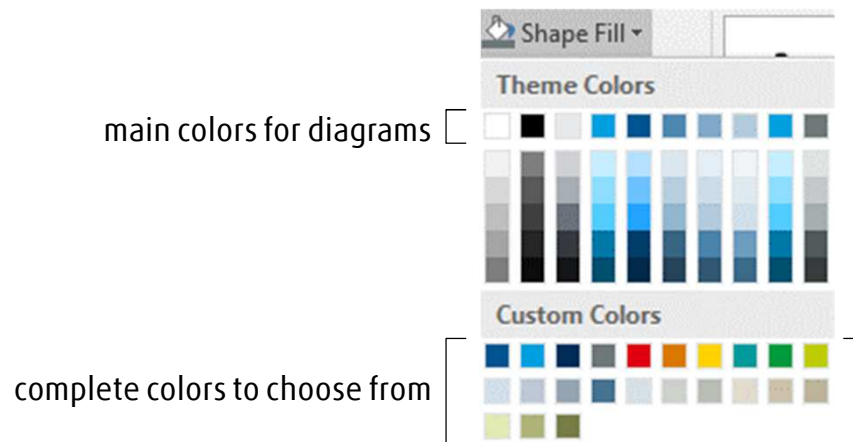


Branding basics for Linde PowerPoint presentations

Color System



Colors are a central brand and design element within the Linde identity. A well thought-out system of harmoniously coordinated colors supports the brand presence and achieves differentiation from other companies.



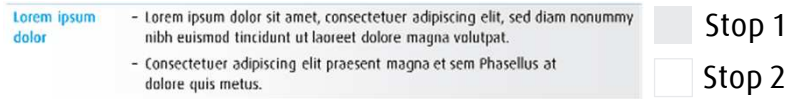
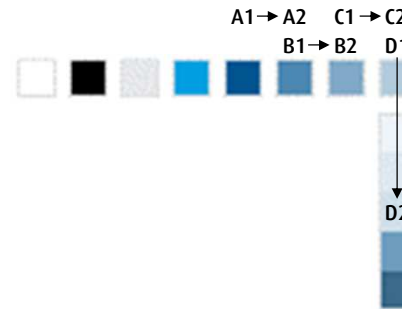
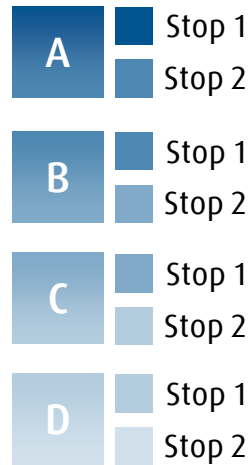
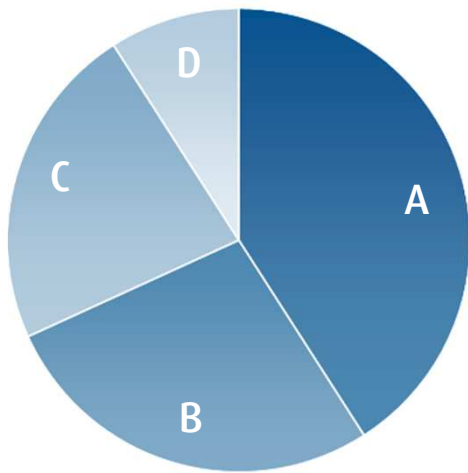
- Linde blue
 - Linde cyan
 - Linde dark blue
 - Linde gray 4
 - Linde signal red
 - Linde signal orange
 - Linde signal yellow
 - Linde signal turquoise
 - Linde signal green
 - Linde neon green
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- Linde light gray
 - Linde blue gray 1
 - Linde blue gray 2
 - Linde blue gray 3
 - Linde gray 1
 - Linde gray 2
 - Linde gray 3
 - Linde brown 1
 - Linde brown 2
 - Linde brown 3
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- Linde green 1
 - Linde green 2
 - Linde green 3

Branding basics for Linde PowerPoint presentations

Gradients



Gradient fills can be used to fill forms and diagrams. Examples:



Format Shape

Shape Options | Text Options

Fill

- No fill
- Solid fill
- Gradient fill
- Picture or texture fill
- Pattern fill
- Slide background fill

Preset gradients: [gradient icon]

Type: Linear

Direction: [direction icon]

Angle: 90°

Gradient stops

A1 Color: [color swatch]

A2: [color swatch]

Position: 0 %

Transparency: 0 %

Brightness: 0 %

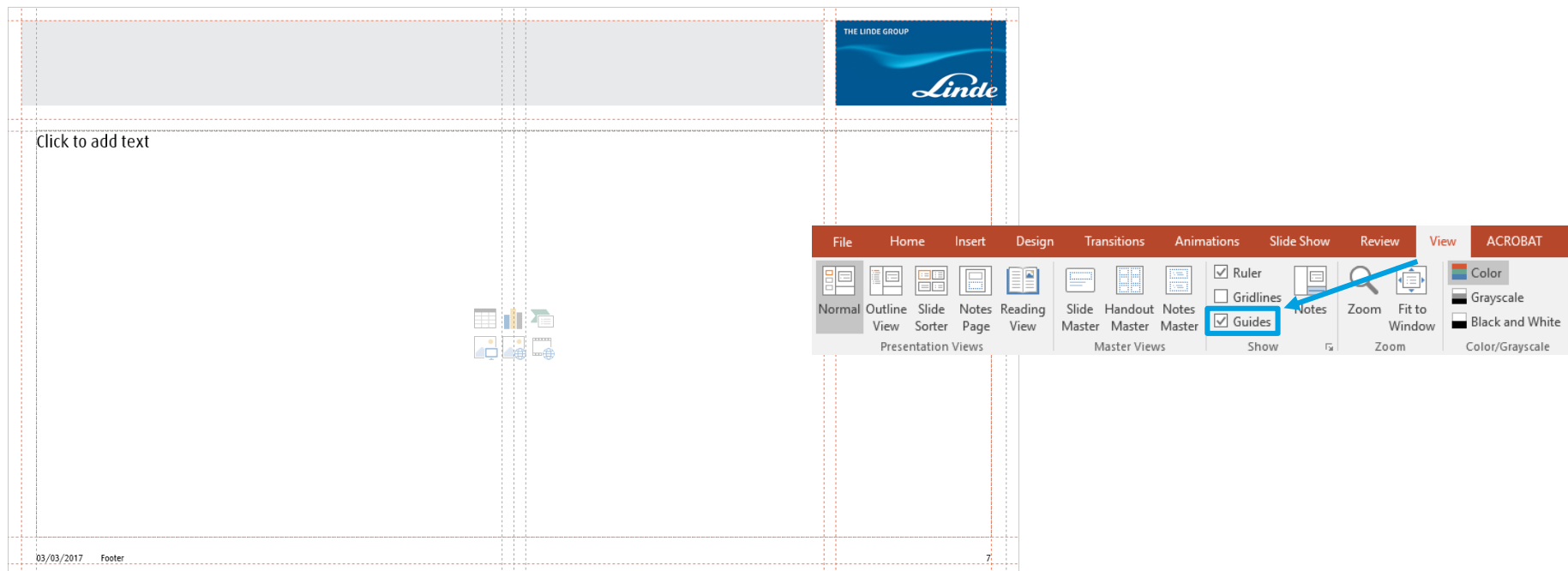
Rotate with shape

Branding basics for Linde PowerPoint presentations

Guides



The magnetic guides can be used to align contents.
They are activated by clicking **View > Guides**.



