

## MBR Businesspark Elisenhütte, Nassau, Germany

### Task

In Elisenhütte in Nassau a predominantly old-established industry is operative. The firm Metallwerk Elisenhütte (MEN) which is producing ammunition as well as the wood-working company Lausberg & Sohn KG belong to it. Furthermore, there are two multifamily residences and one private property.

The whole area is a peninsula which is situated approx. 1.5 km away from the town centre of Nassau. It has a total area of approx. 4 skm. The peninsula Elisenhütte is situated directly to the Lahn which is nature and animal protected. The different properties are located widespread away from each other. The whole peninsula had been heaped up and compacted by several metres with existing building site waste and stones after the last war.

There were no exact plans about the existing wastewater canalisation. The area was supposed to be connected to the public canalisation via the municipality of Nassau. Approx. 1 million Euro would have been necessary to realise this. The result of an exhaustive examination by a group of experts for wastewater of the economic administration of Rhineland-Palatinate (AWEX Group) was that the construction and operation of siClaro® small wastewater treatment plants fulfils all legal requirements for the biological cleaning of wastewater. Furthermore, this method is noticeable more favourable (approx. 90% saving of costs) whereupon the district chief executive of the administrative district Rhine-Lahn arranged this local solution.

### Inlet

The firm MEN currently employs approx. 150 employees in a multi-shift operation. In this firm, a daily amount of approx. 80m<sup>3</sup> industrial wastewater arises. The firm Lausberg currently employs approx. 20 employees. In addition 4 residents live there. In one apartment house, currently 18 residents live and there is the other apartment house as well as in the private property each with 4 residents.

### Wastewater Treatment

The installed small wastewater treatment plants basically consist of a mechanical pre-cleaning as well as a membrane aeration reactor for denitrification and nitrification where the discharged wastewater is cleaned biologically with the help of siClaro® ultra membrane filters. The wastewater thus becomes sanitised bath water and is directly conducted into the Lahn afterwards.

In addition to this, an attempt lasting several months was determined to treat the supplementary arising wastewater from the production of ammunition by the firm MEN alternatively. This is carried out with a siClaro® container plant especially built for such pilot applications. At the moment the industrial wastewater is pre-cleaned by a complex neutralisation station and finally subjected to a treatment with active carbon.



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### Design Data

Population Equivalent (PE) project overall	122,0
Population Equivalent (PE) firm MEN	2 x 30,0
Maximum average flow (m <sup>3</sup> /d)	5,0 each
Installed filters	4,0 each
Installed membrane surface area (m <sup>2</sup> )	24,0 each
Aeration volume (m <sup>3</sup> )	9,3 each
Population Equivalent (PE) firm Lausberg	30,0
Data like firm MEN	
Population Equivalent apartment house 1	20,0
Maximum average flow (m <sup>3</sup> /d)	4,0
Installed filters	3,0
Installed membrane surface area (m <sup>2</sup> )	18,0
Aeration volume (m <sup>3</sup> )	5,7
Population Equivalent apartment house 2	6,0
Maximum average flow (m <sup>3</sup> /d)	1,0
Installed filters	1,0
Installed membrane surface area (m <sup>2</sup> )	6,0
Aeration volume (m <sup>3</sup> )	2,5
Population Equivalent (PE) private property	6,0
Data like apartment house 2	
Total construction time of all plants in weeks	6,0

All installed control systems of the small wastewater treatment plants are equipped with a remote operation monitoring and thus offer an ideal operation safety.