HOW TO MANAGE AUTOMATIC CALF FEEDERS SUCCESSFULLY

FÖRSTER TECHNIK®
Automatisch besser.

JAN ZIEMERINK

Foerster-Technik N.A

5 C’s for successful calf management

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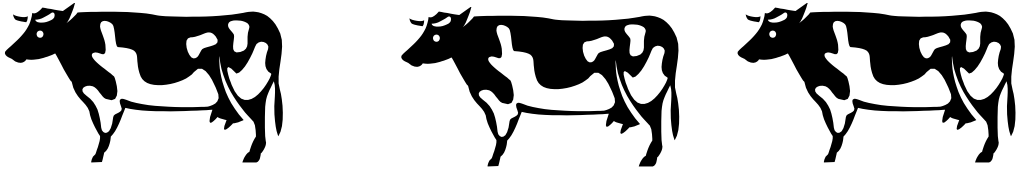
Colostrum
Calories
Cleanliness
Comfort
Consistency

Colostrum Feeding

- 3-4 liters (1 Gallon) (10% of BW) within 2 hours of birth if possible
- Won’t drink it? Tube it!
- Feed 2-3 liters again in 8-12 hours
- Colostrum will not make up for poor sanitation
- Too much heat will damage the proteins



Environment

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- Housing Well Ventilated but Free From Draughts

- 100 cfm hot weather – 15 cfm cold weather

- Bedding is Clean and Dry

- Knee test
- Plenty of it and changed often

- Pens cleaned between calves

- Enough space per calf

- 35 sqft of Bedding space more is better

Importance of Water

- **Check Sodium 0-100 PPM (know you ppm in MP)**
- **Hardness 0- 200 ppm (set detergent accordingly)**
- **Iron Fe 0- 0.04 ppm (could be a taste issues)**
- **Total Coliform, colonies per 100 ml should be** < 1
- **E.Coli, Colonies per 100 ml should be** < 1
- **Chloride, 0 – 300 ppm**
- **Check water every 6 months**

Importance of Water

- **Water is the biggest nutrient in the diet of the calf (test every 6 months)**
- **Each unit of dry matter requires 4 units of water for digestion**
- **Each unit of protein requires 3-4 units of water for tissue building**
- **Water quality WILL effect intakes**
- **Thermoregulation, feed intake, feed utilization**

Tip: Calves prefer warm water!

Best Management Practices

- Clean clothes and boots
- Work youngest to oldest
- Work healthy to sick
-Sanitize feeding articles like you do your milking system
- Vaccination protocols for cows and calves

THE AUTOMATIC CALF FEEDERS

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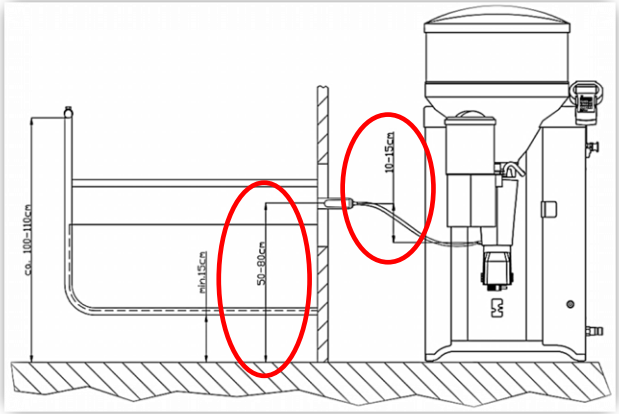
- Feed calves individually
- You can feed vitamins or medicine to individual calves or group (liquid and powder)
- Up to 4 nipples per feeder
- Easy weaning
- Full control over calves performance
- Consumption, drinking speed, visits, and more info available with one click
- Software program available
- Priority control
- I Q heating for always correct feeding temp.
- Automatic calibration

VARIO SMART

Recommendation feeder install

- Mount teat 10 to 15 cm higher then mixer outlet
- Height of teat around 50 to 80 cm above calves platform
- Keep hoses as short as possible
- Possibility to drain feed remains at station



PRIORITY

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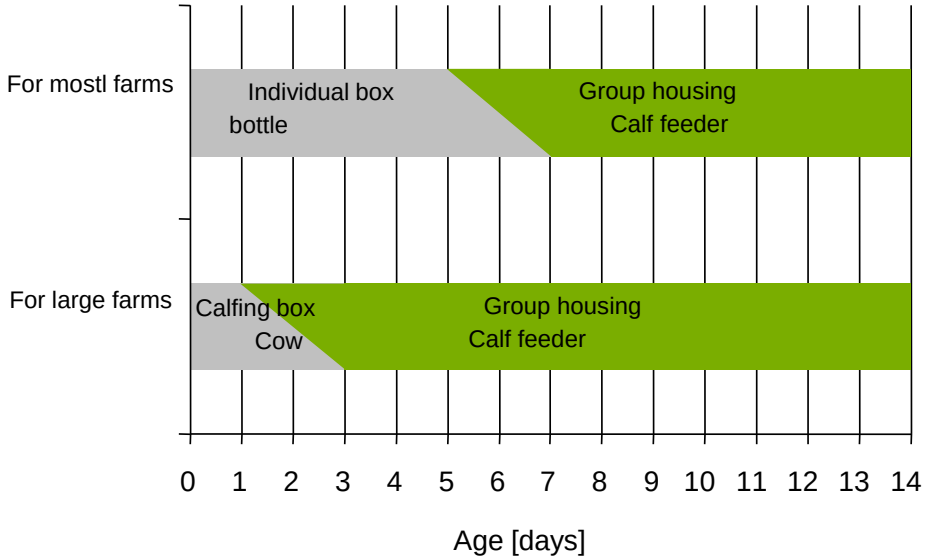
- **Set priority for calves up to 7 - 10 days**

How it works:

- **If a calf with priority enters the feeding station, the machine immediately switches feed over to this calf.**

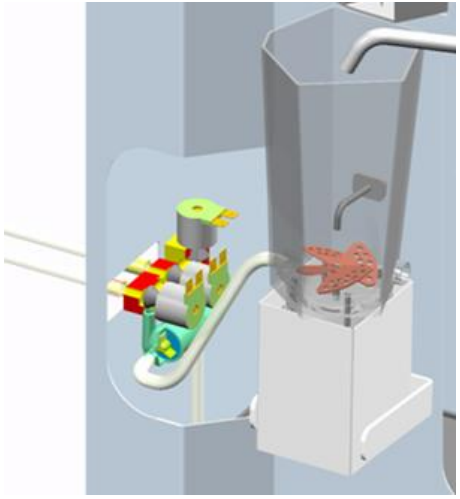
What age should calves go on the automatic feeders ?



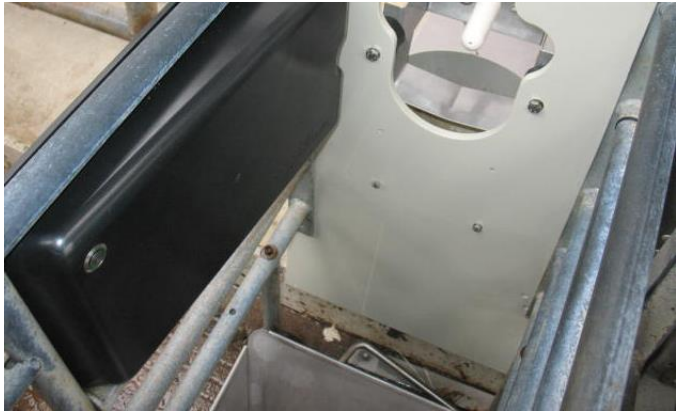
1 - 7 days after birth

- Move calves after colostrum period
- Bottle feed until good sucking reflex
- Use calf feeder to prepare milk for calves in single pens
- Train calves early on teat
- Do not help too often

Manual training pump



To easily train the calves push button: transfers milk to the teat



Automatic calibration

Intensive mixer is connected to load cell.

