



THE NATURAL CHOICE FOR HEALTHY GROWTH

Energized Calf Milk: a revolution in early life nutrition

Milkivit Energizer





ENERGIZED CALF MILK

ENERGI Z ER



LifeStart science indicates that there are benefits to be gained in modern dairy herds from having higher energy levels and lower osmolality in milk replacers.

Milkivit Energizer is the first in a range of Energized Calf Milk (ECM) products designed to revolutionise the way we feed calves. ECM has been designed to support the LifeStart objectives:

-  **OPTIMAL DEVELOPMENT**
-  **RESILIENCE TO DISEASE**
-  **LONGEVITY**

Early life nutrition for farm profitability



The pressure on our farming communities to produce more, in line with the growing world population, is increasing all the time. We must therefore challenge the status quo and explore innovative ways to sustainably improve the efficiency and profitability of dairy and beef farms.

Key to every enterprise that rears young animals is the ability to achieve their full lifetime potential of both yield and longevity.

Understanding the role that a calf's early growth and development plays in the lifetime cow performance is one of the most significant advances in calf nutrition in our time. We must move beyond traditional calf rearing and consider the need for investing for optimal performance to give improved profitability on farm.

Shifting rearing objectives from short-term to long-term

The concept of early-life nutrition and its crucial role in adult health and performance is not new. Having been well established in the human sector, the topic has dominated medical journals over the last few years. Recently, it has become clear that nutrition and management during the early life of calves can have long-term effects on the development, health and lactation performance of the herd.



OPTIMAL DEVELOPMENT

Soberon et al. (2017) revealed that the mammary glands of dairy calves are responsive to nutrient intake during the pre-weaning stage, especially the parenchyma tissue, which will develop into secretory cells in later life.

RESILIENCE TO DISEASE

Ballou et al. (2015) showed how calves that have been fed higher levels of nutrition, pre-weaning, have increased resistance when challenged with enteric pathogens one month after weaning, compared to those fed traditionally lower levels.

LONGEVITY

Van Amburgh et al. (2013) indicated that, for every kilogram of pre-weaning Average Daily Gain (ADG), first lactation milk yield increased by 1,550 kg.

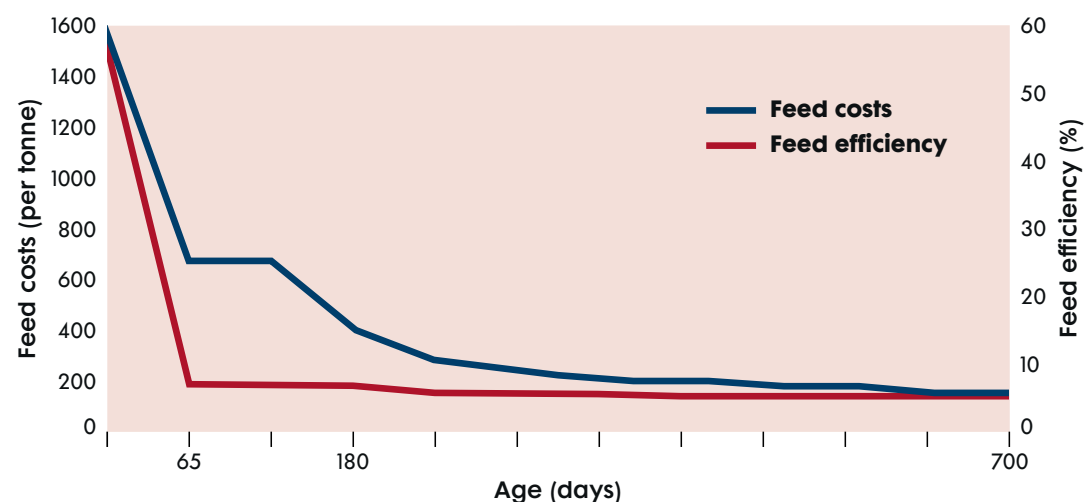
Unlock the full potential of metabolic programming

Critical window of opportunity

Feed conversion is much higher in the first weeks of life than at any other point in the growth cycle. So kilogram for kilogram the animal gets more benefit in the first two months, than later in life. This is one reason why it is beneficial to set high growth targets in the first eight weeks.

The research also shows that calves never make up the shortfall in growth rates and organ development, if fed at lower rates, pre-weaning. This pre-weaning phase offers a unique and unrepeatable opportunity to set calves up for life.

Feed efficiency and feed costs by age



Whilst feed costs are higher in the first two months, the benefits to the development and future productivity of the calf more than justify the extra cost, due to higher feed efficiency during early life.