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First Headline

Second Headline

Name Surname

Location and Date



First Headline

Second Headline

Name Surname
Location and Date

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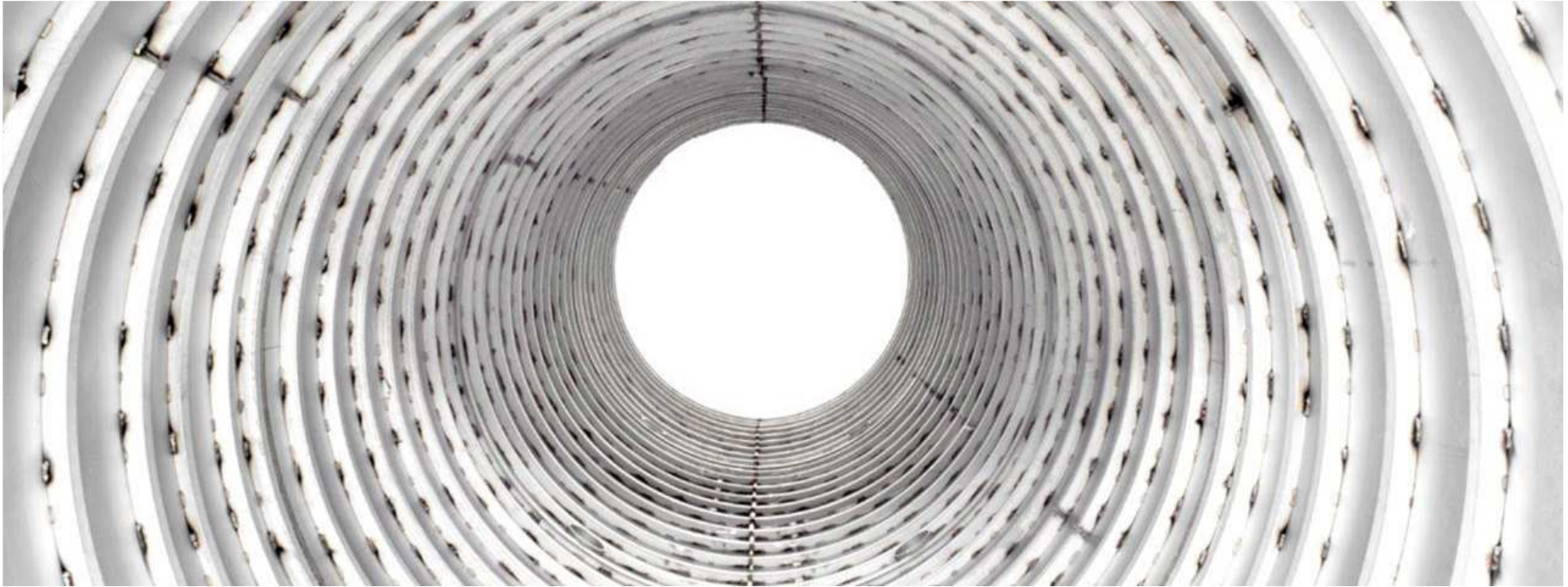


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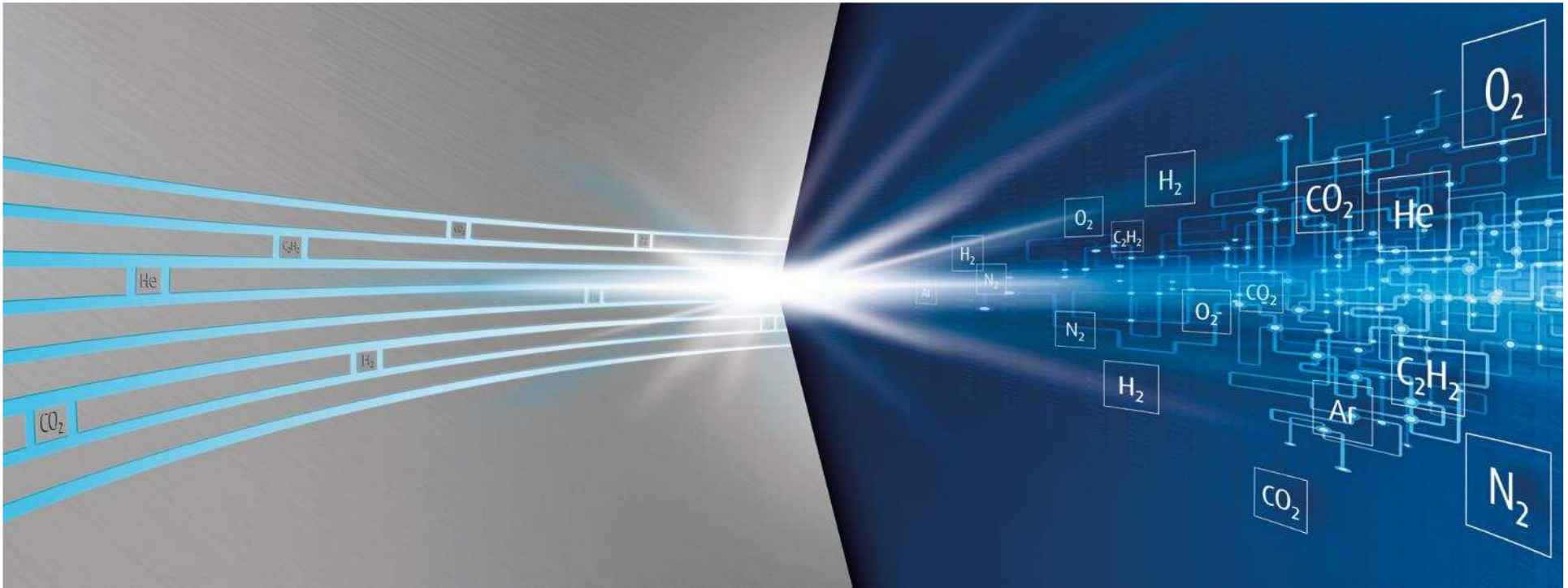
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Agenda



1. Name of Chapter
2. Name of Chapter
3. Name of Chapter
4. Name of Chapter
5. Name of Chapter
6. Name of Chapter

Agenda



1. Name of Chapter
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Agenda

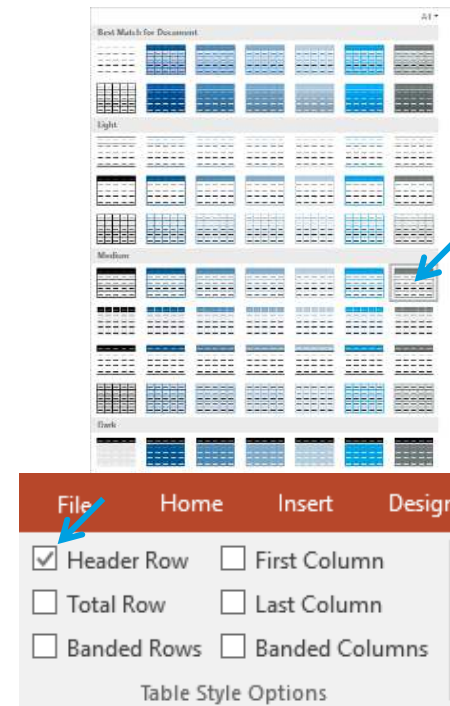


1. Name of Chapter
2. Name of Chapter
 - Subtitle 1
 - Subtitle 2
 - Subtitle 3
3. Name of Chapter
4. Name of Chapter
5. Name of Chapter
6. Name of Chapter

Table, based on auto-layout Medium Style 1, Accent 1



Lorem ipsum dolor	2014	2015
Consectetuer adipiscing elit	0,000	0,000
Praesent nec magna et sem	0,000	0,000
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Sed tortor urna, viverra sit amet	0,000	0,000









Table, based on auto-layout Alternative without vertical lines



Lorem ipsum dolor	2014	2015
Consectetuer adipiscing elit	0,000	0,000
Praesent nec magna et sem	0,000	0,000
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Fermentum vestibulum enim	0,000	0,000
Suspendisse venenatis vestibulum	0,000	0,000
Cras porttitor lectus ac libero	0,000	0,000
Sed tortor urna, viverra sit amet	0,000	0,000

Table, based on auto-layout
Medium Style 1, Accent 1



Lorem ipsum	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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Example

Lines with text



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Divider
Big picture, example



Divider

Small picture, example



Divider

Small picture, example



Divider Text



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Heading



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Layout with two columns



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Layout with three columns



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Layout with four columns



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- Bibendum pretium commodo

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- Fermentum vestibulum enim
- Suspendisse venenatis vestibulum
- Cras porttitor lectus ac libero
- Sed tortor urna, viverra sit amet

Suspendisse venenatis vestibulum

- Phasellus at eros quis metus
- Bibendum pretium commodo
- Consectetur adipiscing elit
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Heading



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Linde Icons

Comprehensive icon catalogue available for download, e.g.

