



Case study

# RFID Technology

for identification participants of mountain bike races



## Automatic RFID identification, timing and scoring system for mountain bike races

### Solution Technology

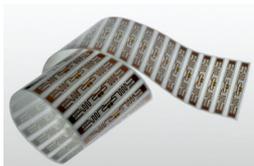
RFID Readers  
Alien ALR-8800



Antennas Alien  
ALR-8610



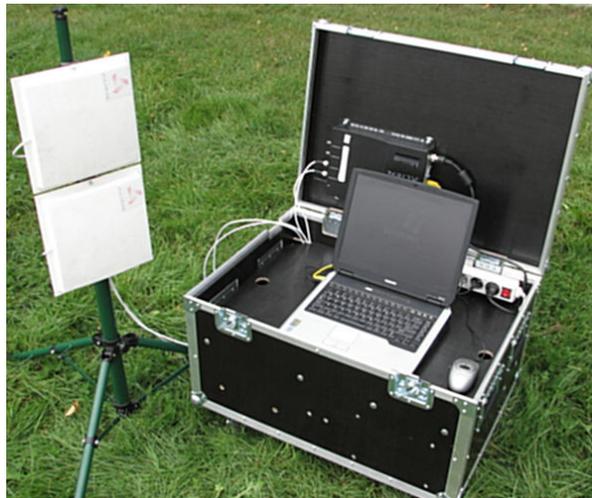
RFID Tags Alien  
ALN-9540



SportChallenge, alternative time measuring system for sport events, makes use of RFID system from Alien Technology to uniquely identify and control participants of mountain bike races. Timing and its entry into the database take place automatically according to the criteria and requirements of the race organizer, without the need of manual data entry.

### Initial Situation

Project SportChallenge incurred in order to improve the current state in the field of electronic non-contact timing and scoring systems in distance sports, mostly for cycling. The founders are the top or active sportsmen. Based on their long experience, they have been able to analyze problems of existing measuring systems, to identify advantages and disadvantages of each type of solution and focus on areas essential to define the place of necessary improvements. Emphasis was given to maximize the probability of correct reading of racer information, simplify the racer registration and make the work of organizers easier and more efficient.



### Solution Development and Design

For its performance parameters, pricing and portfolio of reference projects in the field of sport events timing systems as appropriate technology was chosen RFID UHF technology from Alien Technology. UHF RFID technology from Alien is able to read data from the tag up to a distance of 10 meters and thus the racer identification may take place within a fraction of a second. In the appropriate reader configuration it is possible to find well-defined place of reading, which corresponds to the location of the target line.

Sporting events are organized even in unfavorable rainy weather. Therefore, before deploying, it was necessary to test the possibility of reading and writing RFID tags in a humid environment and to test the ability of the reader to record the RFID tags covered with layer of mud correctly. The tests finished with favorable results and therefore there were no other obstacles to deploy the system in practice.



## RFID identification and control participants of mountain bike races

### Solution Description

On the track, at the starting gate and the target gate there are deployed RFID ALR-8800 readers and antennas. For racer identification passing through the target gate and control points it is used RFID UHF tag Alien ALN-9540 Squiggle®, which is together with the starting number, racer name, nationality and category, etc. attached to the underlying plastic sheet. Based on selected quality of the plastic sheet the starting number can be used for a single event, series of races, or lap races.

The data are captured out of all control points located on the race route and sent through GSM modems to the server. The system can operate without access to an electric network system up to 12 hours. The up to date information about the course of the race is available online on the project website.

When passing through the target gateway the RFID chip uniquely identifies a racer and records the time into a database. The results are processed by software developed specifically for the needs of the SportChallenge project. After racer passes through a target gate, the racer data will immediately appear in the scoring sheets including the time recorded.

The part of the system is a web page [www.sportchallenge.cz](http://www.sportchallenge.cz) containing module for racer registration, the list of registered racers and current information about the course of the race, results of last races held, etc. The system also includes a module for the organizers, which serves for recording of received payments from competitors, for on-site racer registration and change of

information about in advance registered racers.

The competitors need to fill-in the registration form only once. The registration to the next races assisted by system SportChallenge can be done only by user log-in and particular race selection without the need for further filling in of any long forms.

### Solution Benefits:

- Automatic racer identification
- Automatic, timing and scoring system
- Unofficial results available at any time during the race
- Reliable and inexpensive measurement system
- Required only single racer registration
- Production of the starting numbers for MTB
- Quick starting and scoring sheets preparation
- Sending the results (the time and ranking) by SMS
- Mistakes elimination - the tag is programmed based on the racer starting number

### About Barco

Barco is an IT solution provider in the field of barcode applications, RTLS, RFID and wireless technologies in business processes. We specialize on solutions for online warehouse management based on utilization of mobile terminals and wireless infrastructure. Our leading product is online Warehouse Management System SmartStock.WMS. The corporation was established in 1993. Its stock capital is 20 000 000 CZK. Barco is a holder of certificate ISO 9001:2001. [www.barco.cz](http://www.barco.cz)

### About SportChallenge

SportChallenge project was created with the aim to offer an alternative system for time measurement at various sport events. Primarily intended for MTB races, however its use is being constantly extended to other sports as well. Our aim is to offer the organizers as well as the competitors a service that includes: registration of competitors, preparation of starting number, presence at the race, time measurement, making the final results table and many other accompanying services. We broaden the variety of these services so as to achieve maximum satisfaction at the organizers as well as competitors side.

[www.sportchallenge.cz](http://www.sportchallenge.cz)

Solution was realised in cooperation of companies Barco and SportChallenge. For more information, please contact:

**Barco**

**Barco, s.r.o.**  
Okružní 741  
686 05 Uherské Hradiště  
Czech Republic  
Tel.: +420-572 52 00 52  
Fax: +420-572 52 00 32  
E-mail: [sales@barco.cz](mailto:sales@barco.cz)  
[www.barco.cz](http://www.barco.cz)

**SPORTCHALLENGE**

**SportChallenge**  
Jiří Havlíček  
Tel.: +420 776 200 396  
E-mail: [info@sportchallenge.cz](mailto:info@sportchallenge.cz)  
[www.sportchallenge.cz](http://www.sportchallenge.cz)