
Press contact:

Sophie.kauffmann@dreamslide.com

Sophie Kauffmann (Communication, Dreamslide SA)

Tel: +33 (0)1 69 07 01 52 or +33 (0)6 23 32 66 35

PRESS KIT

Updated March 2010

History of an invention

In 1999 Jean-Marc Gobillard, a lover of boardsports and a rollerblading enthusiast in particular, realized the limitations of small wheels; he found it difficult to maintain a satisfactory speed and felt that the overall performance left much to be desired.

He tried modifying various existing rollerblades to try to alleviate, at least partially, some of the problems he had noticed. He experimented with bigger wheels, shock absorbers, different geometries, and various other ways to improve the efficiency, but none of these attempts produced a really satisfactory result. So he decided on a radical change of approach and went 'back to the drawing board' with a completely open mind.

That is when he thought up a machine that would combine the performance, safety, and ease of use of a bike with the freedom and enjoyment of boardsports products in a lightweight, compact, designer form.

The basic idea is that the user should view this machine as an extension of his or her body; a sort of amplifier of the person's own natural locomotion capabilities, without the cumbersome aspect of an ordinary bicycle. It would be a small, two-wheeled vehicle, very low and easy to handle, ridden in a standing position for the feel of skiing or rollerblading, and propelled by a leg movement similar to that of walking or running.

The next step was to find a special propulsion system. The standing position corresponds to 'dancer' pedalling. On a classic bike, this position is used to start up, climb a slope, or go over an obstacle, and as everyone knows, although this position can generate a lot of power, it quickly becomes tiring. It seemed essential, then, to replace this system with a more efficient, ergonomic and comfortable one.

A great deal of research led to the discovery of the ideal kinematics and the development of various mechanisms to achieve it. These mechanisms would reconstitute remarkably efficient and biomechanically healthy pedalling motions thanks to greatly simplified technical systems—and that was not the easiest problem to solve.

Five years later, in 2004, the Dreamslide concept was born.

From invention to creation

2004-2005: First static prototype (P1) and first patent

An analysis of hundreds of patents (concerning products that did not take off) revealed that most inventors try to improve on existing devices instead of having the imagination to devise completely new solutions.

- A theoretical biomechanical analysis determined the new kinematics, which adapts perfectly to pedalling in a continuous standing position: the adaptive pedalling system.
- The first mechanical embodiment of these principles led to the construction of the first static prototype, P1 (made of boards, metal profiles, and parts recovered from various bicycles).

This prototype was used to check the relevance of the assumptions made, the reliability of the mechanical principles being considered, and the anticipated advantages of the system.

2006: 1st moving prototype (P2)

The year 2006 was spent designing and making the first moving prototype, P2, which went into service towards the end of that year.

After running hundreds of kilometres under actual operating conditions (bike trails, forest paths, city streets, etc.), it confirmed the conclusions drawn from the tests on the static model, and identified some adjustments or improvements that could be made, particularly in the areas of user convenience, stability, and safety.

It was already apparent that the novel, fun, and high-performance aspects of the Dreamslide intrigued many bystanders who witnessed our tests.

2007: Creation of the company, concept development, and third prototype.

Early in 2007, Jean-Marc Gobillard decided to devote himself exclusively to his invention and created the DREAMSLIDE S.A. company.

He improved his invention in the following ways:

- Bigger wheels (12 inches),
- A return to dual steering cranks (as on the P1),
- Adopting a completely tubular frame,
- Incorporating a full fairing.

It took more than a year to develop the P3.

First half of 2008: 2nd patent, prototype P4, and fundraising

Market research pointed to the development of a product with a far sportier appearance and characteristics than the P3.

A fourth prototype, P4, was created. This version gave top priority to performance, particularly thanks to its (high pressure) 16-inch inflatable tyres and some demanding choices concerning materials and components. The P4 also had a new, much-improved version of the adaptive pedalling system, for which a second patent application had just been submitted.

At the same time, the Dreamslide company went ahead with its first capital increase, raising more than 500,000 euros from networks of Business Angels.

Second half of 2008: Search for a manufacturing partner, 5th prototype

An initial co-operation agreement was entered into with Taiwan-based PACIFIC CYCLES, one of the world leaders in the bicycle industry, for the completion of the R&D phase and launching of industrial production. This partnership will allow us to analyse the product component by component, optimize and simplify its design, and prepare it for mass production under the best possible quality and price conditions. To confirm these ideas, a new prototype, P5, was required.

2009: Manufacture and launch

Market research was carried out. This study confirmed the initial positioning and the target customer base. It also provided information about the expected sale price and the preferred distribution methods. The product was ready to enter its manufacturing phase.

In October 2009, it was announced and presented as a world sneak-preview at the *Salon du Cycle* bike show at Porte de Versailles, Paris.

2010: Marketing

Dealers who have discovered the Dreamslide at national and international trade shows already love it.

Innovation: Designing a propulsion system for use in a continuous standing position.

From the start, the inventor chose the standing position because of its many advantages: freedom of movement, pedalling power, unrivalled comfort, precise control, enhanced safety... and no adjustments to be made for different users.