Bach et al., (2013).

Longevity and sustainability

Increased longevity has a positive effect on profitability per cow, and less greenhouse gas emissions will be produced per kilogram of milk. Hence the environmental impact of dairy production is reduced, while the longevity of each cow and the efficiency of milk production are improved.

	Kg milk	G methane/kg milk
Lactation 1	8,399	14.72
Lactation 2	9,499	14.00
Lactation 3	10,067	13.00
Lactation 4	10,220	13.60
Lactation ≥5	9,952	13.80

Van Laar et al., 2004, Van Straalen, 2006, CRV 2010.

This study shows that production improves after the 2nd lactation, whilst methane emissions decrease.

LIFE START
SETS LIFE PERFORMANCE

Experts now agree that the management of calves is just as important as that of adult cattle, especially when it comes to improving long term performance. Our unique approach is based on harnessing the benefits of metabolic programming to unlock the genetic potential of cows.

LifeStart sets life performance

The LifeStart programme connects world-leading nutritional expertise with practical on-farm management advice to support:

OPTIMAL DEVELOPMENT

RESILIENCE TO DISEASE

LONGEVITY

by focusing on optimising nutrition and management, early in life.

OPTIMAL DEVELOPMENT

Research has demonstrated that feeding calves LifeStart planes of nutrition has a significant impact on gene expression. Early life nutrition has been shown to positively influence an animal's metabolism with the effects visible later in life. This is represented below in the number of genes altered per organ:

Number of genes altered per organ	Mammary	Fat	Liver	Bone marrow	Muscle	Pancreas
	Changed	654	1045	176	435	651
Up reg.	364	503	85	258	347	70
Down reg.	290	542	91	177	304	33



All the benefits of calf milk replacer plus...

Milkivit

Over 60 years experience in developing and manufacturing CMR, and the research behind LifeStart, have culminated in the launch of Milkivit Energizer, the new generation of "energized" calf-feeding products.

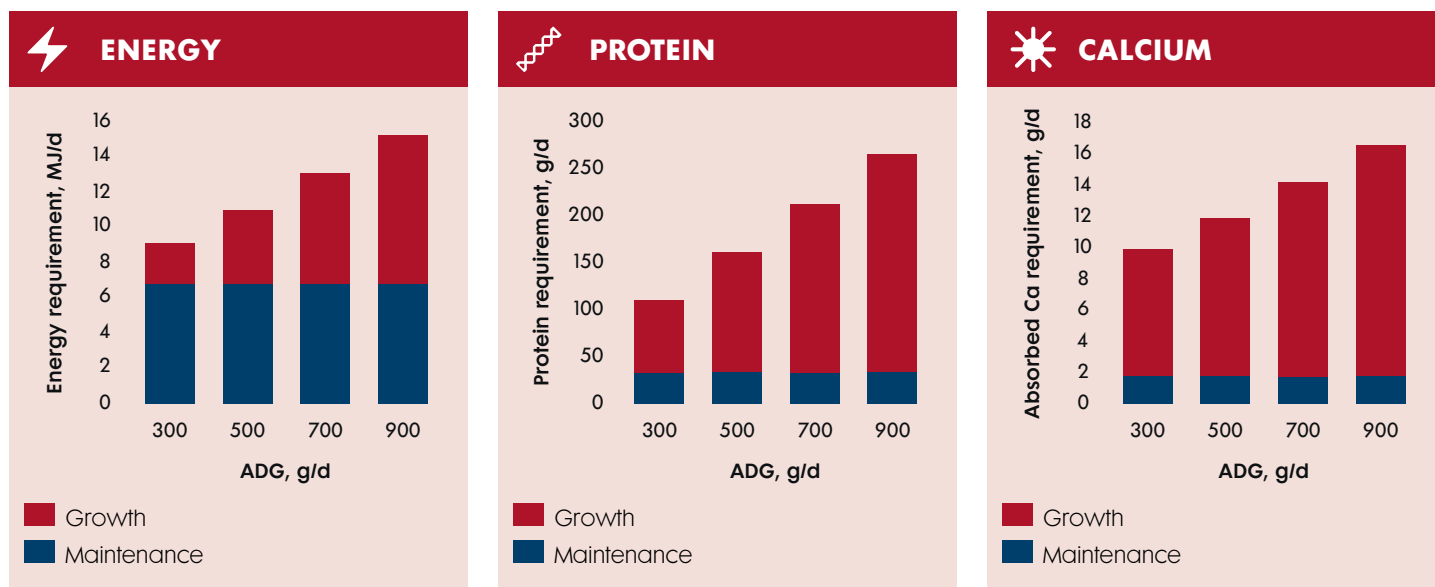
Many farmers have already been convinced of the benefits of calf milk replacer and are successfully feeding a higher plane of nutrition to get the full benefits of LifeStart; so why should they change to ECM?