- The automatic calibration checks the dosing quantities several times per day during the preparation of the portion. Automatically rectifies the calibration value, if necessary.
- Fully Automatic calibration of milk, milk Powder and water

Automatic calibration

- Intensive mixer is connected to load cell
- up to 4 times a day, normally 1 time a day is enough
  - Automatically rectifies the calibration value
  - Fully Automatic Calibration of Milk powder, milk and water
  - Warning appears if difference is to high (do not ignore the warnings)

Temperature settings

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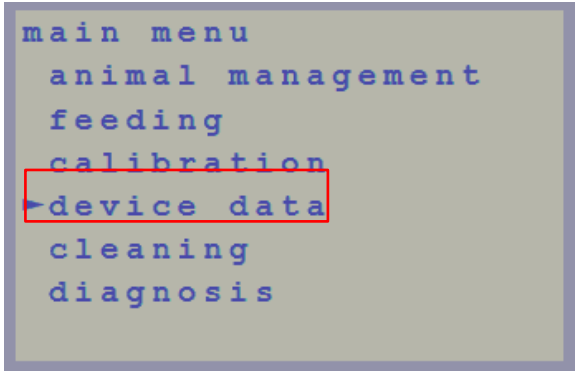

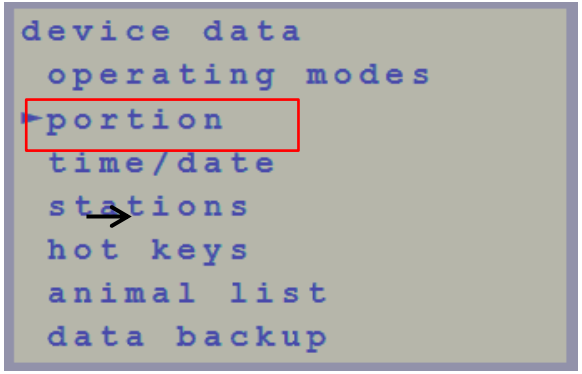

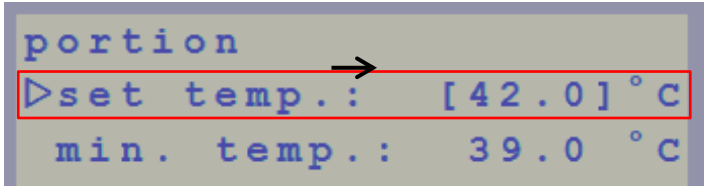

Variable portion size

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Portion preparation between 0.25 and 0.5 l

- **2 sensors in mixing jar for more accurate bookings** Sample:
  1.7 l = (1 x 0.35 l)+(2 x 0.5l)+(1x 0.35l)
- **High intensive mixer only needs 4-5 seconds to mix the MP**

Mixer Jar, Heat Exchanger and Suction Hose Cleaning

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- Mixer and heat exchanger are automatically cleaned up to 4 times a day (possible to clean true nipple)

- Set detergent according to the tag on the detergent (Higher temperature cleaning of feeders is now available 135-140F or 58c)

- We recommend to do a circuit cleaning every day this will clean all valves and hoses

- When circuit cleaning is running check nipples and clean, also turn nipple quarter turn this way the nipple will last longer

Checking suction hose and teat

It is imperative to regularly check the suction hoses and teats.

- If after cleaning deposits are still visible in the suction hoses or teat, you should manually clean them or replace them.

The suction hoses can also be cleaned continuously with automatic cleaning

Check the teat Daily and turn quarter turn

Cleaning automatically

- Check detergent
  - Empty?
  - Is detergent Pump working?
  - Set detergent level correct to much or too little it will not clean correctly
  - Use Acid Rinse (NEW)
  - Set cleaning temprature up to 58c (137F)

Fully Automatic Circuit Cleaning up to the teat

Coming Soon

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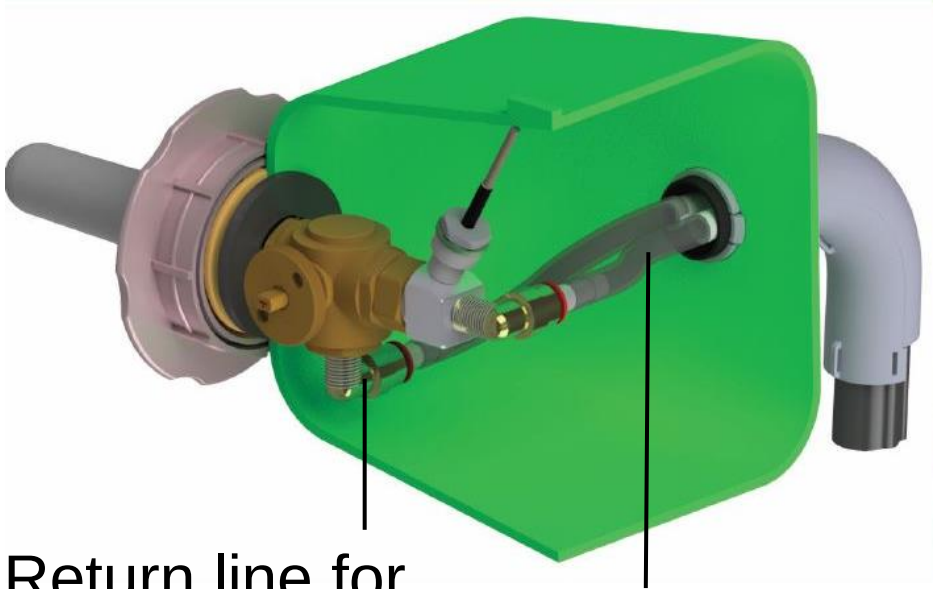

Return line for cleaning water

Suction hose for the milk

- Fully automatic cleaning of the suction hose
- The return line is intended solely for cleaning purposes. The milk is NOT pumped around

UP TO 4 NIPPLES A FEEDER

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Priority control with 2 nipples
50 calves

IFS add to existing feeders 2
IFS added to Priority feeder
could feed up to 80 calves

Quattro can feed 100

additive dispenser

Animal-specific addition of powder and/or liquid additives

Dosage in grams per

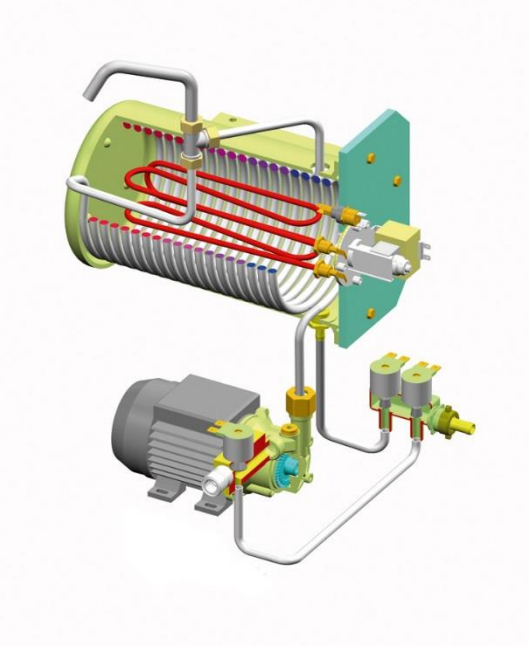
- Kilogram body weight
- Liters of feed
- Animal and day

Distribution over the day

- Once
- Twice
- Evenly

Boiler and Heat Exchanger

Boiler-Powder feeder



Heat exchanger- Combi feeder

CALF MANAGEMENT ON HANDHELD AND OR PC

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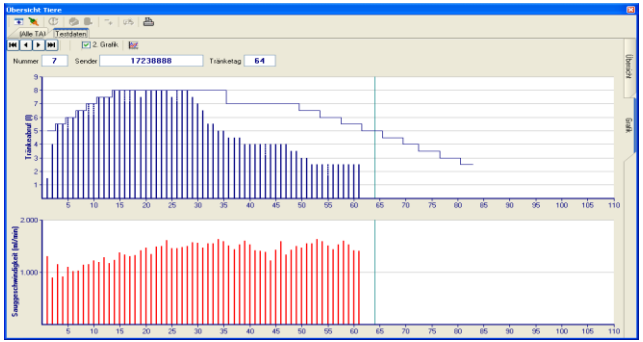
- Check Alarm calves
- Check Consumption
- Check Drinking speed
- Check Visits with and with out milk
- Check Entitled calves
- Check all calves in pens