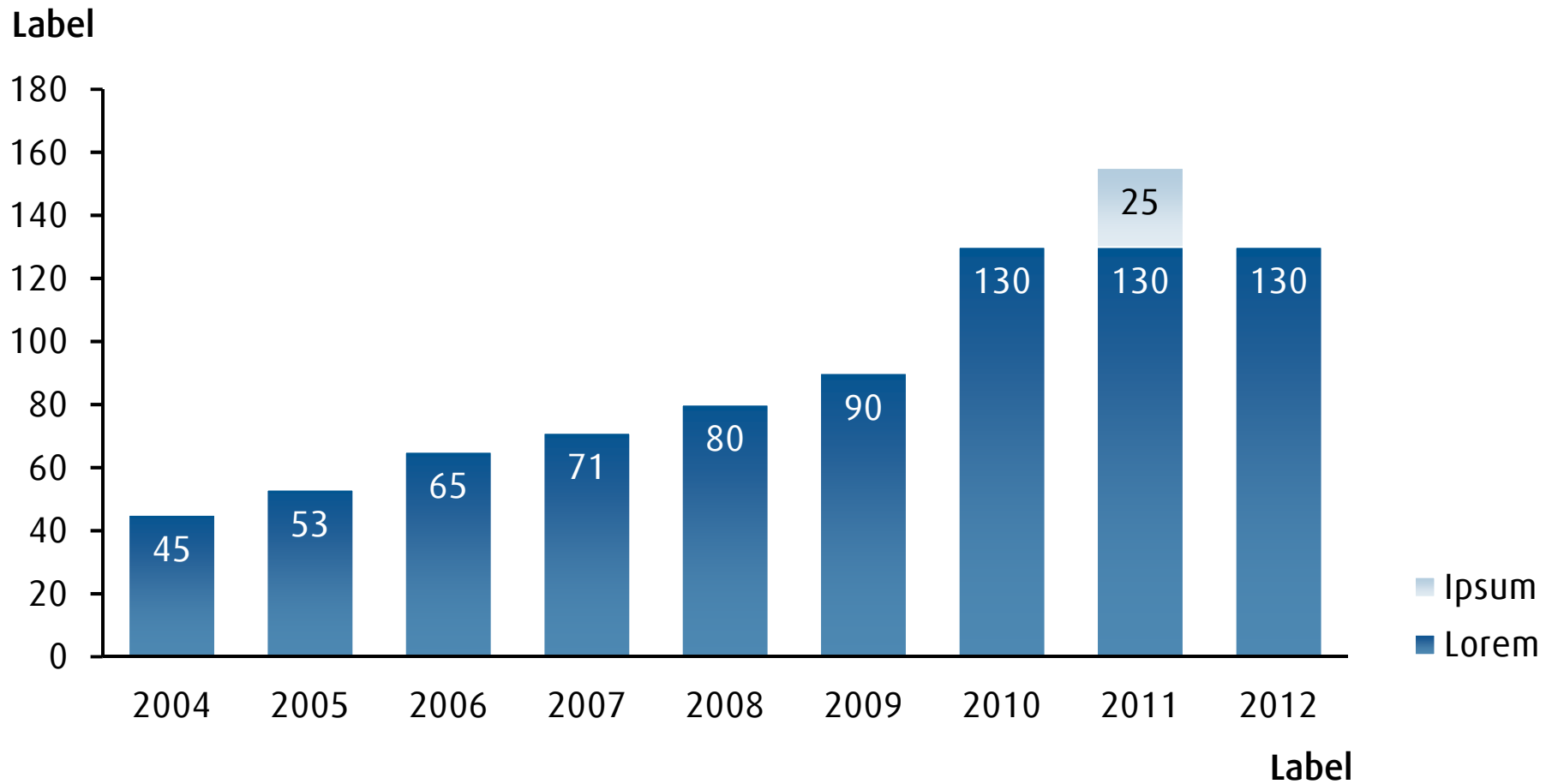


Management	
Customer	
Coordination	
Sales	
SAP	
Technical specifications	

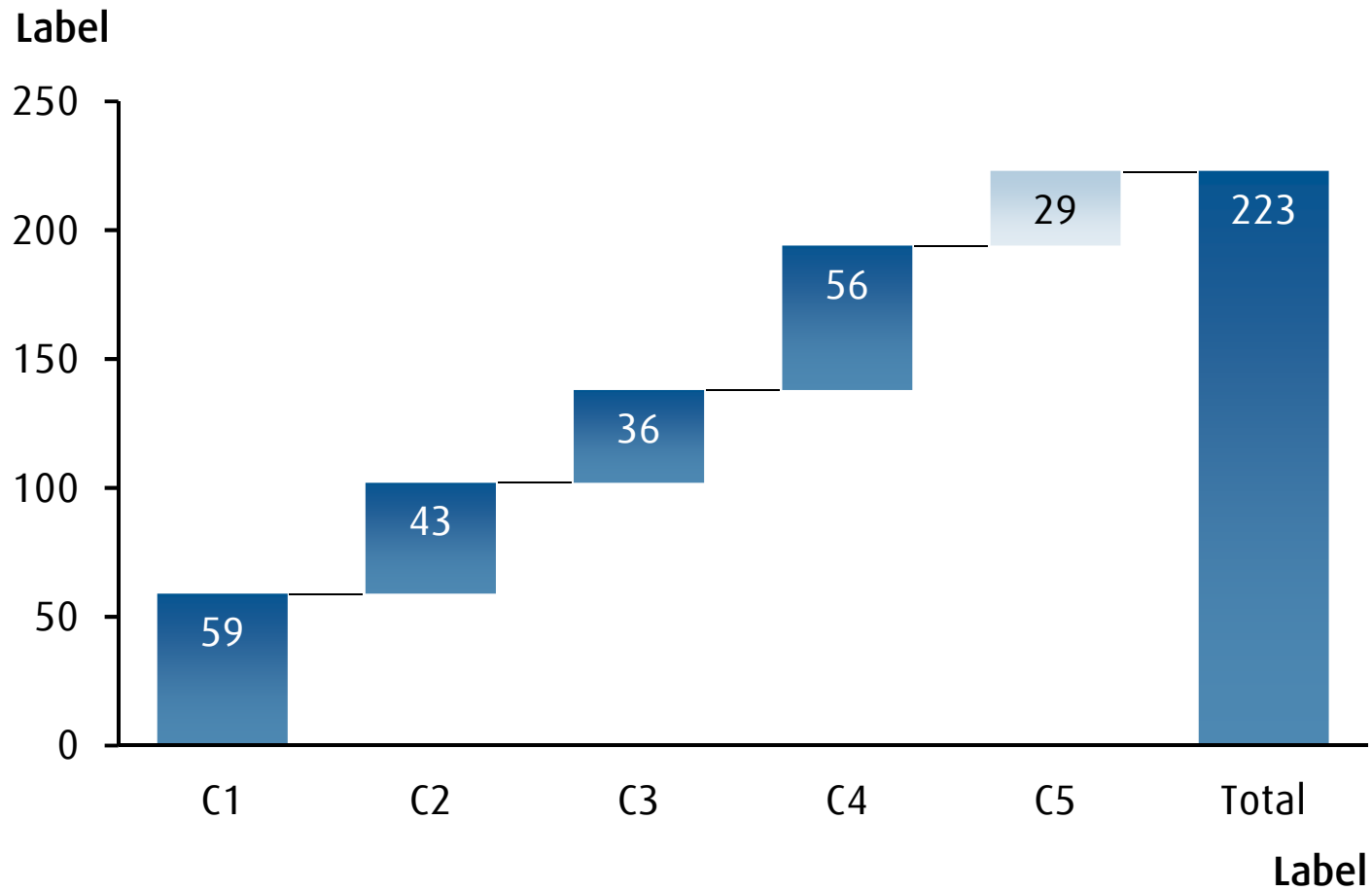
Laptop	
Tablet	
Cell phone	
Computer mouse	
Time	
Certification	