Moving from the traditional practice of restricted feeding to LifeStart means doubling the supply of milk or milk replacer and therefore reaching higher growth rates. However increasing the amount of calf milk replacer fed is only half the story. With ECM we have evaluated the nutrient requirements of the calf to develop a new formulation.

	Traditional feeding	LifeStart feeding
Intake	10% BW	15-20% BW
ADG	400-600 g	700-900 g

Nutritional requirements change with growth rates

Research findings show many current formulations of milk replacers are not optimal for feeding at a higher plane of nutrition level. Calves could be underfed certain nutrients, and overfed others.



As a result we have reformulated ECM to offer the correct balance of minerals for elevated planes of nutrition.

ECM: feed for health, not just growth

Feeding calves a higher plane of quality nutrition will lead to a higher rate of growth. However ECM has been specifically formulated to ensure that the calf receives a balanced nutrient supply to ensure optimal development whilst supporting the health of the calf.

The formula is closer to that of natural milk with 10% more metabolisable energy. The difference in calf performance and appearance should become apparent.

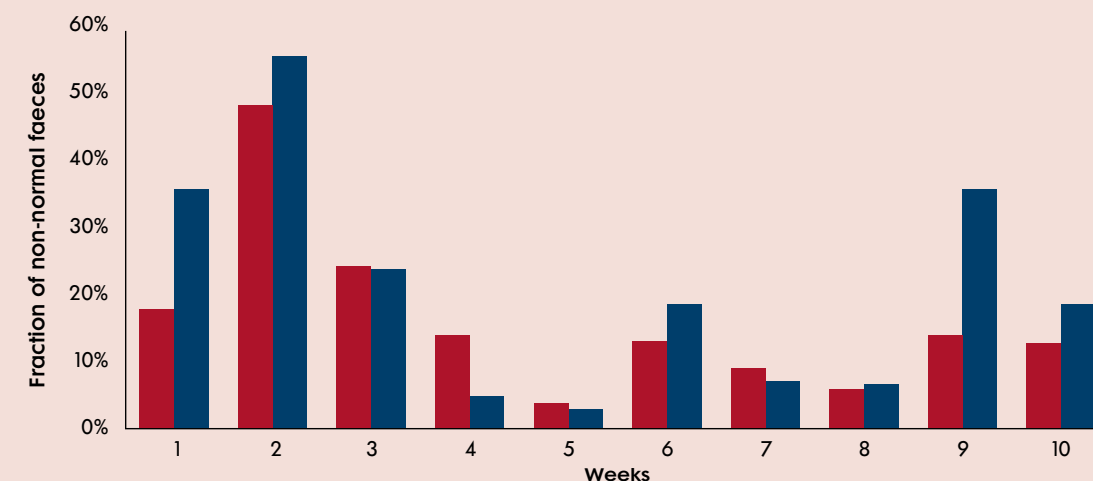
RESILIENCE TO DISEASE

In this study, both treatments had the same level of protein and results showed significant differences in weeks 1 and 9 for faecal scores, when comparing ECM with a traditional CMR.

Faecal scores 10 weeks



ECM
Traditional CMR

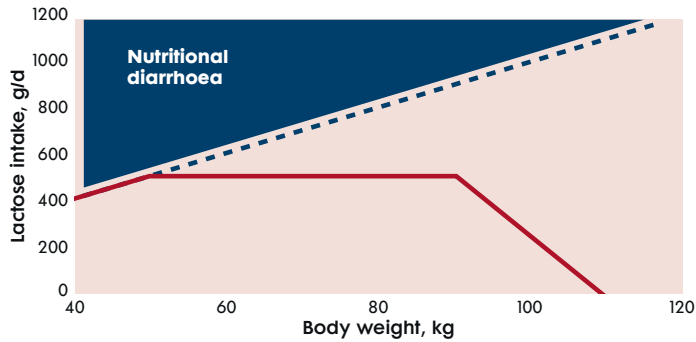


All the benefits of calf milk replacer plus...

