

## Calag Blog

Langenthal, 02.2021

### New Railway car bodies from Calag for Pilatus-Bahnen

*It is the steepest rack railway in the world. Commissioned in 1889, with a gradient of up to 48 per cent and a journey time of around 30 minutes: that's the Pilatus Railway in figures. It climbs the path from Alpnachstad to Pilatus Kulm metre by metre. Now the unique heritage is being transferred into a new era and will receive a modernisation of the platforms as well as eight completely new railcars. The cabins, as the superstructure of the new carriages, come from Calag.*

The overall project is impressive. In about three years, the entire rack railway between Alpnachstad and Pilatus Kulm will be modernised. The platforms will be renovated, given more space for tourists and made wheelchair accessible. The aging railcars will be replaced by new, modern and more comfortable models. These not only meet the latest requirements for public transport, but also give the traditional railway a modern appearance. The new railway offers visitors a first-class ride on the imposing mountain route as well as a 360° panoramic view.

In the process of the project, those responsible for the Pilatus Bahnen are relying on Swiss craftsmanship. Project management for the construction of the new railcars is the responsibility of Stadler Rail, which, with its many years of experience in train construction, is responsible for project coordination and the construction of the drive unit on the substructure. The design comes from the renowned Swiss industrial designer KÜCHLER Designs. Calag Carrosserie Langenthal AG is responsible for the car body, which has to be extra light due to the conditions at Pilatus.

The cabin construction experts at Calag-Gangloff specialise in the construction of light metal structures for the worldwide use of gondolas, aerial tramway cabins and funicular cars. It is precisely these skills that are in demand at Pilatus, because the total weight of the railcars must be as low as possible due to the extreme gradient and the load-bearing capacity of the existing bridges.

The Pilatus project includes a total of eight new railcars, each with space for 48 passengers. The first carriage is currently being built in the Calag workshops, before the drive system is installed in the substructure at the Stadler works in Bussnang. By 2023, all the new carriages should be in service on the steep route up to Pilatus Kulm.

### A prestige project for Calag cabin construction

With the Pilatus Bahn project, one can confidently speak of a prestige project. With visitors from all over the world, Mount Pilatus is a popular destination for Swiss tourism and has an international appeal. Since its construction in 1889, the Pilatus Railway has also held the record for the steepest cogwheel railway in the world, with a gradient of up to 48%.

In 2018, Calag Carrosserie Langenthal AG took over the cabin construction division from Gangloff, whose funicular carriages and cable car cabins are in use worldwide. Gangloff bodies are also already on the road under the existing carriages at Pilatus. In 1967 Gangloff supplied two carriages for the Pilatus Railway.

The carriages are the flagship of every railway and are always unique due to customised projects. The Pilatus project was no exception. Since a rack railway, like the one on the Pilatus, has capacity for several carriages, the Calag team is for once building not just the usual two for a funicular railway, but eight carriages of the same type.

"Of course, we are proud to be involved in this project and to be able to prove our skills in cabin construction for such a prestigious project. The Pilatus Railway is internationally renowned and we are delighted that superstructures from our company will be transporting tourists to the summit in the future," says Urs Friedli, project manager for the Pilatus project at Calag.

## **Calag-Gangloff with a lot of experience in the construction of funicular railway carriages**

Car bodies like those of the Pilatus Railways are always one-of-a-kind at Calag. There are not many components that can be bought off the shelf. The construction of these carriages therefore demands a great deal of craftsmanship from the cabin builder. The Calag team builds the new carriages from scratch. The shapely, curved profiles that make up the track in the end are brought into the right shape by hand with a great deal of care and skill. Once the frame of the track is in place, you can immediately see what is to be made of it. Just as quickly, you can see how much work goes into each of the individual carriages.

Calag's cabin construction team has years of experience in building superstructures for funiculars and rack railways. The majority of the current team was already involved in cabin construction at Gangloff before the takeover in 2018 and worked on projects all over the world. This expertise and Calag's resources in light metal construction enable the lightweight construction of the Pilatus Railway superstructures. The Calag cabin construction team knows the immense demands of such projects in terms of quality and safety; after all, in this case it is even the steepest line in the world over which the passengers have to be transported safely. And the requirements are also high in terms of aesthetics. The cars are the flagship for every mountain railway company as well as for Swiss craftsmanship. They are ridden on and viewed by thousands of tourists from all over the world during their operating time. The demands on the finish as well as the longevity of each individual component are therefore very high.

The Calag team is proud to be able to build the superstructures for the new train horses on Pilatus and is already looking forward to a first ride in one of the new railcars.

## Technical data

<b>Facts and figures on the redesign of the steepest cogwheel railway in the world</b>	
<b>Route</b>	Alpnachstad - Pilatus Kulm (commissioned 1889)
<b>Height difference</b>	1635 m
<b>Length of railway line</b>	4618 m
<b>Mountain ride</b>	19 min (previously 30 min); max. 15 km/h (previously max. 12 km/h)
<b>Downhill ride</b>	28 min (previously 40 min); max. 12 km/h (previously max. 9 km/h)
<b>Frequency (new)</b>	Half-hourly
<b>Operating time (Season)</b>	May till November
<b>Construction phase</b>	November 2020 to May 2023 (parallel to ongoing operations and in winter months)
<b>Rolling stock (new)</b>	8 passenger railcars in double traction for 48 passengers each 1 freight railcar (newly separated from passenger traffic) Gradual commissioning summer 2021 to May 2023
<b>Weight railcar</b>	18 t (gross weight)
<b>Drive power</b>	210 PS or 154 kW per railcar
<b>Railway system</b>	Zahnstangensystem Locher (since 1889)
<b>Freight transport</b>	Approx. 1000 t per Year
<b>Route</b>	Track gauge : 80 cm / gradient: maximum 480 ‰, average 380 ‰
<b>Project partner</b>	General project lead / Planning: Emch & Berger AG Railcar: Stadler Rail; Design: K�uchler Design Cabins: Calag Carrosserie Langenthal AG Gleiswender: Ferdinand Steck Maschinenfabrik AG Leitsystem: Actemium LeitTec

## Images

	Dateiname: Pilatusbahn_Modell neue Triebwagen_1
	Dateiname: Pilatusbahn_Modell neue Triebwagen_2
	Dateiname: Pilatusbahn_Modell neue Triebwagen_3
	Dateiname: Pilatusbahn_Animation_1
	Dateiname: Pilatusbahn_Animation_2
	Dateiname: Pilatus Bahn_Klarlack_103
	Dateiname: Pilatusbahn_065722200
	Dateiname: Pilatusbahn_143457
	Dateiname: Pilatusbahn_111115
	Dateiname: Calag_Urs Friedli_Portrait

[Image Download](#)

[Youtube Video mit 3D Animation der neuen Wagen der Pilatus-Bahn](#)

Projekt-Website Neukonzeption Zahnradbahn: [www.pilatus.ch/zahnradbahn](http://www.pilatus.ch/zahnradbahn)

## Calag Gangloff



In April 2018 Calag took over the activities of Gangloff Cabins for design and construction of coaches for funiculars, cabins for aerial tramways as well as cabins for amusement rides (Ferris Wheels etc.) and special cabins of all kinds.

Experienced ex-Gangloff staff together with the highly specialized Calag crews and in company with the large know-how of Gangloff in these fields allow us to satisfy all of your challenges in this special branch.

130 years of tradition in car body manufacturing, a state of the art infrastructure and more than 180 highly qualified and motivated staff in all car body professions will guarantee for highly professional quality.

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