The Linde Icons are available for download at the Linde Brand Portal at https://brandportal.linde.com/tools/media_library/#/assets?collection=63261

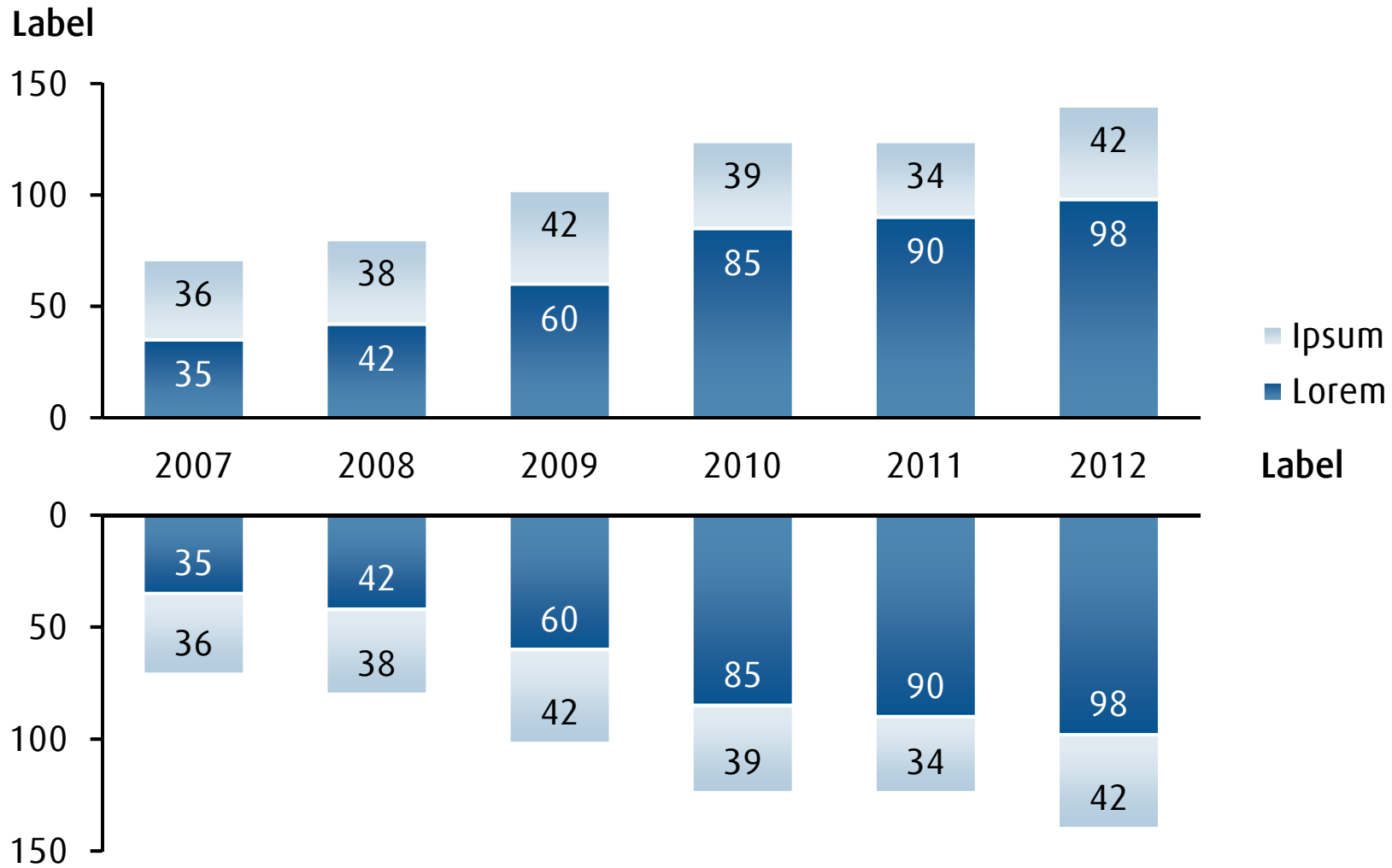
Example: column chart



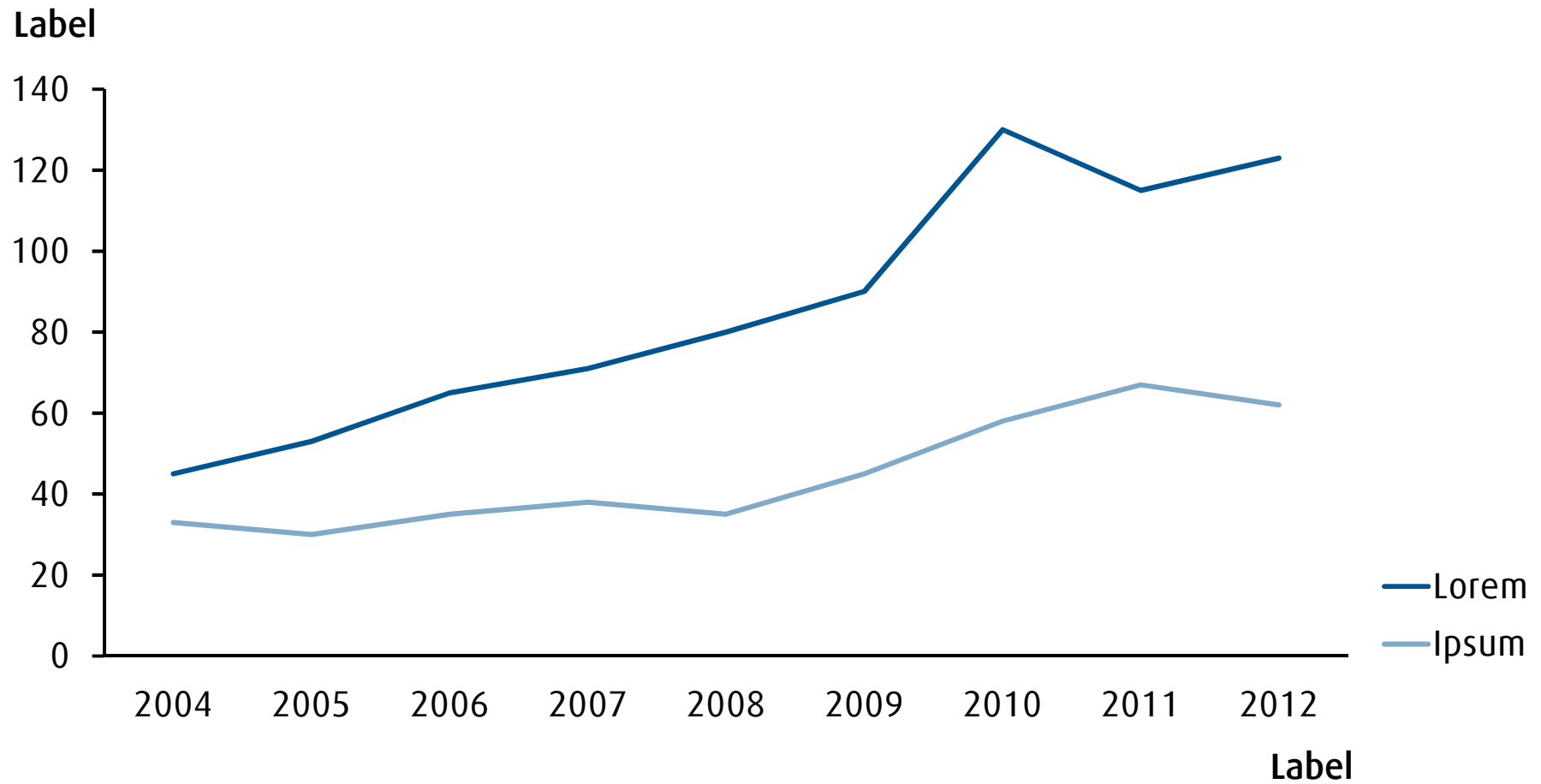
Example: waterfall chart



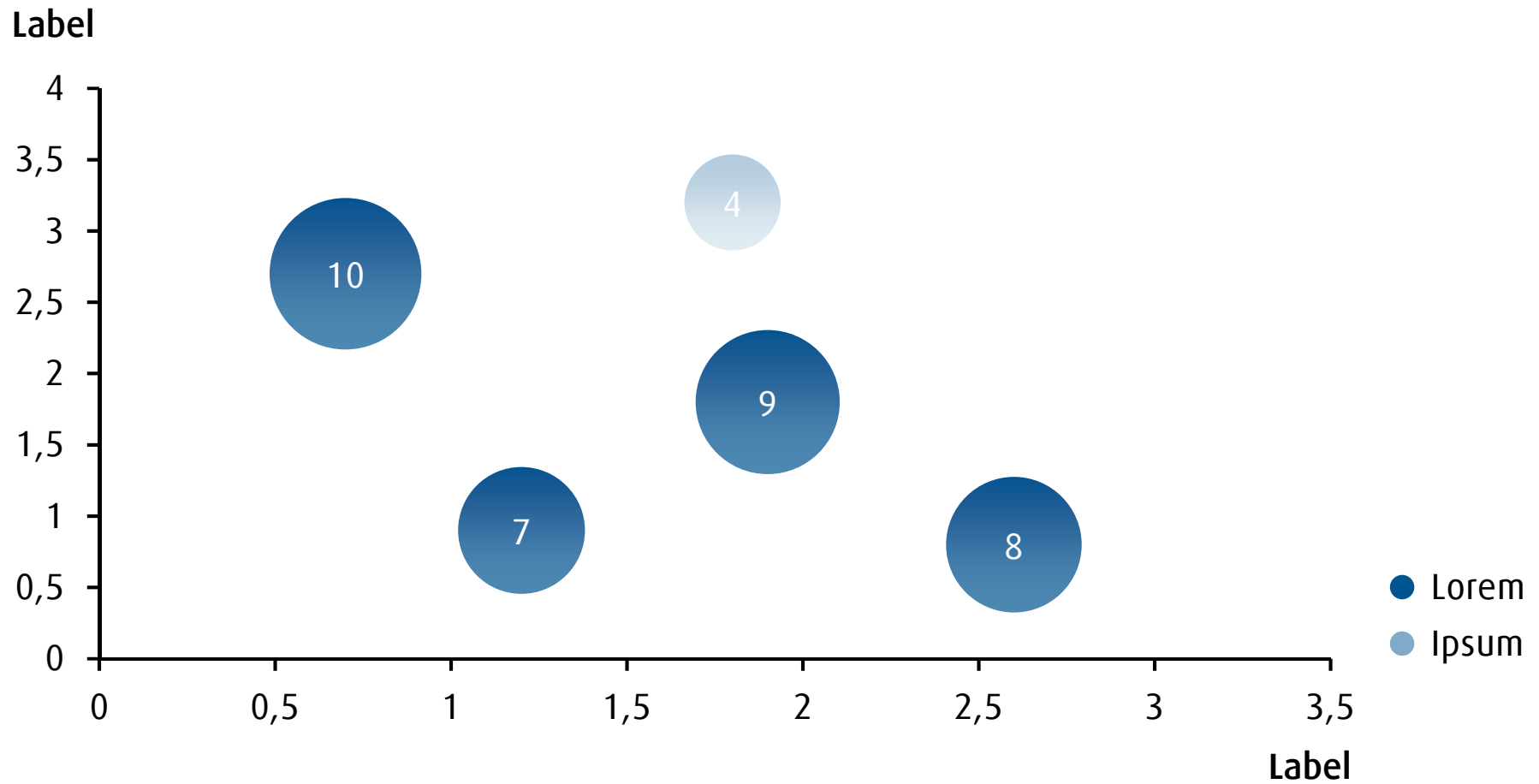
Example: butterfly chart



