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# FSC 中国大学生方程式赛车总体设计

## 摘 要

FSC: Formula Student China 中国大学生赛车方程式。世界第一次方程式大赛开办是 1979 年在美国, 大多数参赛人员是大学生。按照大赛组委会的规则要求, 在为期一年的期限内制造出一台在转向、制动、稳定性等方面表现都很优异的方程式单人赛车。在国外, 这项赛事已经日益完善, 规则严谨, 本着以培养学生自主学习能力和动手能力为宗旨, 这项国际化赛事受到各个国家广泛的关注, 在 2010 年正式进入中国, 至今已经举办九届。国外的汽车行业较为发达, 汽车改装俱乐部也层出不穷, 相应的成套赞助零件商也很完善。而中国, 汽车行业发展稍显薄弱, 大学生们在校园内接触的汽车知识不够深入, 实习或者实验也是照本宣科, 很少有自己动手动脑造车的机会。本着为中国汽车产业输送人才的想法, 这项赛事引起了各大高校广泛关注。赛车上的很多部件不像国外有厂家技术人员提高调试资料或者赞助, 需要自己进行设计, 结构优化, 委托加工。目前网上的很多文献多是按照国标为基础进行设计, 同时查询机械手册辅助制图。但是 FSAE 赛车是一种相对特殊的车型, 学生造出赛车的目的更多的是用来比赛, 以完成参赛为首要目的, 所以所设计赛车的寿命不及乘用车长, 赛车所使用的轮胎也是专门的热熔胎。同时, 在赛车设计过程中, 各个系统的相互干涉一直是一个很大的问题, 由此项目初期的总布置尤为重要, 本文总布置所用的三维软件为 CATIA, 后期使用二维软件 CAD 导出图纸, 尽可能的避免实际加工的误差。

**关键词:** 方程式赛车; 总布置; 设计; 制造; FSAE

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## Abstract

Fsae full name Formula SAE, Chinese name international student formula racing. It was founded by the American Society of vehicle engineers in 1979 and is widely praised abroad. It is based on college students as the main force, according to the rules and requirements of the Organizing Committee of the competition, in a period of one year, it has produced a formula single car with excellent performance in steering, braking, stability and other aspects. In foreign countries, this international competition has been increasingly improved, with strict rules. Foreign auto industry is more developed, auto modification clubs are emerging in an endless stream, and the corresponding set of sponsorship parts manufacturers are also very perfect. However, in China, the development of automobile industry is slightly weak. The automobile knowledge that college students contact in campus is not deep enough. The practice or experiment is also based on the book, and there is little chance to make cars by themselves. In line with the idea of providing talents for China's automobile industry, this event has attracted wide attention of universities. Many parts of the racing car, such as brake disc, column, wheel hub, etc., do not need to be designed, optimized and commissioned for processing by the technicians of foreign manufacturers to improve the commissioning data or sponsorship. However, Fsae racing car is a relatively special model, because its purpose is only to meet the parameter requirements, so the designed racing car's life is not as long as the passenger car, and the tyres used in the racing car are also special hot melt tyres, which are different from the traditional vehicles, so it is not allowed to design according to the professional car standards.

**Key words:** Formula racing; general arrangement; design; manufacture; Fsae

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