- In terms of sensations, standing upright is man's natural position. It is also the position used in boardsports: skateboarding, rollerblading, skiing, and surfing. It also allows the cycle to be seen as an extension of the body, as skis or rollerblades can be perceived.
This continuous standing position provides the greatest possible freedom of movement.
- As with the 'dancer' position on a bicycle, the rider generates enough pedalling power to reach a high speed or climb a steep slope, whilst the pedalling frequency remains similar to the frequency of a walking motion. Moreover, with the 'neutral point' problem of the classic pedalling system being totally eliminated, the user can adopt a very long stroke without expending much effort and going easy on the knees.
This results in much less frequent gear changes.
- The standing position is a natural posture that avoids creating some of the back or neck problems that are so common these days, when many people spend the whole day sitting down. The standing position also gives the rider a better overall view of traffic and pedestrians, to anticipate hazards, especially in an urban setting.
- The standing position also gives you finer control and makes it easy to shift your weight between front and back, for example when mounting a kerb. Another plus: because of the cycle's low weight and very low chassis, you can avoid obstacles with just a little sway of your body, without even moving the handlebars. You'll be able to master new control techniques; for example, keep pedalling through a bend whilst holding the cycle straight but tilting your body to compensate for the centrifugal force.
- The absence of a saddle and saddle-pillar makes the cycle easy to mount, and it is also why we were able design this low, simplified chassis. So it's really easy to hop off the Dreamslide, without even slowing down.

- Unrivalled comfort on damaged road surfaces or on impact (mounting a kerb), because the user's legs act as natural shock absorbers, which they are unable to do when seated on an ordinary bicycle.
- Safety is greatly improved because, in the event of a loss of control, the rider can easily jump clear and land on his feet, because he was already standing and the low chassis does not hinder his movements.
- Finally, with the elimination of the saddle, we also eliminate an adjustment that most riders of traditional bicycles can never quite get right: the saddle height. Cyclists almost always set their saddle too low so that their feet can easily touch the ground when stopped. By doing so, they put themselves in a far-from-optimum pedalling position in terms of efficiency and knee strain.

Because the classic pedalling system is not suitable for a continuous standing position (the dancer position requires strenuous effort which is difficult to sustain for long periods), it was necessary to invent a system that would allow the rider to pedal in a standing position for a long time, at high speed, and without undue muscle fatigue.

Pedalling upright with a classic pedalling system ('dancer' position) spells 'fatigue'. The main cause of this fatigue is excess energy consumption due to the constant vertical oscillation of the rider's centre of gravity. With every revolution of the pedals, the rider's body rises and falls through 17 cm, the height of the crank. If the cyclist repeats this movement 60 times per minute, he or she has effectively climbed 10 metres—the height of a three-storey building.

A new pedalling system must therefore satisfy certain constraints which would eliminate the disadvantages of the classic pedalling system when used standing up:

- The pedals must move in a circular trajectory, which generates power the most efficiently and is the easiest arrangement to create from a mechanical point of view.
- The amplitude of the vertical oscillation of the user's centre of gravity must be small when the user is pedalling with legs extended.
- The pedal must be travelling slowly when it reaches its lowest position to avoid dissipating the kinetic energy related to the vertical movement of the user's centre of gravity when the user is pedalling with legs extended.

- The pedal must be travelling at high speed when it reaches its highest position in order to avoid the dead centre effect. The effective lever arm, which is proportional to the speed of the pedal, is longer because of this. Moreover, the kinetic energy of the pedal and the associated leg helps in going beyond dead centre.

This results in pedalling that preserves the circular trajectory of traditional pedals but adapts the movement to reduce the amplitude of the oscillation of the centre of gravity. This amounts to reducing the pedal speed at the bottom and increasing the pedal speed at the top or, in other words, creating an equivalence with cranks of variable length. We have named this process 'adaptive pedalling', and the mechanism used to achieve it, 'adaptive pedalling system'. It could equally well be called an 'asynchronous' pedalling system.

The Adaptive Pedalling System (APS) better suits the physical capabilities of a human being, is more efficient, and generates better torque than a classic pedalling system.

A natural movement

Many anthropological studies have found that the predominant physical characteristic of human beings throughout their evolution has been their tremendous endurance; in particular, their ability to run long distances in small paces and at low speed.

This means that the movement used in adaptive pedalling, which is similar to that of jogging, perfectly suits the natural physical capabilities of the human body.

A large efficiency zone

Whatever the pedalling system, the speed of a pedal is proportional to its lever arm. In the context of adaptive pedalling, the speed of each pedal is adapted to optimise the use of the available muscle power at every point of the trajectory. Through its design, adaptive pedalling thus has a significantly larger efficiency zone than classic pedalling, which means that power equivalent to that of classic pedalling can be generated with a lower pedalling speed, and therefore less fatigue.

Higher torque

Because the adaptive pedalling system, by its very nature, requires the rider to be standing, the rider exerts more force on the pedals than with a classic pedalling system, generating more torque. This results in far better start-up and acceleration capabilities.

The development of this mechanism required several years of work and the creation of several prototypes.

The specification was very demanding, since so many criteria had to be optimised at the same time: weight, overall dimensions, efficiency, reliability, ease of manufacture and integration. Many possibilities were therefore explored; in particular, planetary gear systems, elliptical gears, elliptical chain and pinion systems, and complex cam systems.

Of all the possibilities considered, just one remarkably simple system fulfilled all the criteria.

What characterises this system?

First of all, the pedals are long and wide so that feet can stand on them naturally, as if standing on the ground.

Next comes a feature that is specific to our kinematics: the two external cranks are not coupled. Each of these cranks, operating independently from the other, drives a travelling head into a groove, which allows the lever arms to be varied to the right and left, which varies the speed of the pedals on their trajectories.

The absence of gears in the force transmission chain, with the resulting absence of friction, guarantees optimum efficiency. Compared to a classic pedalling system, the greater mechanical complexity generates less than a kilogram of additional weight, for about ten additional components.