Calf Manager management software

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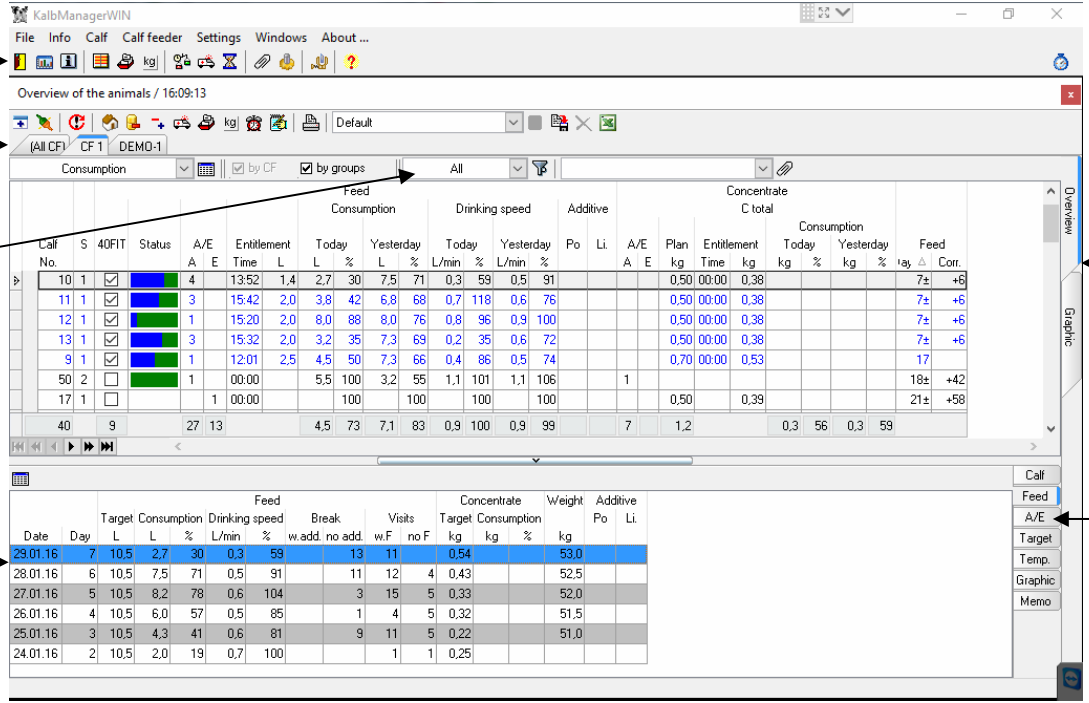
„Navigator“ = main menu + toolbar

menu bar calf feeder

sort and filter tool



history of one animal

menu bar index or graph

menu bar history of one animal

www.calf-cloud.com

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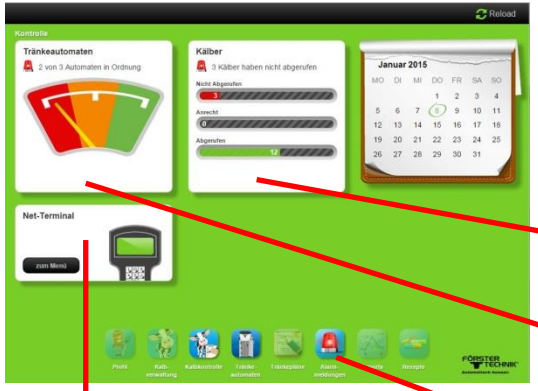
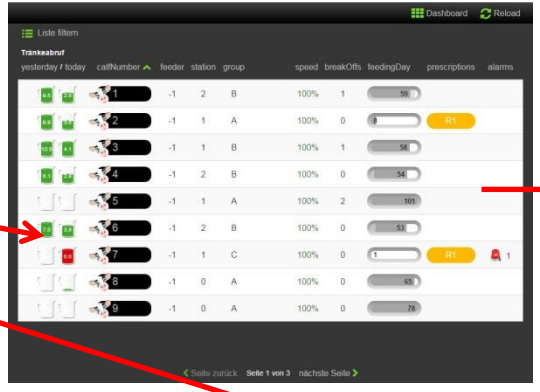
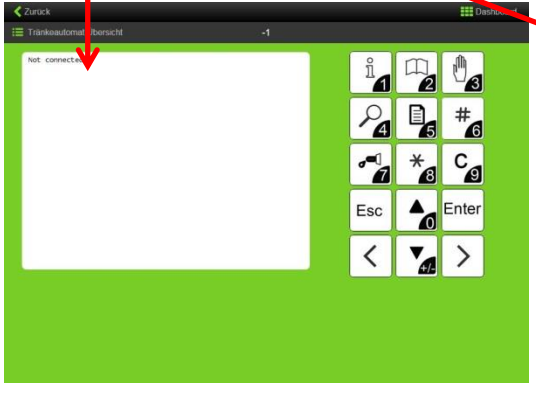
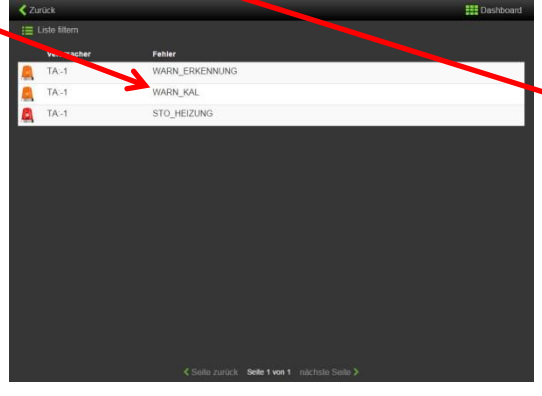
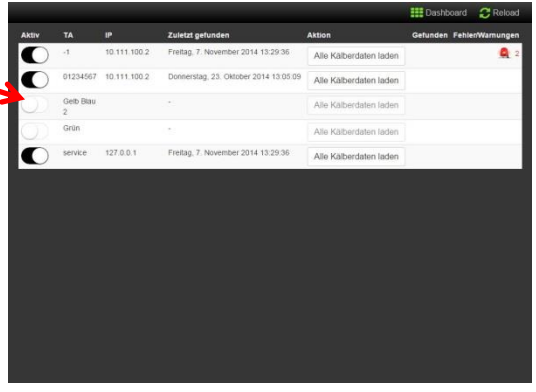










CalfApp – animal list

quick and easy all animals at one glance

- fast overview because of color design
- filter, sort and present to your individually preference
- complete list of all calves

Liste filtern

Ø - Wert der Gruppe: gestern / heute: 11 | 5

Tränkeabruf: gestern / heute	Kalb-Nr.:	Tränkeautomat:	Station:	Gruppe:	Saug-geschw.	Abbrüche:	Tränketage:	Rezepte:	Alarme:
12 | 12	12324	Stall 1	4	B	60%	2	32		4
7 | 4	12438	Stall 2	4	B	70%	2	14		3
3 | 0	12455	Stall 3	3	D	30%	8	7	R1	2
0 | 4	12199	Stall 5	1	C	55%	10	9	E	1

CalfApp – individual animal

look at individuals more precise

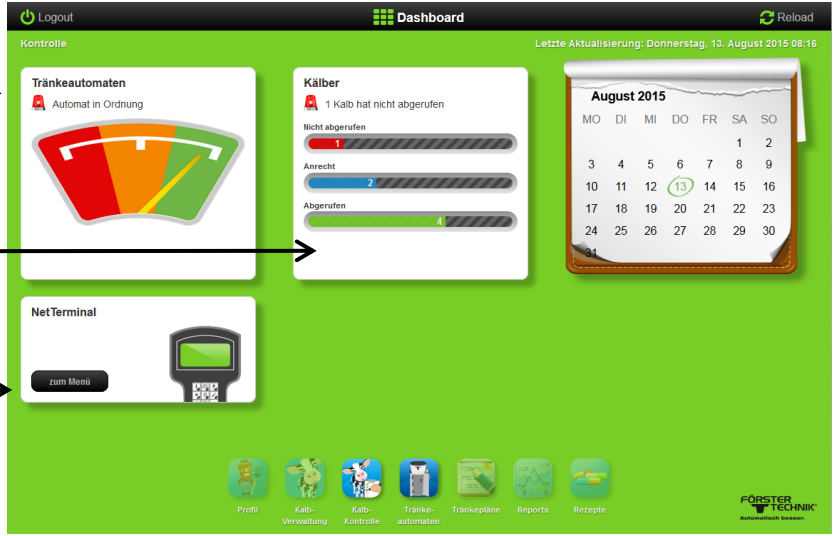
- adjust master data
- graphical representation

CalfApp

Calf feeder – Functionality is shown

Calf behavior (drinking speed, visits, feed intake etc.)