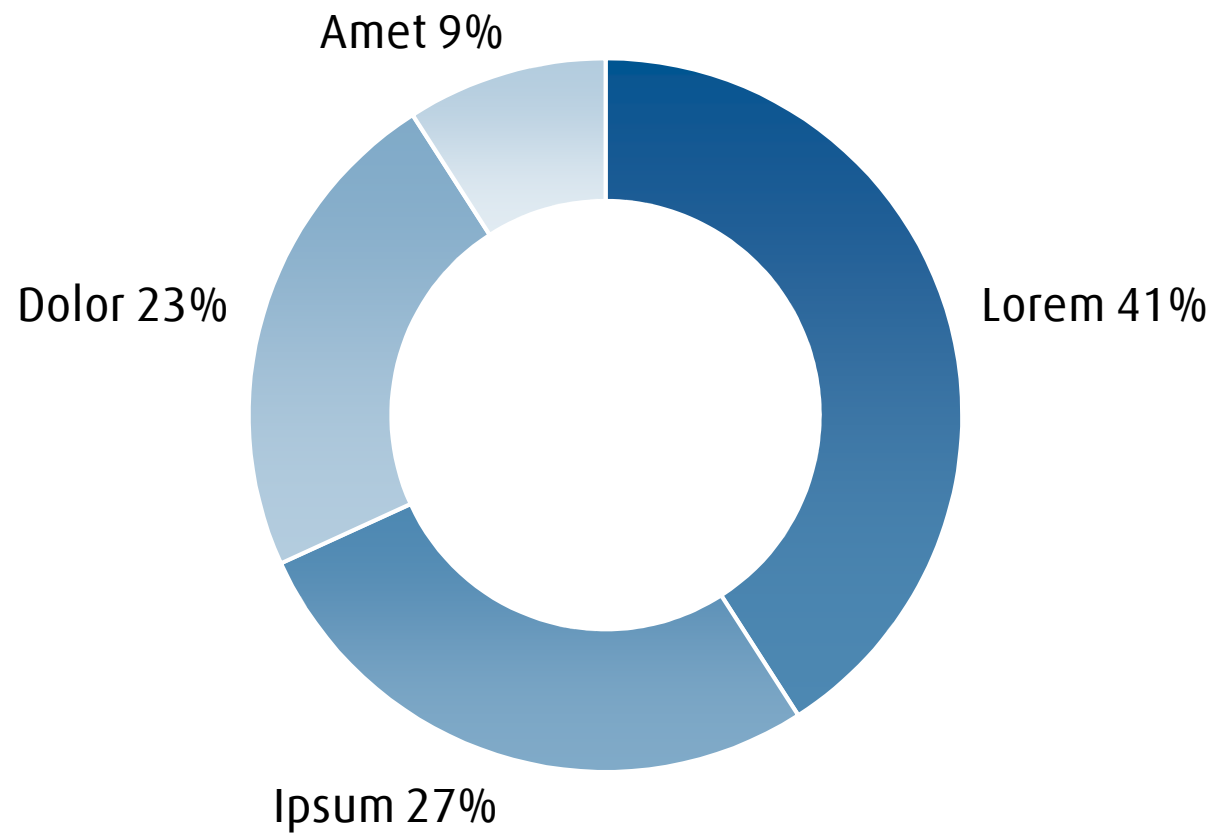
Example: line chart



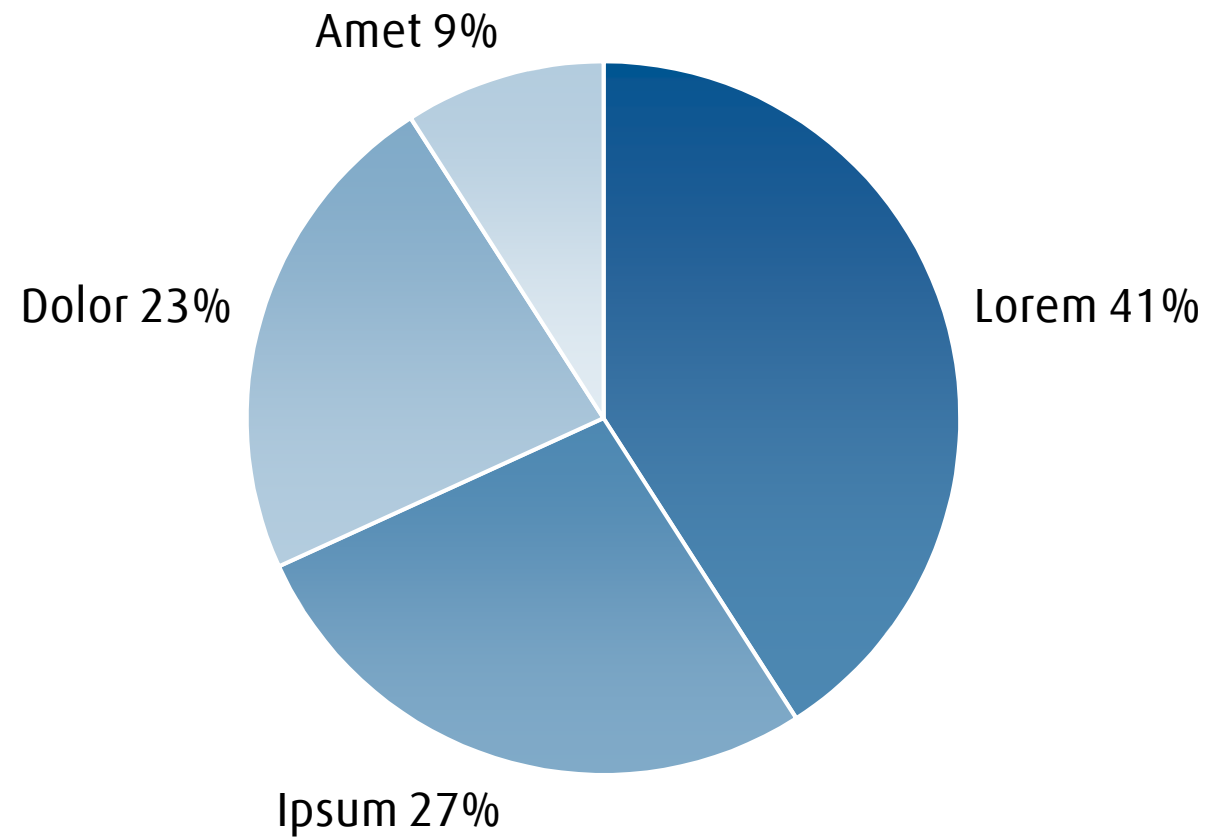
Example: bubble chart



Example: ring chart



Example: pie chart



Additional Example Slides

Usage of gradients



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Additional Example Slides

Usage of gradients



