



**CASE STUDY**

**PUSH-PULL SYSTEMS IN THE TRANSPORT INDUSTRY**



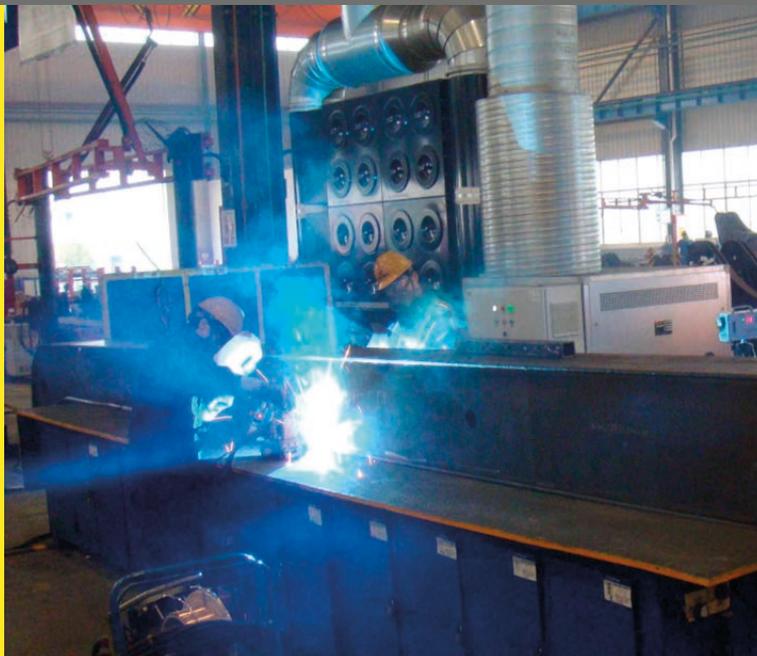
**THE CHALLENGE**

Zoomlion, based in China, produces all kinds of enormous vehicles/machines, e.g. to asphalt, pave, drill, sweep and wash, but also crane transportation, bulldozers and fire trucks; all heavy machinery. One of its subsidiaries, based in Changsha<sup>1</sup>, was looking for a solution to remove the overdose of welding fumes from its workshop. This subsidiary is huge: 95,000 m<sup>2</sup> (207 m x 72 m x 14.6 m) and includes three bays.

The welding area covers 180 m x 72 m x 5 m; 180 employees work in two shifts, seven days a week. Besides manual welding, welding installations are used. All together consuming 60,000 kg of welding wire per month. Plymovent analysed the situation carefully and proposed an engineered solution.

<sup>1</sup> Changsha is the birthplace of China's mechanical engineering technology.

Zoomlion Heavy Industry Science & Technology Development Co., Ltd. is a Chinese company, founded in 1992. It has subsidiaries, marketing and research institutions, a complete sales network and manufacturing bases located all around the world, employing over 4,000 people. Its annual turnover is more than 5,6 billion RMB (€ 682,180,800).



**TESTIMONIAL**

“We are very happy with the engineered solution provided by Plymovent. As a professional company, Plymovent analysed our manufacturing facility first and came up with a well-considered system design. They ran a test in zone 3 and eventually installed four Push-Pull systems. Everybody notices the big difference, less fumes and dust; thus a safer and healthier workplace!”

» *The Push-Pull systems of Plymovent ensure a clean environment.* «

QUOTE BY Mr. Chen, Sr. Technical Manager of Zoomlion.

## THE SOLUTION

Plymovent has taken the following things into account creating an engineered solution for Zoomlion:

- Heavy development of welding fumes and grinding dust.
- Large workplaces (due to the large workpieces): source extraction is not an option.
- Intensive welding, constantly 24/7.
- No existing roof (or other) ventilation systems.
- High personnel costs per welder, due to annual medical inspections.

First, Plymovent inspected the manufacturing site. They drew a professional system design, started with test settings and made a quotation for the entire project.

Plymovent advised a general filtration system; in this case four parallel Push-Pull systems. Push-Pull systems are a perfect solution if welders work with large workpieces.

Welding fume rises due to its heat. Ductwork is being placed at exactly that height, where the welding fumes remain floating. Push grids in the ductwork push (airflow) the welding fumes to the other side, where as pull grids in the opposite ductwork attract the welding fumes. The welding fumes are transported to the central filter system, which then cleans the polluted welding fumes and dust. The filtered clean air is brought back into the workshop (recirculation).



## MAIN BENEFITS

- Safer working environment, better view (less dust and fumes), cleaner work floor.
- Healthier working environment, less medical costs.
- Less absence due to illness, higher productivity.

## SYSTEM FACTS

### Engineered solution

#### Extraction system

- 4 x Push-Pull system (parallel)

#### Filtration unit

- 4 x MultiDust® Bank (MDB-16)

#### Fan

- 4 x SIF-1900

### Control equipment

- 4 x SCP 18.5 kW

### Year of installation

- 2011

### Applications

- MIG welding



CN-01



**PLYMOVENT®**  
clean air at work

[www.plymovent.com](http://www.plymovent.com)

*Plymovent cares about the air you breathe. We offer products, systems and services which ensure clean air at work, anywhere in the world. We respect the environment and we deliver high-quality products. Our expertise gained over many years and our genuine commitment to customer requirements enable us to provide precisely the solutions you need.*