Diagnosis option



Compatible with networkable devices (iOs and Android)

Appointments

Calf feeder sends data

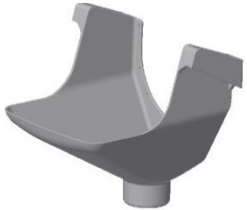
Management - Animal list

	1/ 12	cons.		dr.sp	
►9	aA1	27	89	✓+	80
5	aA2	70	✓	49	52
11	aA1	83	✓	✓+	63
3	aA1	84	✓	✓	✓+
12	aA1	89	✓	✓+	95
4	aA2	✓	✓	✓+	✓+
2	aA1	✓	✓	✓+	✓+

ActivityBox – Coming Soon

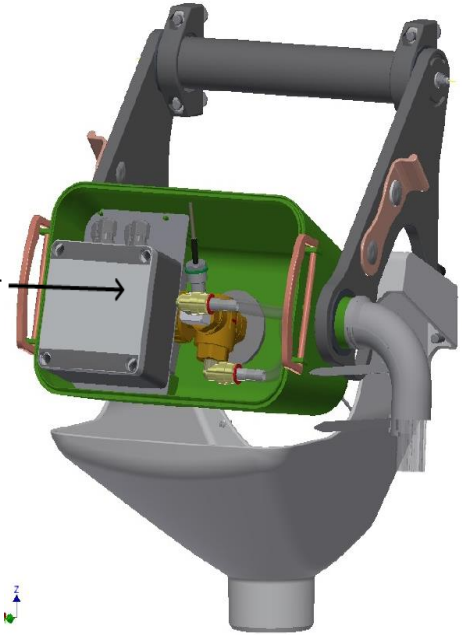
Movable teat unit including switching valve and sensors

Tool-free teat replacing



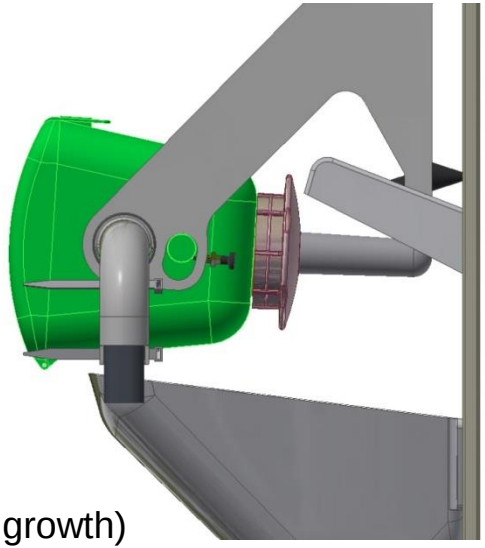
New draining bowl

Control unit with PCB including movement sensor



ActivityBox - Advantages

- Optimum protection from dust, dirt and water
- Quick lock for training young calves
- Depending on position of identification and the local conditions
- No Tools needed to replace nipple
- Supports natural drinking behavior like Udder



Automatic suction hose cleaning

- High hygiene level
  - NO need of keeping warm and recirculation of milk (inhibition of germ growth)
  - Thanks to the draining bowl the saliva and leftover feed will be lead away from the calf area

Smart Calf System – Smart Neckband Coming Soon

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LED-lamp to detect animals

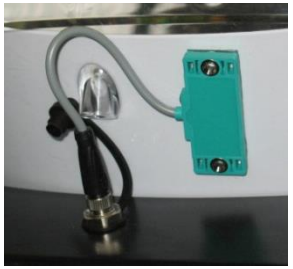
Activity measurement

Feed back button,
work-flow-management

Filling level sensor milk powder

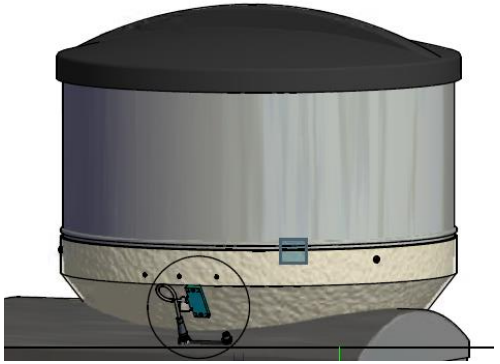
Electronic sensor at the powder hopper registers the filling level

- Mounted on the backside of the hopper



Notification about low milk replacer filling level shown in the CalfCloud and CalfApp

- Additionally shown on display of calf feeder

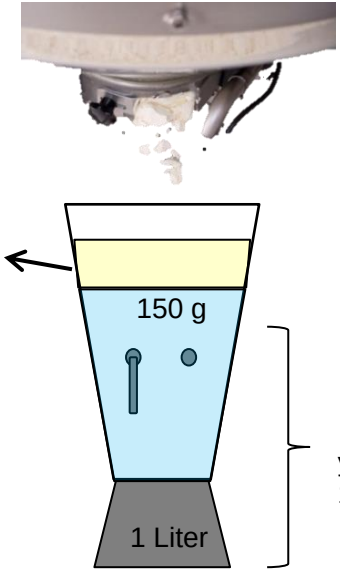


Higher operational reliability

- Management support

Use of milk replacer

Dry matter (in %/l feed)	Concentration of feed (in g/l)			Adjusted at feeder (in g/l Wasser)		
11	110	g	In the Liter	124	g	On top of a liter water
12	120	g	In the Liter	136	g	On top of a liter water
13	130	g	In the Liter	149	g	On top of a liter water
14	140	g	In the Liter	163	g	On top of a liter water
15	150	g	In the Liter	176	g	On top of a liter water
16	160	g	In the Liter	190	g	On top of a liter water



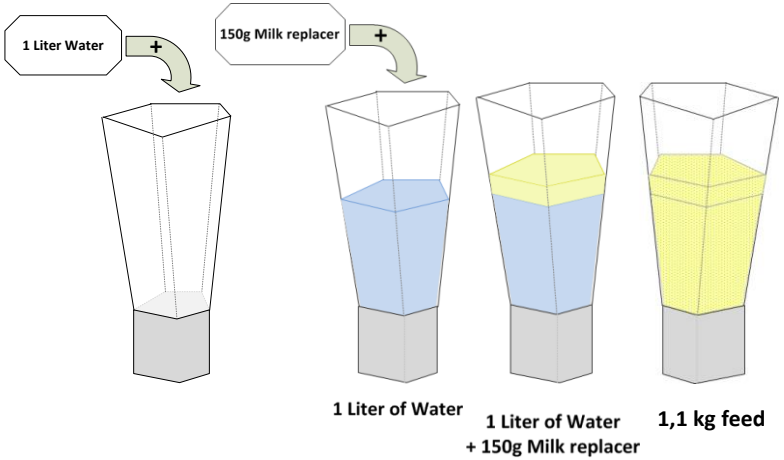
Setting to 150 g gives you approx. 130 g in the liter

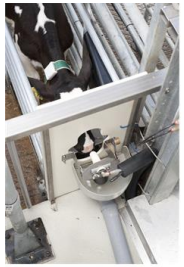
Hint: The solubility of milk replacer differs depending on the milk replacer that is used. This can influence the dry matter content per liter feed. Therefore the present table needs to be regarded as guidline only, individual adjustments can be necessary.