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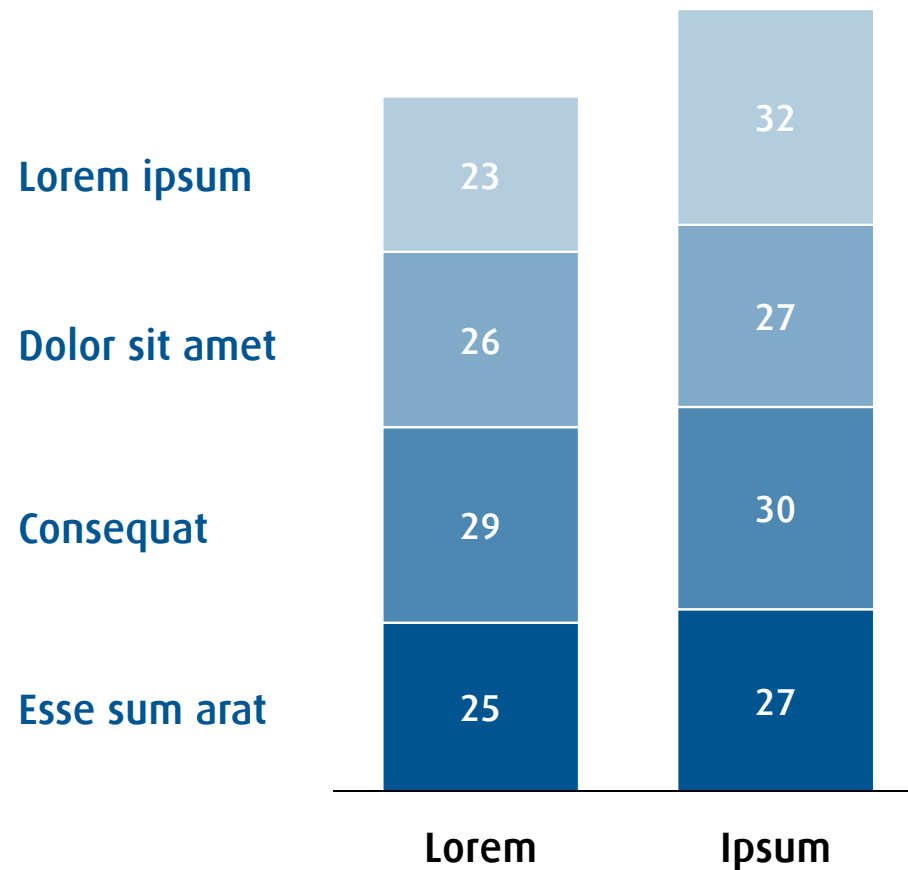
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Additional Example Slides

Usage of gradients



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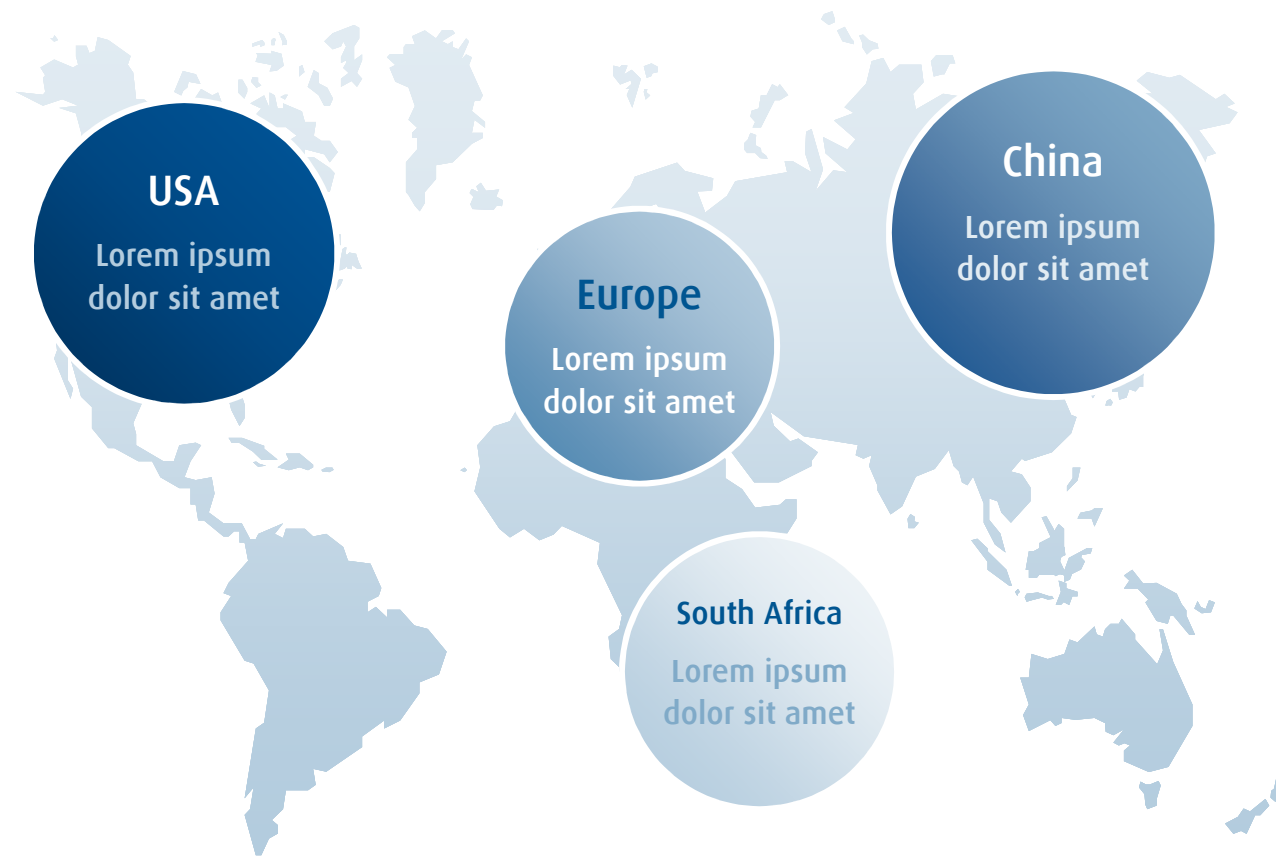
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Additional Example Slides

