

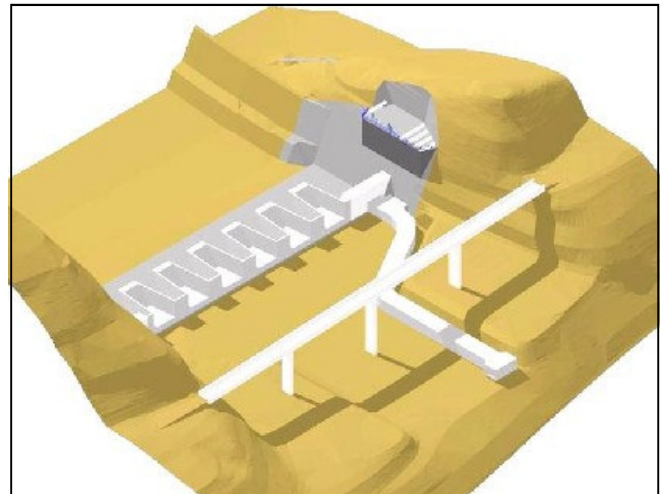


## HYDROPLUS IN THE USA Terminus Fusegates Underway

The 6.5-meter high Fusegates at Terminus Dam – located on the Kaweah River, South of Fresno, CA will become the highest Fusegates in the world so far.

The existing spillway is a 93.6-meter wide concrete sill with a notched center section that is 41.2-meter wide. For the proposed arrangement, a total of six Fusegates made of reinforced concrete are required, each 11.7-meter wide, 6.5-meter high, and 13.0-meter in length at the crest.

Their installation will allow for an increase of the storage capacity of the reservoir (Lake Kaweah) by  $50 \times 10^6 \text{m}^3$  and improve the flood protection attenuation capacity. As of March 2003, the excavation works at the side abutments of the spillway are completed and the supporting of slopes with rock bolts are underway. The



*Spillway Raise Pertinent Features  
Courtesy of USCOE—Sacramento District*

construction of the Fusegates is scheduled to start early June this year and be completed in late Fall 2003.

The application of the Fusegate solution enables the American taxpayers to save about US \$4 million compared to a traditional solution which had been originally considered, involving widening and heightening of the existing uncontrolled spillway.



*Upstream View of the Dam and Spillway*

## RIVER FLOOD RISK MANAGEMENT

# Controlling Polders with Fusegate Technology

While drought remains the main scourge for many countries worldwide, there are times when too much water can also have devastating results.

Presently environmental studies look at reducing the risk of damage and economic loss in flood hazard zones by reversing the encroachment into natural floodplains and man-made polder areas. The goal is to divert part of the river flow into designated areas in order to limit the river flow through urbanized areas.

Hydraulic research shows that the efficiency of the polder is widely dependant on the polders inlets. Mechanical gates are generally discarded considering their low frequency of operation whereas free sills lead to too frequent inundations of the polder. Thus, fusedykes have been widely used by default to control polder inlets in spite of the inherent reliability concerns.

In such circumstances, application of reliable devices, only driven by gravity and water pressure, is a very promising alternative.

The technology of HYDROPLUS has now been transferred to river polder control. Artificial levee modules, essentially consisting of a concrete skeleton



*Artist Impression of A River Fusegate*

covered by grassed earth, act as a low environmental impact spillway.

Ordinary to medium floods are discharged through the limit of the river bed. For catastrophic events, the river surface will reach the various predetermined levels triggering the rotation of a given number of Fusegates, required to pass safely the flood. The breach in the levee is then accurately and reliably controlled.

The control of polder inlet by Fusegates is considered with high interest by river basin authorities. This type of application has been extensively studied in the hydraulic laboratory of the University of Milan, Italy. A pilot project has already been successfully implemented on the capricious Huaihe River in China. The use of this technology is the preferred alternative on new river management plans, particularly in Italy and in the USA.



*The Dong Feng Lake Project*

**SOUTH AFRICA**

## Melspruit Dam

**A**pplication of the Fusegate System is the preferred alternative to raise Meulspruit Dam in the free state province of South Africa.

This project will become the third one in this country and will reinforce the presence of HYDROPLUS in the region.

*First HYDROPLUS reference in South Africa, the Shongweni Dam is still operating after 10 years, at satisfaction of the dam owner.*



## Recent Papers and Forthcoming Conferences

- *Dam Safety Modifications to Improve Spillway Discharge Capacity—Environmental Considerations and Solutions*

By Arthur H. Walz, Jr., P.E.

Hydro Review, April 2003, p. 46

- ICOLD 2003 - Montréal, Québec, Canada  
June 16 to 20

*Optimization of Existing Dams Q. 81 - # 3*

By Sylvain Chevalier and Julien Rayssiguier  
Hydroplus

ICOLD, June 18, 8:30 a.m.

- WaterPower XIII- Buffalo, NY, USA  
July 29 to 31



Visit us at  
booth 710!

**ICOLD - MONTREAL, JUNE 2003**

## HYDROPLUS Proud Participant

**H**YDROPLUS is thrilled to participate to the 21st ICOLD Congress. We will answer question 81 - #3, "Economic Evaluation of Hydraulic Projects Including Dams—Evaluation of Alternatives to Dams". The presentation will take place on Wednesday morning, June 18. Hope to see you there!

### OPTIMIZATION OF EXISTING DAMS—Summary

As the public and political concern that all development in the future to be sustainable and protect the environment, the construction of new dams encounters an increasing number of difficulties. Any alternative to very little environmental impact, that does not engender social and political controversy, presents much greater value in the present context.

Increasing the storage capacity of existing dams without raising the maximum water level, when technically feasible, constitutes an interesting alternative because of limited environmental impacts.

As such, the experiment carried out by Gujarat province in India is interesting: the raising of 13 dams using the HYDROPLUS system allowed the State to quickly increase its irrigated perimeter by about 50,000 hectares without modifying the dams environment.

Other States in India are on the verge of imitating this example.

## WE HAVE MOVED!

Please take note of our new address:

### HYDROPLUS

5, cours Ferdinand-de-Lesseps, 92851 Rueil-Malmaison Cedex, France

Tel: +33 1 47 16 44 34 - Fax: +33 1 47 16 42 12 - [contact@hydroplus.com](mailto:contact@hydroplus.com)

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