What the feeder does…

Amount according to feeding plan:

1 Liter

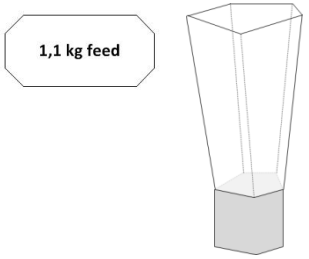




Calf enters the feeding station:

Amount of feed the calf can drink:

registered amount



Example Feeding Schedule for Automatic calf feeders (Restricted)

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Quantities

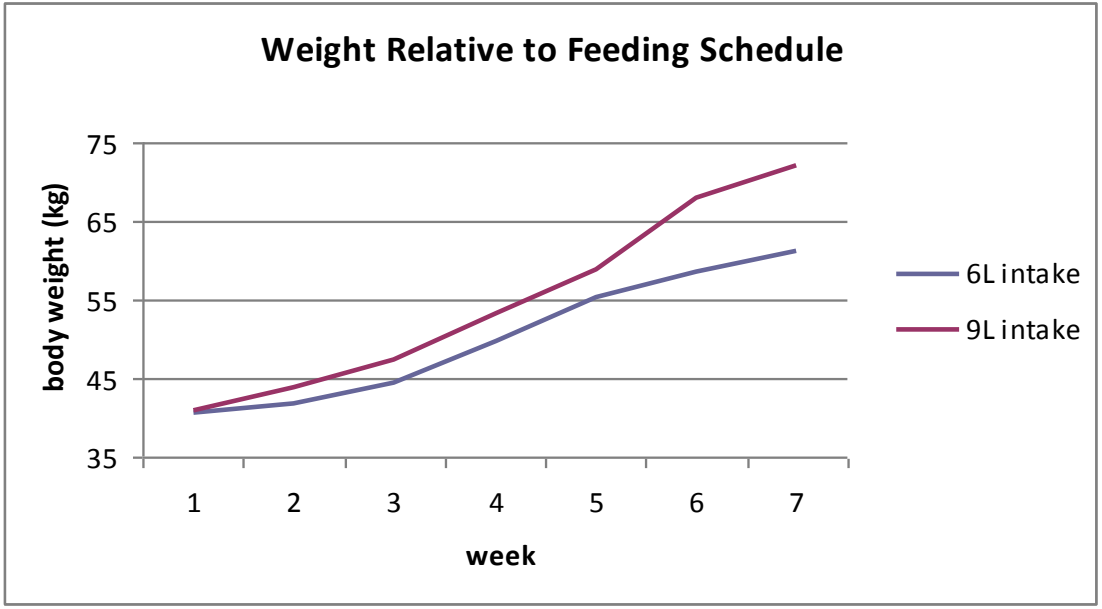
- 5 Days 8.0 to 9.0 liters
- 10 Days 9.0 to 10.0 liters
- 27 Days 10.0 to 10.0 liters
- 14 Days 10.0 to 2.0 liters

Calves will be weaned at 56 Days s
Concentration set on 150grams per liter

Feeding limits:

- 5 Days 1.0L Min 2.0L Max
- 10 Days 1.5L Min 2.5L Max
- 41 Days 1.5L Min 3.0L Max

results show increase in body weight by 10.8 kg or 23.8 lbs (9L vs. 6L)



The importance of intensified calf feeding

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Many impressive new studies show that intensive rearing in the first few weeks of live produces calves that

- are more energetic
- are more fertile
- are healthier

→ Higher earnings from milk yield exceed by far the added costs of calf raising

→ “The first 40 days in life are essential to exploit the full genetic potential.”

40FIT
TECHNOLOGY
STARKE KÄLBER
STARKE KÜHE

40FIT Feeding plan controlled ad lib

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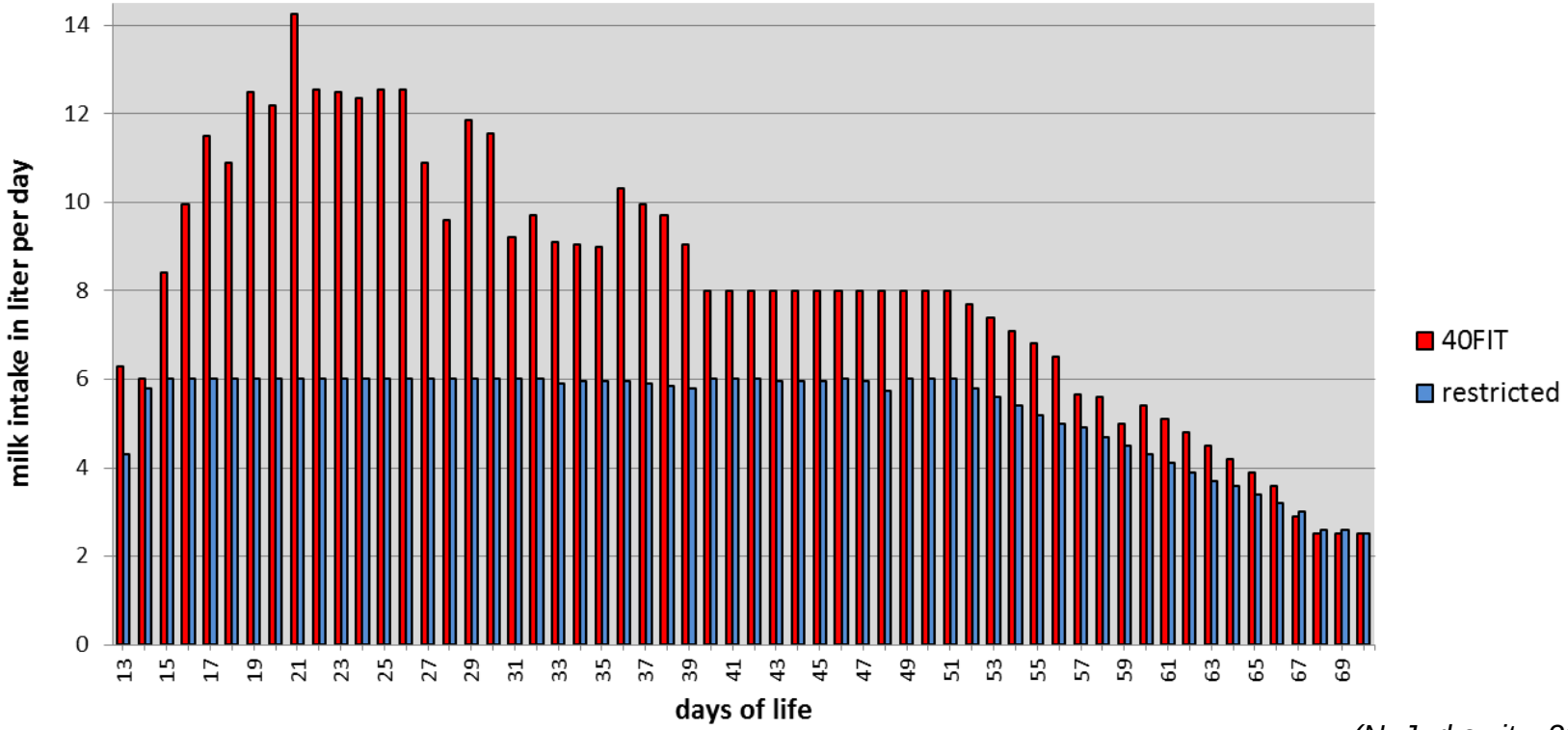
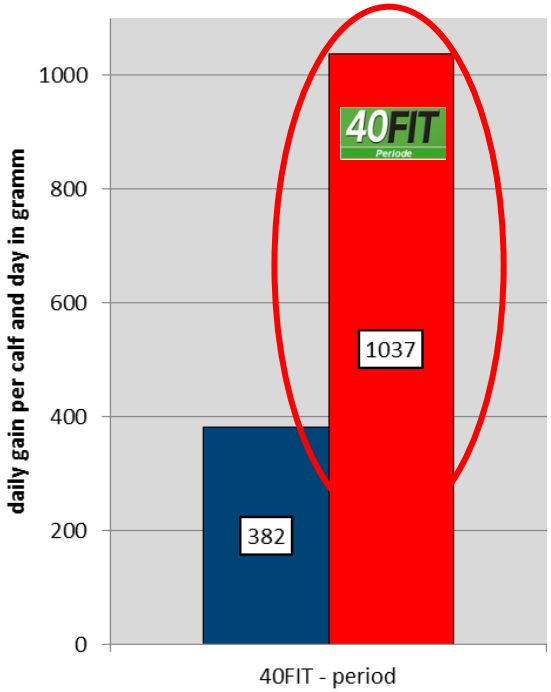
- Each drinking visit is computer controlled via RFID, also in the ad-lib phase of the 40FIT plan
- Limits only per visit to prevent over-drinking
- Works for winter and summer conditions
- Intake compared against reference, e.g. older calf needs to drink more liters, otherwise alarm
- documented in Calf feeder & PC
- always freshly prepared
- with exact drinking temperature
- Easy weaning afterwards