Usage of gradients



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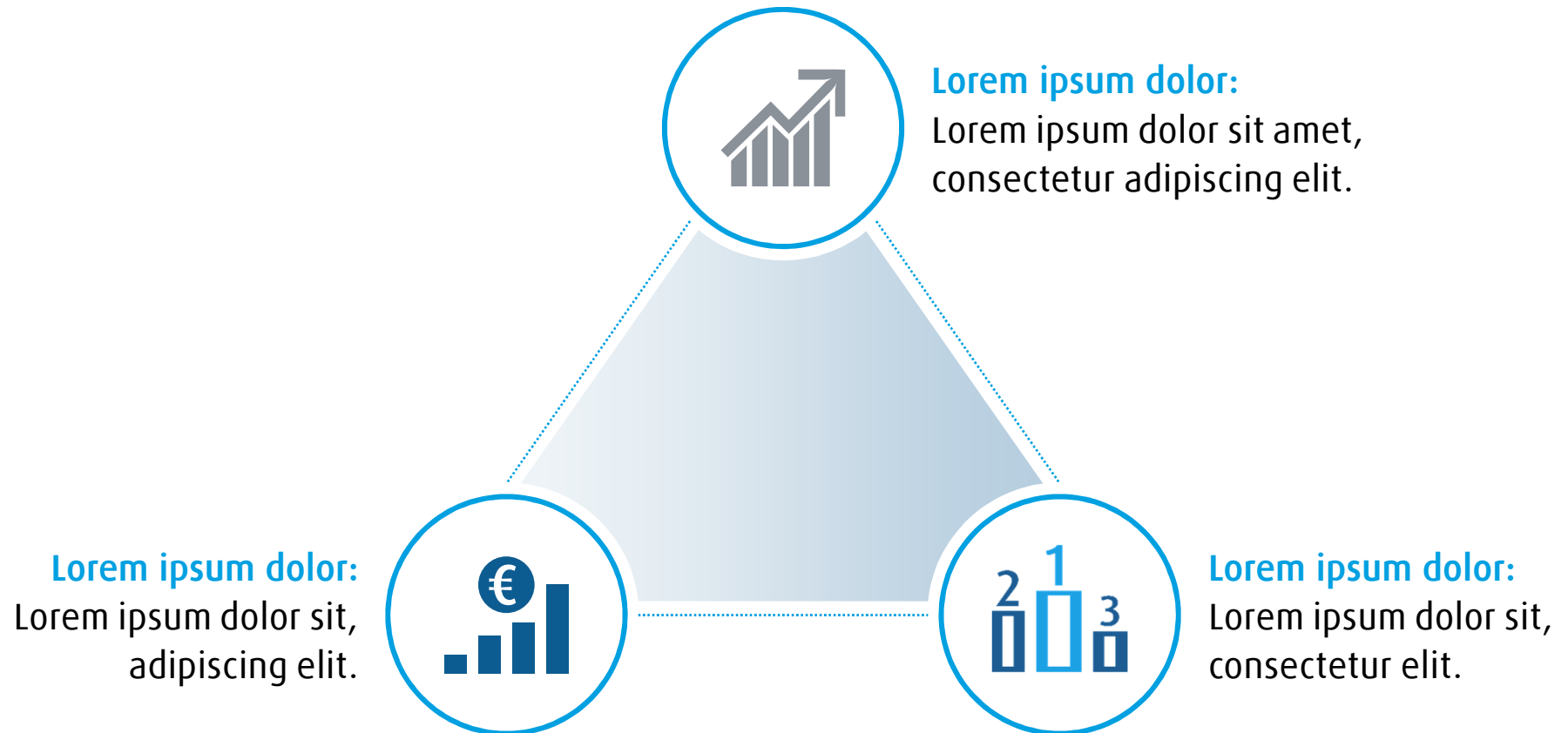
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Source: United Nations Population Division, Linde data, figures excl. Japan, equipment