Avoid the risks of exceeding nutrient tolerance

The graph shows at what level calves reach their nutrient tolerance for lactose. The red line represents a typical high plane of nutrition using a typical calf milk replacer where, especially early in life, there is a risk of exceeding lactose tolerance, leading to nutritional diarrhoea.

For this reason, ECM has been developed with a lower lactose content to reduce the risk of exceeding lactose tolerance.

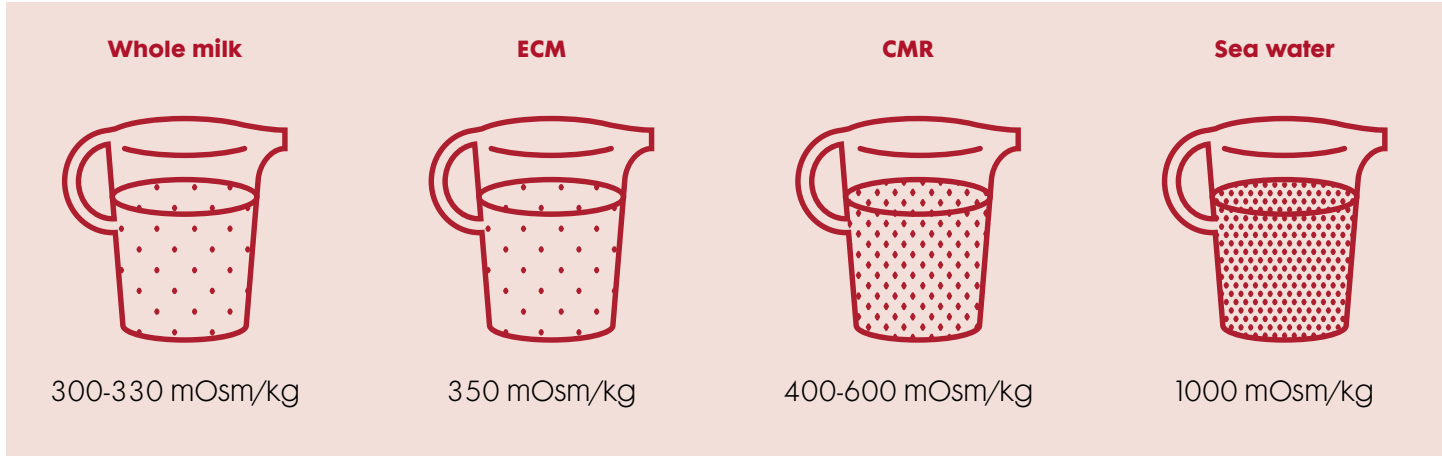


Adapted from Hof (1980).

Osmolality levels: risk factor for calf scour

This parameter measures the concentration of solute particles in a solution and is calculated by adding the concentrations of sugars and minerals in mOsm/kg of solvent. Lactose content in CMR is the main contributor to the final osmolality value.

CMRs with elevated levels of osmolality can damage gut integrity, increase the risk of abomasal bloat (because of slower gastric emptying) and exacerbate diarrhoea severity in sick calves. We have therefore ensured that the osmolality level of ECM is closer to that of whole milk.



THE KEY BENEFITS OF ECM VS CMR

- 20% less osmolality**
 With an osmolality of 350 mOsm/kg, ECM is the closest to the 330 mOsm/kg in cow's milk.
- 10% more metabolisable energy**
 There are 2.9 MJ of ME in 1 L mixed at 135 g/L.
- balanced mineral content**
 Reformulated for elevated planes of nutrition.

All the benefits of whole milk plus...

Many farmers prefer to use whole milk to feed their calves. Some find it more convenient, others believe it to be a more natural product that is best suited to the calf – nature’s original liquid feed strategy.

Whole milk can exist in a number of forms, each with a different potential impact on health, performance and convenience. Issues can include:

- Inconsistency of quality and availability
- Transmission of pathogens and disease
- Antimicrobial resistance

Energized Calf Milk (ECM) has been developed with whole milk as the biological reference, mixing the best of whole milk with the best of CMR.

Just like milk: naturally high energy

Inspired by saleable milk, ECM is high in fat ensuring the calf gets a high level of energy. The balance of vitamins and minerals within the formulation means that the calves get the best possible LifeStart. Farmers should soon see the difference in calf performance and appearance.

Biosecurity: the high cost of disease

Mortality and morbidity take a surprisingly high toll on some farms due to:

Contamination

Waste milk carries a risk of microbial contamination from E. coli, bovine viral diarrhoea virus, Listeria monocytogenes and various species of Streptococcus, Salmonella, Mycoplasma, Campylobacter and Staphylococcus, as well as possible transmission of diseases such as Johne’s (Selim and Cullor, 1997; Stewart et al., 2005).