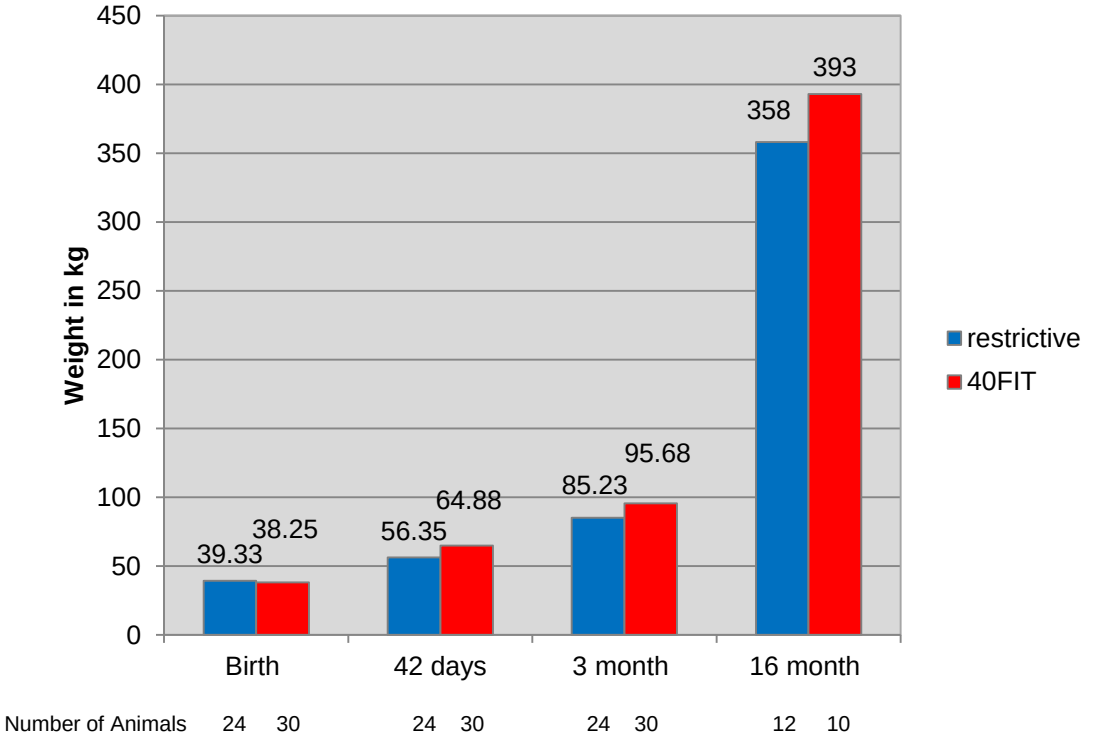
Feed consumption



(N. Jurkewitz, 2012)

More milk – more gain

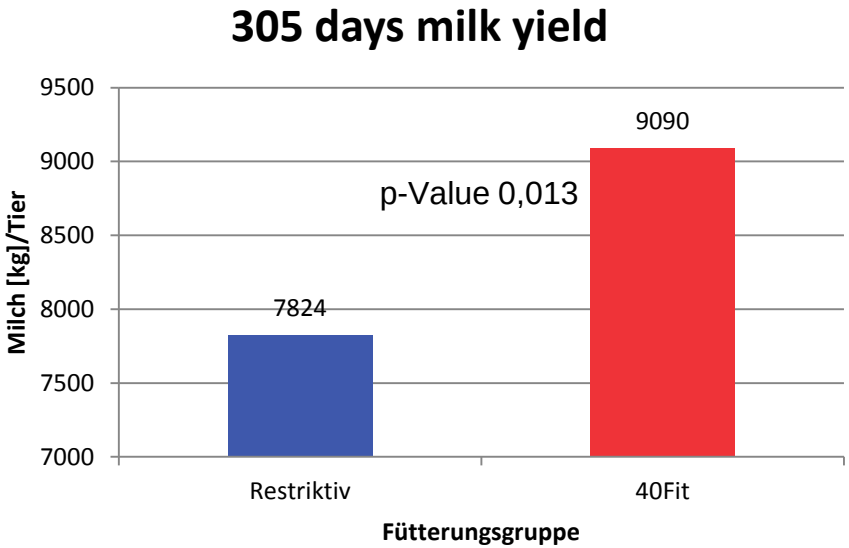




(N.Berberich 2012 ; B.Broghammer 2015)

2 years after – increased milk yield

Significant difference in milk performance and persistence



1200 liters i.e. 15% improvement

Development of concentrate consumption

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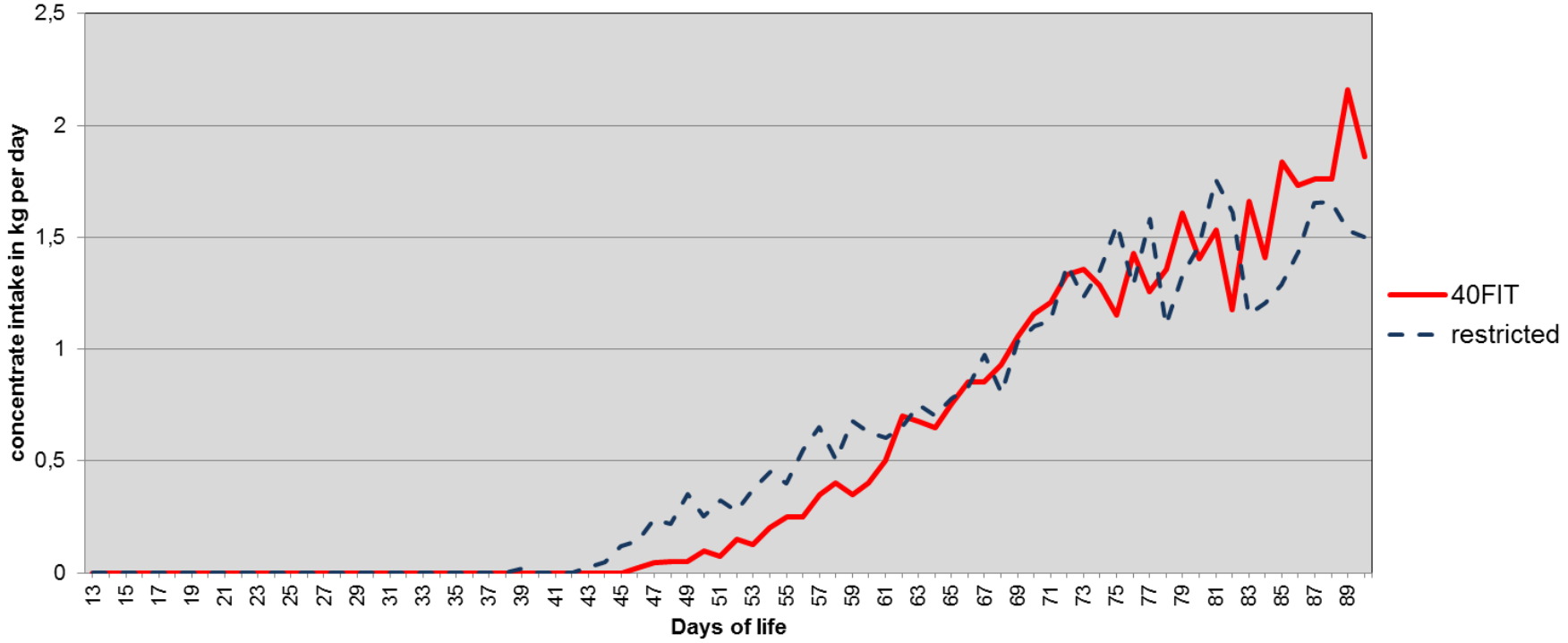