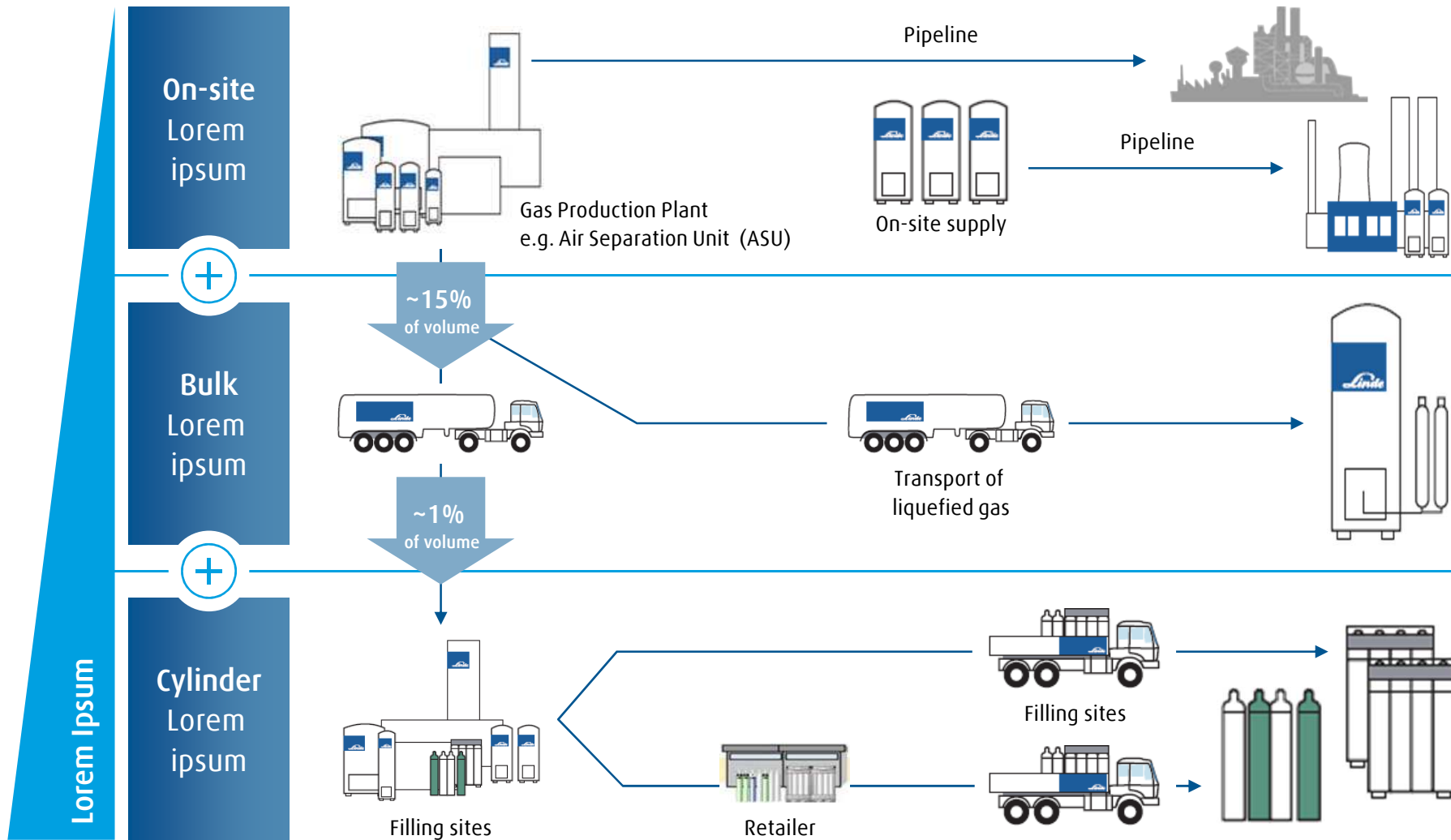
Additional Example Slides

Usage of gradients

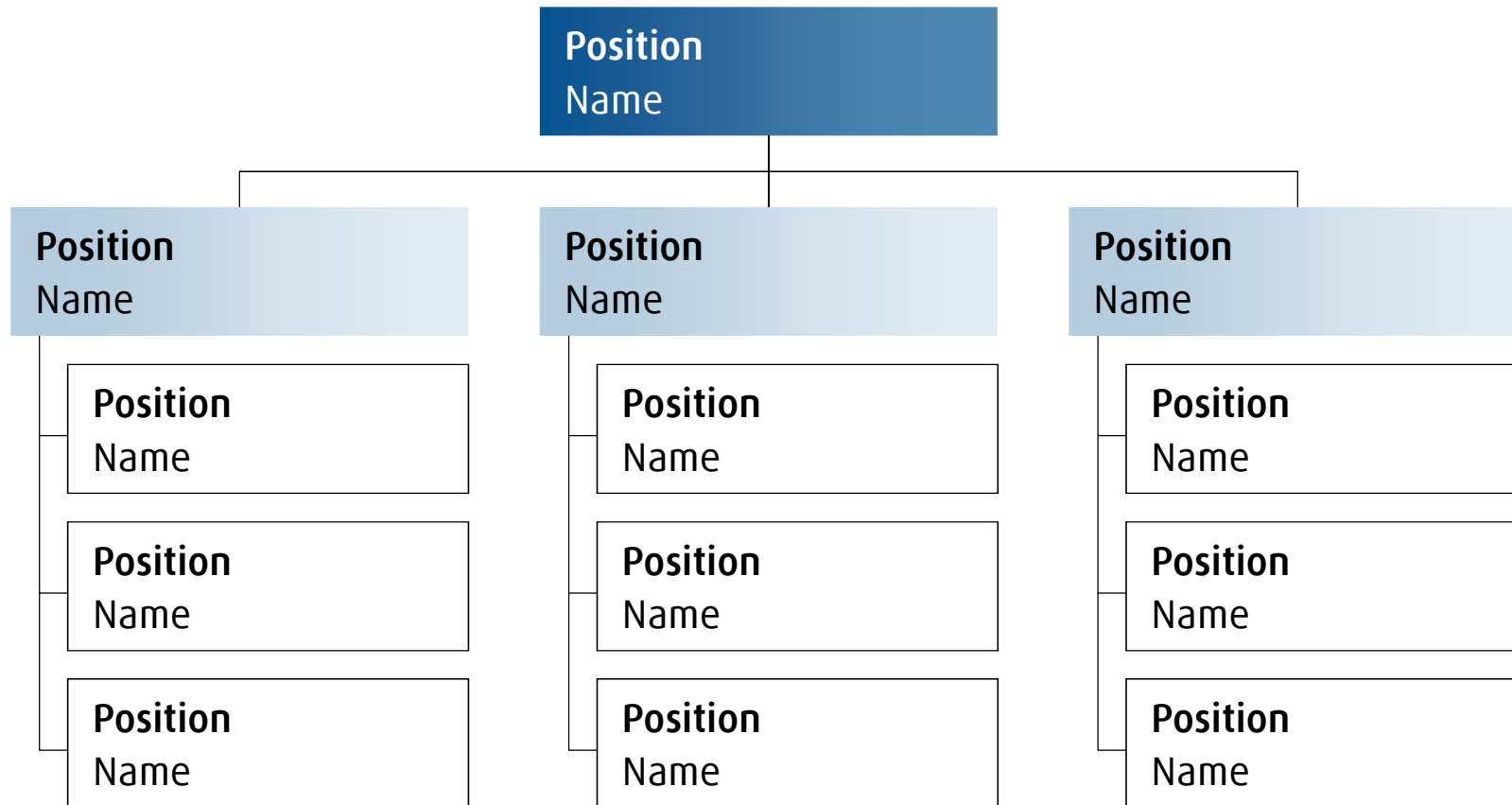


Additional Example Slides

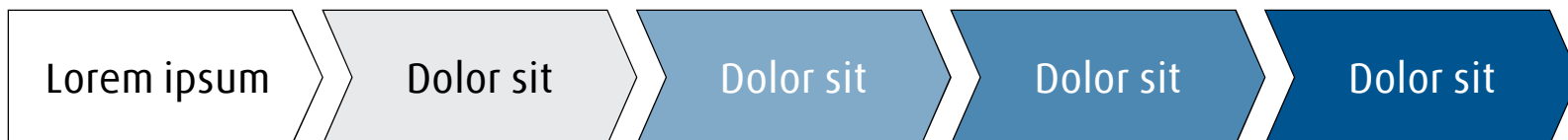
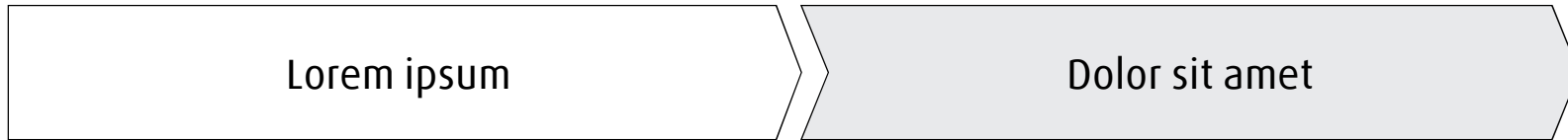
Usage of gradients



Example: organisation



Example: sequences



Example: reference slide

Type 1



Client Lyse Gass AS

Location Stavanger, Norway

Process LIMUM® closed mixed refrigerant cycle process with coil-wound heat exchanger

Capacity 900 tpd

LNG storage capacity 30,000 m³

Loading facilities LNG ship and truck loading

Scope of work Engineering, procurement, construction, start-up supervision

Start-up 2010



Example: reference slide

Type 2



Client Lyse Gass AS

Location Stavanger, Norway

Process LIMUM® closed mixed refrigerant cycle process with coil-wound heat exchanger

Capacity 900 tpd

LNG storage capacity 30,000 m³

Loading facilities LNG ship and truck loading

Scope of work Engineering, procurement, construction, start-up supervision

Start-up 2010



Example: reference slide

Type 3



Client Xinjiang Guanghui LNG Development Co. Ltd.

Location Shanshan, Xinjiang, China

Process LIMUM® closed mixed refrigerant cycle process with coil-wound heat exchanger and gas turbine as driver of MRC compressor

Capacity 1,300 tpd (430,000 tpa)

LNG storage capacity 30,000 m³

Loading facilities Truck loading

Scope of work Engineering, procurement of main equipment, construction supervision, start-up supervision

Start-up 2004



Area for contents



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