Antimicrobial resistance (AMR)

Antibiotic traces in waste milk have been shown to contribute to resistance (Langford et al., 2003; Hinton, 1986; Teale et al., 1999; Khachatryan et al., 2006).

The consistency of manufacture of ECM supports safe feeding every time giving you peace of mind.

Saleable milk: maximising returns

For economic and traditional reasons, the use of the variations of whole milk remains widespread on farms. However, as an increasing number of producers evolve towards more modern standards of health and performance they are looking for all the benefits of whole milk feeding with the added consistency of a manufactured product.

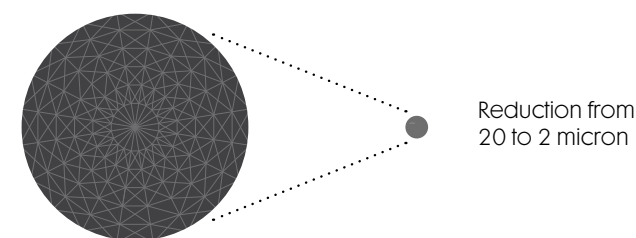
ECM allows the farmer to maximise returns for the business by selling that milk, rather than using it on farm.

Manufacturing: focus on consistent quality

The specialised raw materials for ECM are produced by Trouw Nutrition. The process begins by mixing the fresh dairy products with vegetable oils and fats. This mix is pasteurised and then high-pressure homogenised and spray-dried, utilising advanced technology. This results in miniscule fat globules of uniform size, similar to the small fat molecules in cow’s milk.

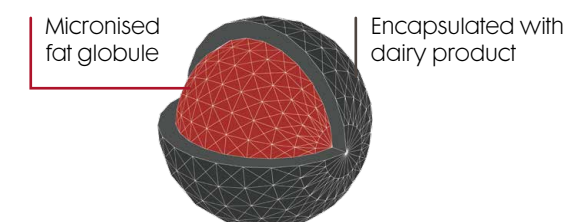
Homogenisation

Creates an optimal fat globule size, similar to cows’ milk, for improved solubility and stability in solution.

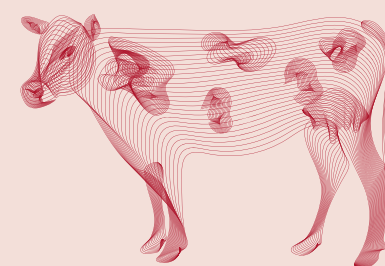


Encapsulation

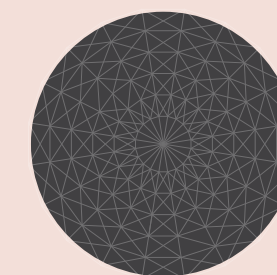
The micronised fat globules are encapsulated with dairy products to improve the absorption and increase intake.



THE KEY BENEFITS OF ECM VS WHOLE MILK



Eliminates contamination reducing the risk of AMR.



Consistency of manufacture ensures safe feeding every time.

balanced
mineral content



Formulated for elevated planes of nutrition.



Milkivit Energizer

Energized Calf Milk has been developed with whole milk as the biological reference; the best of whole milk combined with the best of CMR. Milkivit Energizer is a key component of Metabolic Programming and supports the LifeStart objectives:

- OPTIMAL DEVELOPMENT
- RESILIENCE TO DISEASE
- LONGEVITY

SPECIFICATION

This calf milk has been specially adapted for the concept of high feeding intensity with guaranteed optimal nutrient supply.