(N. Jurkewitz, 2012)

Example Feeding Schedule for Automatic calf feeders Controlled Ad-Lib(40Fit)

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- 28 Days 6.0 to 8.0 Liters F
- 4 Days 12.0 to 8.0 Liters R
- 10 Days 8.0 to 8.0 Liters R
- 14 Days 8.0 to 2.0 Liters R (Weaned at 56 days)

- Feeding Limits
- 7 days 1.0 liters Min 2.0 liters Max
- 21 days 1,5 liters Min 2.5 liters Max
- 42 days 1,5 liters Min 3.0 liters MAX

F is 40 fit (40 fit setup for every 02:00h) (P1 8.0-8.0 liters is used only to alarm animals the calves will be fed controlled adlib for 28 days max 2.0-2.5L every 2 hours R is restricted)

Summary of 40Fit trial

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- Natural behaviour
  - Average milk intake per day per calf of 11 liter during 40FIT
- Higher daily gain during 40FIT- Period
  - Higher weights at the end of the trial
- Less visits of 40FIT calves during intensive feeding
  - More rest time - less stress
- Concentrate intake of both groups almost equal

⇨ and: Feed conversion of 40FIT calves up to 9% better.

Accelerated Feeding

Increased immunity with Higher plane of nutrition

Feces remain softer longer on Accelerated feeding programs – incidence of scours, however, is not increased.

The importance of intensified calf feeding

Effect of increased feed intensity on first lactation cow performance

Study	Performance
Denmark (Foldager and Krohn, 1994)	+ 3000 lbs
Denmark (Foldager et al., 1997)	+ 1140 lbs
Israel, (Bar-Peled et al., 1998)	+ 1000 lbs
USA, NY (Ballard et al., 2005)	+ 1500 lbs
USA, MI (Davis Rincker et al., 2006)	+ 1100 lbs
USA, IL (Drackley et al., 2007)	+ 1700 lbs
USA, MN (Chester-Jones et al., 2009)	+ 2100 lbs
Average	**+1700 lbs**

Saving potential

Example: Dairy farm with 100 dairy cows and automatic feeder

Saving potential	Saving	Notes	Revenue/ Unit		Total revenue	
Labour saving	250 h	Utilization through additional cows	$10	Per hour		$2500.00
Reduction of first calving age	2 months	e.g. from 24 to 22 months	$100	Per heifer	20	$2000.00
Higher milk yield during the first lactation thanks to improved weight development	500 kg More milk	500 x 0.30	$150	Per heifer	20	$3000.00
					Total additional earning/year:	**$7500.00**

WEANING ADVANTAGE

FÖRSTER TECHNIK®
Automatisch besser.

- One of the biggest advantages from Automatic feeders

- Last 2 weeks weaning about 0.5 liters less every day (automatically done with feed curve)

- Normally calves are weaned after 8 weeks on a machine

THE TWO LEGGED PROBLEM

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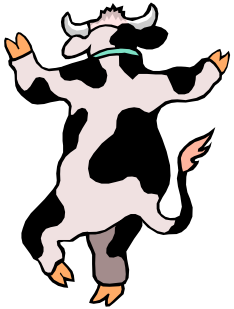
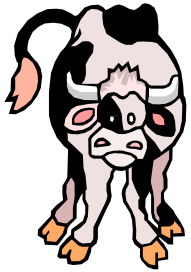
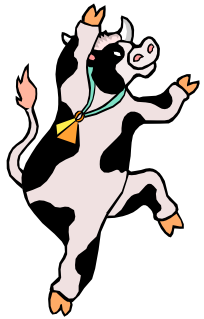
Problems may occur when……

- Colostrum not managed
- Wrong barn Layout
- Problems with ventilation
- Wrong feed schedules
- Not Managing calf feeder
- Not managing calves







Take Home Message

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- COLOSTRUM First hour (10% of body weight 4 liters or 1 gallon)
- Provide adequate housing
- Ensure appropriate ration management
- Good weaning schedule
- Use priority control
- Use Auto Calibration
- Do not ignore warnings on feeder
- Ensure good hygiene
- Manage Automatic feeder
- Check calves not just Automatic feeder

FOERSTER-TECHNIK CALF FEEDER DAILY ROUTINES

FÖRSTER TECHNIK®
Automatisch besser.

- 2x daily Check MP level in calf feeder fill when needed
- 2x daily check milk level in holding tank when feeding whole milk make sure milk is still fresh
- 1x daily clean milk powder outlet (not around auto calibration time)
- 2x daily Check calves in pens check for like cough, runny noses health swollen navels, swollen knees make sure calves are alert if you see something investigate more by checking this calves performance on the calf feeder, maybe give calf some electrolytes if needed consult veterinarian
- 2x daily check calves on feeder Hand held and or KM check for drinking speed, consumption, visits, and more
- 1x daily check hoses for deposits replace hoses if dirty
- 1x daily check, clean and turn nipple
- Check for warnings on calf feeder true out the day and do not ignore these warnings when they come up
- Have minimum 3 automatic cleaning per day
- With powder feeder 3x mixer cleaning
- With Combi feeder with only feeding milk powder set 3 mixer cleanings and 1 Heat exchanger cleaning per day
- With Combi feeder and feeding whole milk set to 3 Heat exchanger cleaning per day
- Do one circuit cleaning per day (1x a week use an acid instead of the detergent)
- If MP is not mixed good enough check mixing time under device data-portion-off delay mix, you can increase to 5 sec.

Must have for Automatic feeders

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- Automatic Calibration.
- Automatic Cleaning
- Priority feeding.
- Small portions mixed per feeding.
- Always right temperature at nipple. (IQ Heating)
- Dosing device stainless steel blades not a auger.
- High capacity boilers to keep water and milk at right Temps.
- Software that keeps date forever (Traceability)
- Cloud based with App to get messages on you phone

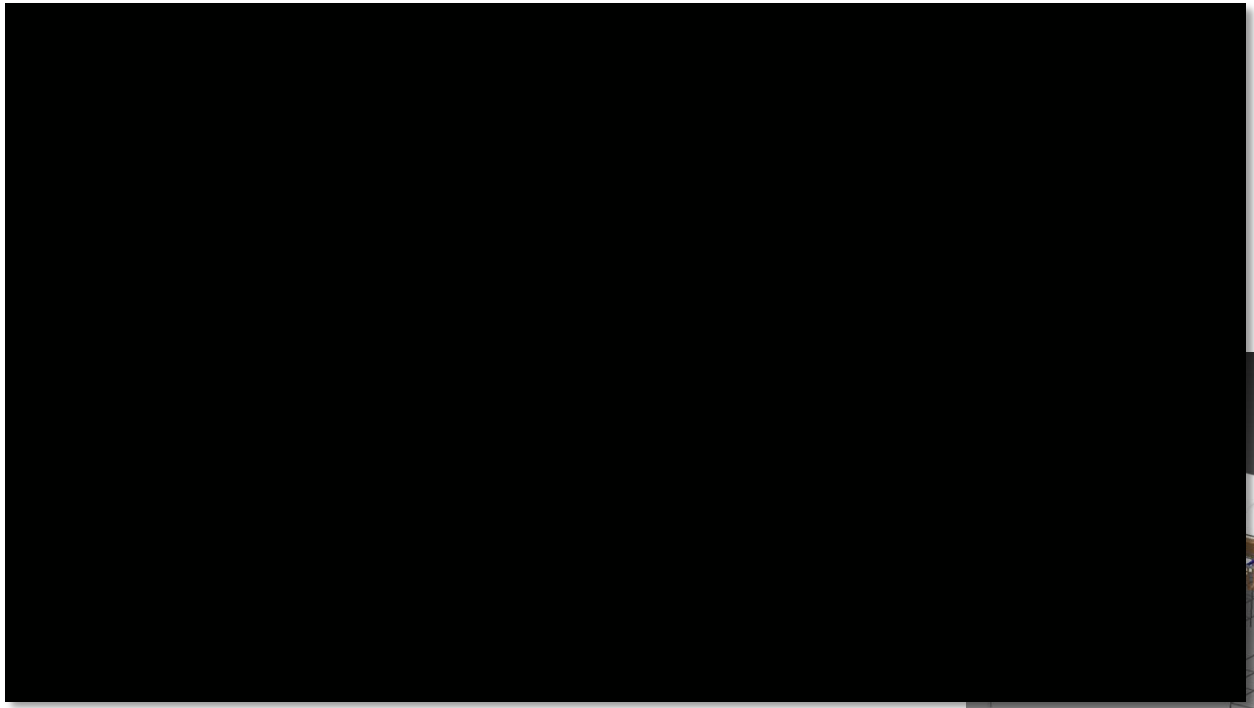
CalfRail

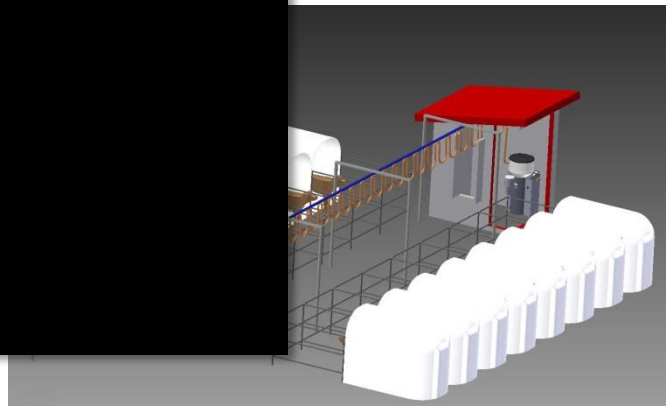
FÖRSTER TECHNIK®
Automatisch besser.

- Automated feeding for individually penned calves.
  - Up to 8 times a day
  - Feed always fresh
  - Always right portions
  - Individually
  - Controlled
  - Exact Temperature
  - Full CIP cleaning
  - Nipple sanitized

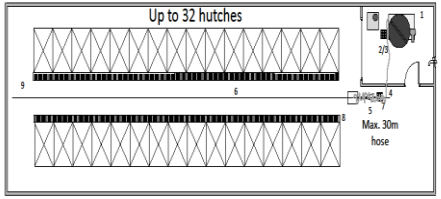
CFR100 – Feeding for individually penned calves

FÖRSTER TECHNIK®
Automatisch besser.

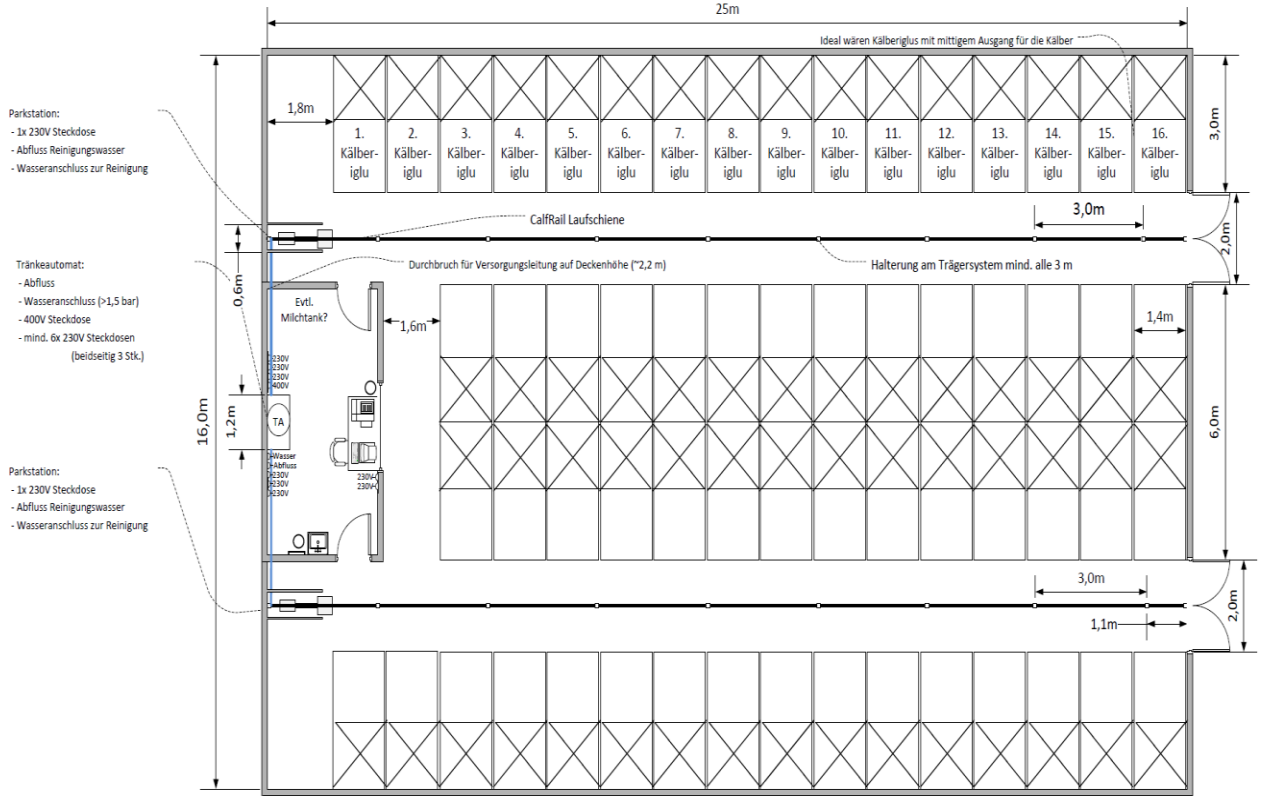




Application area: Used for Calf Rail only



1. Connections:
   Automatic feeder: 1x 5,5KW/240V/30Amp
   1x water, 1-6bar
   CalfRail Heater: 1x 15Amp/240V
2. Drain Automatic Feeder
3. Drain room
4. Opening for hose kit: 15cm
   } If feeder sits in a room
5. Parking position: 1,5m – 2m
6. Distance from rail to Calf box: 0,7m -1,0m
7. Drain CalfRail, approx.. 1,5m after parking position
8. Drain channel, 30cm
9. Rail end until last stopping position >1,5m



CalfRail Single and Groups

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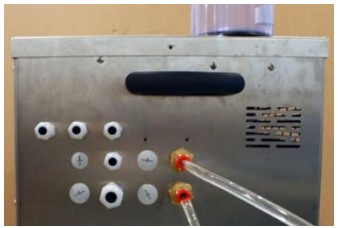
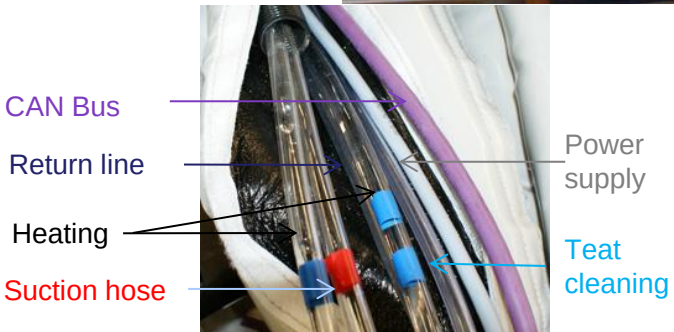
Automatisch besser.

CFR100 – Heating

- Heating of CFR100
  - External Element to keep line at right temperature
  - Pumps warm water through separate hoses next to suction hose with the milk
  - Water is circulated back to boiler and kept warm
  - Heating included in Calf Rail purchage





CFR100 – function

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Teat cleaning:

- Optional
  - After each calf the teat is cleaned with disinfectant, spread over the teat via a jet

Thank You Very Much

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