Oil
25.0%

Protein
22.5%

Ash
7.0%

Fibre
0.0%

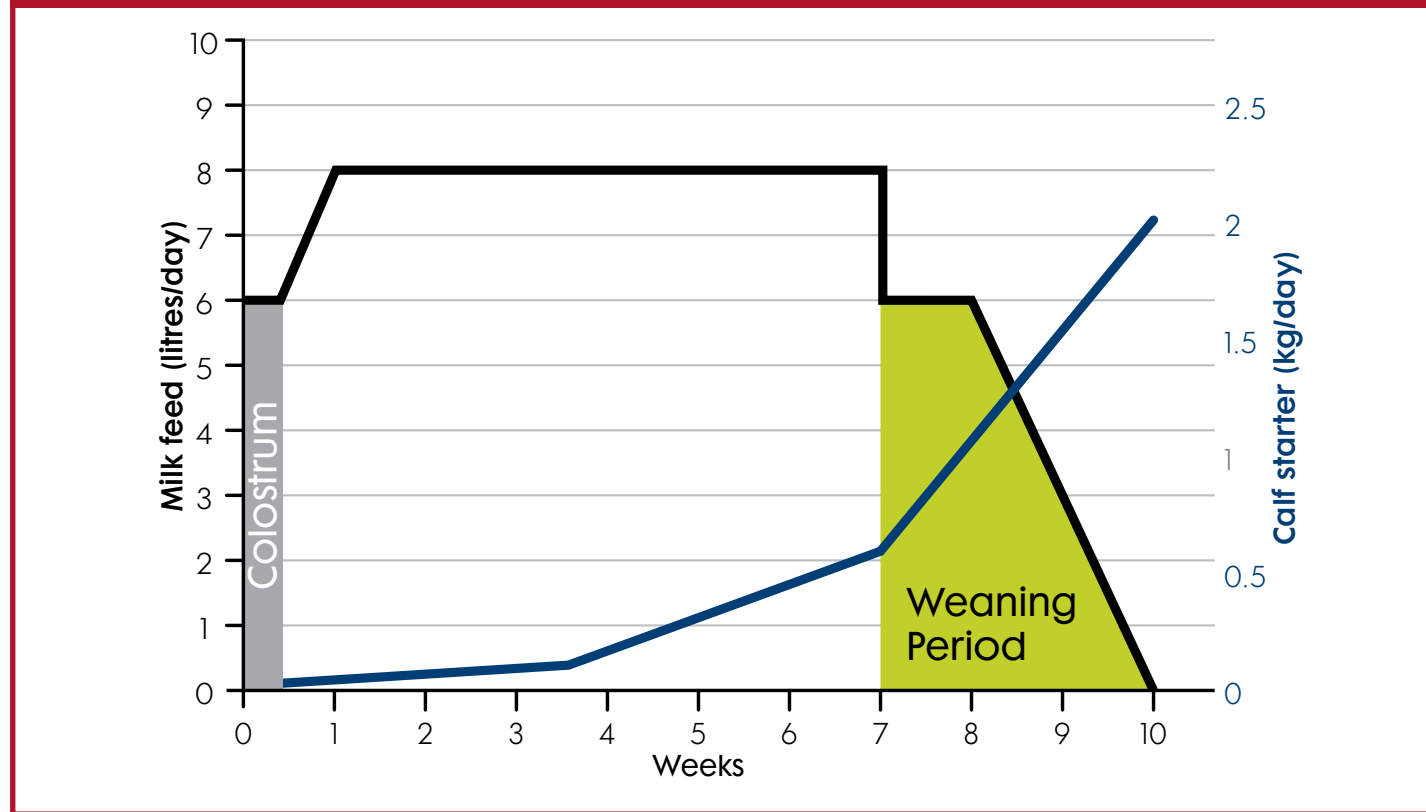


Mixing guide

Milkivit Energizer should be mixed at a concentration of 135 grams per litre of mixed milk.

This concentration enables the dry matter of the mixed calf milk replacer to closely resemble the dry matter content of cow's milk, whilst also ensuring nutrient and mineral balance is optimised.

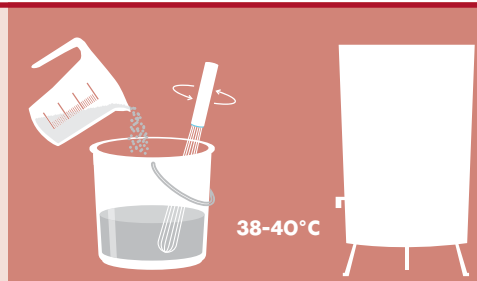
TYPICAL LIFESTART CALF FEEDING PLAN



Milkivit Energizer can be easily prepared manually with a bucket and a whisk. For larger amounts it is very convenient to use a milk mixer.

A feeding machine should be set for the correct dry matter proportion.

Feed Milkivit Energizer to your calves at a temperature of 38-40°C.





THE NATURAL CHOICE FOR HEALTHY GROWTH



For more information
trouwnutrition.co.uk/ecm

Milkivit is a brand of Trow Nutrition, a Nutreco company.

Trow Nutrition is a global leader in innovative feed specialities, premixes and technical services for animal nutrition. Quality, innovation and sustainability are the guiding principles behind everything we do – from research and raw material procurement, to the delivery of cutting-edge products and services for agriculture.

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